REQUEST FOR PROPOSAL

FOR

Selection for Agency to set up Mega Skill Centre in Energy 4.0 & Industry 4.0 for Bihar Skill Development Mission (BSDM).

RFP No: BSDM/Mega Skill Center /2024-01
Date: 05.08.2025

BIHAR SKILL DEVELOPMENT MISSION (BSDM)
DEPARTMENT OF LABOUR RESOURCES
GOVERNMENT OF BIHAR,
A-WING, 5TH FLOOR, NIYOJAN BHAWAN, PATNA- 800001
Email Id: biharskilldevelopmentmission@gmail.com
Website: www.skillmissionbihar.org

Contents

Bihar Skill Development Mission (BSDM)
Department of Labour Resources, Government of Bihar
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Notice Inviting Request for Proposal

RFP No: BSDM/Mega Skill Center/2024-01 Date-05/08/2025

Secretary, Dept. of Labour Resources, Govt. of Bihar- cum- CEO, Bihar Skill Development Mission (BSDM), invites proposals **(Two Bid System)** for Selection of experienced and qualified Agency to set up Mega Skill Centre in Energy 4.0 & Industry 4.0 for Bihar Skill Development Mission (BSDM).

Kindly note that the selection of agency under this RFP will not guarantee allocation of work and BSDM will assume no liability or cost towards it. BSDM makes no commitments, expresses or implied that this process will result in a business transaction between anyone.

Document Fee and Tender Processing Fee: All Applicants have to pay a **non-refundable** Document Fee of Rs. 5,000/- (Rupees Five Thousand only) and Tender Processing Fee of Rs. 590.00 (Five Hundred Ninety only) **through e-payment mode** (i.e. NEFT/RTGS/Credit Card/Debit Card) on E-Proc Portal.

Earnest Money Deposit (EMD): An EMD of Rs. 40,00,000/- (forty Lakh) only, **through e-payment mode** (i.e. NEFT/RTGS/Credit Card/Debit Card) on E-Proc Portal, well before the last date/time for submission/ uploading of offer/Bid, failing which the bid will be rejected. This EMD will be non-interesting and refundable. If the selected bidder fails to submit the requisite performance guarantee or to execute the agreement, this EMD will be forfeited.

The Proposal has to be submitted through online mode on https://www.eproc2.bihar.gov.in and can be searched by clicking the Tab "Tender" on home page of above website and then going to Latest Tender by searching Department Name as "Labour Resources Department".

The Proposal has to be submitted in online mode containing following cover stage-

A) Technical Bid Open Stage and B) Cost Bid Open Stage

The application procedure, eligibility criteria, evaluation methodology, terms and conditions and the scope of work are detailed in this RFP which can be seen or downloaded from the "e-Procurement Portal https://www.eproc2.bihar.gov.in and departmental **website:** http://www.skillmissionbihar.org**.** The RFP will be available to download from the above websites from **Date-06.08.2025**. The **Pre-bid meeting** will be held on **03:00 PM of Date-14.08.2025 days physically.** The last date for uploading of proposal/bid will be **Date-27.08.2025 days up to 15.00 Hrs.** Technical Bid will be opened on or after **Date-27.08.2025 days post 16:00 Hrs. The Evaluation of Bids will be under Least Cost System.** Please refer RFP document for complete details.

The undersigned reserves the right to issue addendum/corrigendum/modification or to amend any or all conditions of this RFP Document or to accept or reject any or all proposal(s) or to cancel the whole of this RFP at any stage without assigning any reason thereof and no bidder shall have any cause of action or claim against the undersigned for the same.

Mission Director,
Bihar Skill Development Mission,
Department of Labour Resources, Govt. of Bihar

Section - I

1. LETTER INVITIG e-TENDER (Letter of Invitation)

(Through e-Procurement Mode only) (https://www.eproc2.bihar.gov.in)

Tender Notice No: BSDM/Mega Skill Center/2024 Date- 05/08/2025

1.1 Tender Schedule/Timelines and Instructions:

SN	Activity	Date/Time: Duration
1.	Online Sale/Download date of Tender documents	From **Date-06.08.2025 (https://www.eproc2.bihar.gov.in)**
2.	Last Date of sending Pre-Bid queries by e-mail	**Date-13.08.2025 days up to 15.00 Hrs.** on biharskilldevelopmentmission@gmail.com
3.	Date, Time and Place of Pre-Bid Meeting	Bihar Skill Development Mission # A-Wing, 5th Floor, Niyojan Bhawan, Bailey Road, Patna-800001, **on 03:00 PM of D+8 days.**
4.	Publishing of Pre-Bid queries response	**Will be published on best effort basis at e-proc website/BSDM website**
5.	Last Date/Time for submission/ uploading of offer/Bid	**Date-27.08.2025 days up to 15.00 Hrs. (https://www.eproc2.bihar.gov.in)**
6.	Date & time for opening of Technical Bid	**On or after 27.08.2025 days post 16:00 Hrs. (https://www.eproc2.bihar.gov.in)**
7.	Date and time for Technical Presentation and demonstration.	Date and time for Technical Presentation and demonstration shall be communicated later
8.	Financial Bid Opening Date and Time	Post Completion of Technical Evaluation, at e-proc portal, as per decision of competent authority.
9.	Method of Selection	LCS
10.	Bidding in Consortium/Joint Venture	NO
11.	Bid Proposal Validity	180 days from the date of opening of bid
12.	Agreement Period	02 year from the date of signing of contract; extendable further 1 year based on satisfactory performance and /project requirement and based on the sole discretion of BSDM.
13.	Contact person/Nodal Officer for queries	Name: Manish Shanker & Designation: Mission Director Email: md.bsdm@gmail.com & contact no: _____

- Detailed descriptions and instructions for submitting the proposal can be downloaded from e-tender website **(https://www.eproc2.bihar.gov.in)**.
- **Return of EMD:** The EMD of unsuccessful bidders will be returned after execution of agreement with successful agency or completion of Bid validity period whichever is earlier.
- Bids along with necessary online payments (Tender Processing Fee, Document Fee and EMD) must be submitted through e-Procurement portal **(https://www.eproc2.bihar.gov.in)** before the date and time

specified in the NIT/RFP. The department/Tendering Authority doesn't take any responsibility for the delay / Non-Submission of Tender / Non-Reconciliation of online Payment caused due to Non availability of Internet Connection, Network Traffic/ Holidays or any other reason."

- The bidders shall submit their eligibility and qualification details, Certificates as mentioned in section etc., in the online standard formats given in e-Procurement web site **(https://www.eproc2.bihar.gov.in)** at the respective stage only.

- The bidder is expected to carefully examine all the instructions, guidelines, terms and condition and formats of the RFP. Failure to furnish all the necessary information as required by the RFP or submission of a proposal not substantially responsive to all the requirements of the RFP shall be at the bidder's own risk and may be liable for rejection. Bidders are advised to study the RFP document carefully. Submission of the bid shall be deemed to have been done after careful study and examination of the tender document with full understanding of its implications.

- The bidders should ensure that all the required documents as mentioned in the tender document are submitted/ uploaded along with the bid and in the prescribed format only. The bidder shall upload the scanned copies of all the relevant certificates, documents etc., in support of their eligibility criteria / technical bids and other certificate /documents in the e-Procurement web site **(https://www.eproc2.bihar.gov.in)**. **This will be the bidder's sole responsibility to ensure that all required documents have been uploaded and all uploaded documents, when downloaded must be legible/readable failing which their bid will be rejected. Hence it is advised that all the documents should be properly scanned and uploaded.**

  - ❖ BSDM shall carry out the evaluation solely based on the uploaded certificates/documents in the e-Procurement system
  - ❖ BSDM will notify the bidders for submission of original hardcopies of the uploaded documents, if required.

- The bidder shall sign on the supporting statements, documents, certificates and on being uploaded by him, owning responsibility for their correctness/authenticity. The bidder shall attach all the required documents for the specific tender after uploading the same during the bid submission as per the tender notice and bid document.

- Conditional Bids shall be outrightly rejected.

- **Validity of Bids:** Minimum 180 days from Last date of Bid submission.

- **Pre-Bid Meeting:** BSDM shall receive and respond to Pre-Bid queries of prospective bidders as per the scheduled date and time mentioned in the above Table of Tender Schedule. The bidders are requested to send their consolidated queries to the e-mail address, as specifically mentioned in the above table, **only once and within stipulated time as mentioned**. Further queries sent by the bidders or queries sent at the last moment may not be entertained.

  BSDM will host a Pre-Bid meeting as per the scheduled date and time as mentioned in the above table of Tender Schedule in this RFP. BSDM may incorporate any changes in the RFP based on acceptable suggestions received in pre-bid queries. The decision of BSDM regarding acceptability or rejection of any suggestion or modification requested shall be final in this regard and shall not be called upon to question under any circumstances. The response to the queries shall be conveyed by way of hosting amendments/ clarifications on the websites **(https://www.eproc2.bihar.gov.in) and/or**

(www.skillmissionbihar.org) and no bidders/participant would be intimated individually about the responses of BSDM.

The purpose of the pre-bid meeting is to provide the prospective bidders with information regarding the business process of BSDM, the RFP and the project requirements and to provide each bidder with an opportunity to seek clarifications regarding any aspect of the RFP and the Project.

Note: The queries should necessarily be submitted in the following format with editable file (in word or excel only) only, else the queries may not be entertained by BSDM:

Organization Name: **Designation:**		**Name of representative:** **E Mail Address:**	
S.N.	**RFP Document reference, Section and Page No.**	**Content of RFP requiring clarification(s)**	**Points of clarification(s)**

- **For support related to the e-tendering process, bidders may contact at following address:** "e- Procurement HELP DESK, RJ Complex, 2nd Floor, Canara Bank Campus, Khajpura, Ashiana Road, PS: Shastri Nagar, Patna-800014. "**Toll Free Number: 1800 572 6571**" Email ID: eproc2support@bihar.gov.in.

- **Corrigendum/ Addendum/ amendments** if any, will be published on the departmental website **http:// www.skillmissionbihar.org** and e-Procurement, Bihar **https://www.eproc2.bihar.gov.in** itself. All such corrigendum/ addendum/ amendments shall be binding on all the bidders. The bidders are also advised to visit the aforementioned website on regular basis for checking of corrigendum/ addendum/ amendments, if any.

- Kindly note that the selection of agency under this RFP will not guarantee allocation of work and BSDM will assume no liability or cost towards it. BSDM makes no commitments, expresses or implied that this process will result in a business transaction between anyone.

SD/-
Mission Director,
Bihar Skill Development Mission
Department of Labour Resources,
Government of Bihar

1.2 e-Tendering Process Related Instructions:

Submission of Proposals Through electronic mode only:

1. The bidder shall submit his bid/tender on the e-Procurement platform at **www.eproc2.bihar.gov.in**.

2. The bidder must have the Class II/III Digital Signature Certificate (DSC) with signing + Encryption, and User-id of the e-Procurement website before participating in the e-Tendering process. The bidder may use their DSC if they already have. They can also take DSC from any of the authorized agencies. For user-id they have to get registered themselves on e-Procurement Portal **https://www.eproc2.bihar.gov.in** submit their bids online on the same. Offline bids shall not be entertained by the Tender Inviting Authority for the tenders published on an e-procurement platform.

3. The bidders shall submit their eligibility and qualification details, technical bid, financial bid etc., in the online standard formats given in e-Procurement web site at the respective stage only. The bidders shall upload the scanned copies of all the relevant certificates, documents etc., in support of their eligibility criteria / technical bids and other certificate /documents in the e-Procurement web site. The bidder shall digitally sign on the supporting statements, documents, certificates, uploaded by him, owning responsibility for their correctness / authenticity. The bidder shall attach all the required documents for the specific tender after uploading the same during the bid submission as per the tender notice and bid document.

4. All the required documents should be attached to the proper place as mentioned in the e-forms otherwise the tender of the bidder will be rejected.

5. Tender Processing Fee (TPF), Document Fee and EMD to be paid through e-Payment mode (i.e. NEFT / RTGS, Credit / Debit Card & Net Banking) only.

   Note: "Bids along with necessary online payments must be submitted through e-Procurement portal www.eproc2.bihar.gov.in before the date and time specified in the NIT/RFP. The department / Tendering Authority doesn't take any responsibility for the delay / Non-Submission of Tender / Non-Reconciliation of online Payment caused due to Non-availability of Internet Connection, Network Traffic / Holidays or any other reason."

6. The tender opening will be done online only.

7. Any **Corrigendum/Addendum** or date extension notice will be given on the e-Procurement Portal https://www.eproc2.bihar.gov.in only.

8. For support related to e-tendering process, bidders may contact at following address **"e- Procurement HELP DESK, RJ Complex, 2nd Floor, Canara Bank Campus, Khajpura, Ashiana Road, PS: Shastri Nagar, Patna-800014. "Toll Free Number: 1800 572 6571" Email ID: eproc2support@bihar.gov.in.**

1.3 Disclaimer

i. The information contained in this Request for Proposal document (RFP) or subsequently provided to bidders, whether verbally or in documentary or any other form by or on behalf of the Tenderer or any of their employees or advisers, is provided to bidders on the terms and conditions set out in this RFP and such other terms and conditions subject to which such information is provided.

ii. This RFP is not an agreement and is neither an offer nor invitation by the BSDM to the prospective bidders or any other person. The purpose of this RFP is to provide interested parties with information that may be useful to them in the formulation of their Proposals pursuant to this RFP. This RFP includes statements, which reflect various assumptions and assessments arrived at by the Tenderer in relation to the Project. Such assumptions, assessments and statements do not purport to contain all the information that each bidder may require. This RFP may not be appropriate for all persons, and it is not possible for the Tenderer, its employees or advisers to consider the objectives, technical expertise and needs of each party who reads or uses this RFP. The assumptions, assessments, statements and information contained in this RFP, may not be complete, accurate, adequate or correct. Each bidder should, therefore, conduct its own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments and information contained in this RFP and obtain independent advice from appropriate sources.

iii. The information provided in this RFP to the bidders is on a wide range of matters, some of which depends upon interpretation of law. The information given is not an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. The Tenderer accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on the law expressed herein.

iv. The Tenderer, its employees and advisers make no representation or warranty and shall have no liability to any person including any bidder under any law, statute, rules or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expense which may arise from or be incurred or suffered on account of anything contained in this RFP or otherwise, including the accuracy, adequacy, correctness, reliability or completeness of the RFP and any assessment, assumption, statement or information contained therein or deemed to form part of this RFP or arising in any way in this selection process.

v. The Tenderer also accepts no liability of any nature whether resulting from negligence or otherwise, caused arising from reliance of any bidder upon the statements contained in this RFP. The Authority may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumption contained in this RFP.

vi. The issue of this RFP does not imply that the Tenderer is bound to select a bidder or to appoint the selected bidder, as the case may be, for the Project and the Tenderer reserves the right to reject all or any of the Proposals without assigning any reasons whatsoever.

vii. The bidder shall bear all its costs associated with or relating to the preparation and submission of its Proposal including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by the Tenderer or any other costs incurred in connection with or relating to its Proposal. All such costs and expenses will remain with the bidder and the Tenderer shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a bidder in preparation of submission of the Proposal, regardless of the conduct or outcome of the Selection Process.

1.4. List of Definitions and Abbreviations

- “BSDM” means Bihar Skill Development Mission
- “Client” means the implementing agency the Bihar Skill Development Mission, a Society formed under Department of Labour Resources, Government of Bihar that signs the Contract for the Services with the selected Bidder.
- “Contract” means a legally binding written agreement signed between the Client and the Bidder and includes all the attached documents listed thereon.
- “Day” means a calendar day.
- “State Government” means the Government of Bihar.
- “Registration" means a unique ID of a person whose name, address etc. are registered on BSDM portal.
- “LOA” means the Letter sent by client to the selected bidder before the legal agreement. LOI and LOA may be used interchangeably.
- “Proposal/Bid” means the Technical Proposal and the Financial Proposal of the bidder in response to the RFP.
- “Proposal due date” means the date of opening of the technical bid.
- “RFP” means the Request for Proposal prepared by the Client for the selection of a reputed and experienced for Imparting of Digital Skilling in Technical Institutes in Bihar for JAVA FSD with ML & AL Training for Bihar Skill Development Mission (BSDM).
- “Services” means the work to be performed by the Bidder pursuant to the Contract.
- “MSCs” means Mega Skill Centre.
- “MAF” means Manufacturing Authorization Form.
- “OEM” means Original Equipment Manufacturer

Section II

2. Instructions to Bidders

2.1 Brief background of BSDM

The Bihar Skill Development Mission (BSDM), operates under the Department of Labour Resources, Government of Bihar, is committed to equipping the state's youth and workforce with industry-relevant skills and competencies that drive employability and inclusive growth. In alignment with the state's vision of strengthening technical education and fostering rural-industrial transformation, BSDM proposes to establish Mega Skill Centers (MSC) utilizing the infrastructures across the designated ITIs (Industrial Training Institute) available at 9 administrative divisional headquarters of Bihar, aimed at equipping the young workforce with relevant and high-quality skills in the new age technologies. Under the First Phase of this project, nine Mega Skill Centers are to be set up at each divisional headquarter district. These centers will be developed in collaboration with governmental, non-governmental, and industrial organizations, ensuring a blend of academic rigor and industry-driven training.

BSDM, through this RFP, invites Industry Leaders (OEMs/ authorized channel partners) to submit their bids for the establishment of the Mega Skill Centre in Industry 4.0 and Energy 4.0 technologies utilized the ITI premises in the state and shall be operational under the administrative set-up of Bihar Skill Development Mission.

This proposed MSC will function as a specialized training and innovation hub aimed at delivering cutting-edge, industry-aligned technical education in areas including Industrial Automation, Smart Electrical Systems, Energy Management, Industry 4.0, Smart Grids, and other advanced technologies. The center will enhance the capabilities of the youth of the state and also provide a platform for continuous skill upgrading for technical professionals, and field-level of human resources.

Through this Request for Proposal (RFP), BSDM invites experienced and qualified Industry Leaders or its authorized channel partners to set up and manage the Mega Skill Center (MSC) under a turnkey solutions provider/s who will not only establish the Lab but also provide the course content and depute necessary trainers. The scope of the project includes:

- End-to-end lab setup with modern infrastructure as per Specification of components given at **Annexure 1**
- Design and development of industry-relevant curriculum and training modules
- Training of trainers (ToT) and delivery of student-centric learning programs
- Industry collaboration and certification support
- Deploy necessary trainers for 2+1 Years duration.

This initiative aims to bridge the gap between academic learning and industry requirements by embedding hands-on, experiential training into the technical education framework. The MSC will serve as a Model Center, supporting surrounding technical institutions and skill centers, and will be instrumental in:

- Creating a pipeline of skilled workforce for public and private sector needs
- Improving employability and entrepreneurship among youth
- Fostering innovation and technology adoption in rural electrification and infrastructure
- Establishing partnerships with industry leaders for sustainable impact

This Mega Skill Centre is envisaged to be developed in close coordination with industry stakeholders to ensure that the training delivery remains relevant, practical, and scalable across the State. BSDM envisions replicating this model across more technical institutions in Bihar over time, making it a statewide network of industry-integrated technical learning hubs.

2.2 Need & Objectives of RFP

Bihar is undergoing a substantial transformation in its infrastructure and industrial sectors, creating a critical demand for a technically skilled workforce proficient in modern electrical, energy management and automation technologies. The state's strategic push to strengthen power infrastructure is evidenced by the approval of 68 new power substations in North Bihar, aimed at meeting the growing energy needs arising from industrialization, agriculture, and increasing household consumption.

This rapid growth demands a workforce trained in smart electrical systems, industrial automation, smart grids, and energy management. In response, the Bihar Skill Development Mission (BSDM) is committed to establishment of Mega Skill Centers in the State and provide skill development programs aligned with emerging industry needs and technology trends.

Under the **"Saat Nischay Part-2" (Seven Resolves Part-2)** program, specifically under the resolve of **"Yuva Shakti - Bihar Ki Pragati" (Youth Power - Progress of Bihar)**, the Bihar government is committed to establishing at least one Mega Skill Centre in every district for youth who are not studying in it is and polytechnics and wish to receive training in new skills. Here, short-term, employment-oriented training will be provided in popular and useful skills such as apparel making, refrigerator and air conditioning repair, solar panel mechanics and wellness training and caregiver services for the elderly and patients, which are in demand in market.

2.3 Objective

Through this RFP, BSDM proposes to establish **a Mega Skill Center in Industry 4.0 and Energy 4.0 technology at the designated locations identified by Bihar Skill Development Mission in Bihar**, which will serve as a Sectoral Skill Academy for imparting sector specific, high-quality and hands-on training.

The Mega Sill Center will enable students and local youth to acquire industry-relevant skills, thereby improving their employability and career prospects in the growing sectors of electrical infrastructure, smart manufacturing, automation, and Energy Management linked with employment.

2.4 Scope of the RFP

This Request for Proposal (RFP) invites experienced implementation partners with demonstrated expertise in setting up and managing skill development infrastructure in collaboration with industry stakeholders. The selected partner will be responsible for the end-to-end establishment and two years (one year extendable) operation of the MSC at the selected locations identified by BSDM.

2.5 Key Deliverables

Establish a Mega Skill Centre in Energy 4.0 and Industry 4.0 technologies at identified locations in Bihar, functioning as a Sectoral Skill Academy.

2.6 Conflict of Interest and Corrupt and Fraudulent Practices

The selected Bidder shall not receive any remuneration in connection with the assignment except as provided in the Agreement. Bidder and its affiliates shall not engage in consulting activities that conflict with the interest of the BSDM under the contract. It should be the requirement of the consultancy contract that the Bidders should provide professional, objective and impartial advice and at all times hold the BSDM interest paramount, without any consideration for future work, and that in providing advice they avoid conflicts with other assignments and their own corporate interests. Bidders shall not be hired for any assignment that would be in conflict with their prior or current obligations to the BSDM, or that may place them in a position of being unable to carry out the assignment in the best interest of the client.

A. The Bidder has an obligation to disclose to BSDM any situation of actual or potential conflict that impacts its capacity to serve the best interest of its client. Failure to disclose such situations may lead to the disqualification of the Bidder or the termination of its Contract.

B. The Agency shall strictly avoid conflicts with other assignments/jobs or their own corporate interest and shall disclose to BSDM all actual and potential conflicts of interest that exist, arise or may arise in the course of performing the services after it becomes aware of that conflict.

C. Corrupt and Fraudulent Practices:

BSDM will reject a proposal for award if it determines that the bidder recommended for award, or any of its personnel, or its agents or, vendors and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question; For the purposes of this provision, the terms are set forth as follows:

(i)"Corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party.
(ii)"Fraudulent practice" is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation.
(iii) "Collusive Practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party.
(iv) "Coercive Practice" is impairing or harming, or threating to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party.
(v) "Obstructive Practices" is deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to BSDM in order to materially impede an investigation into allegations of a corrupt, fraudulent, collusive or coercive practices; and or threating, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation.

2.7 Eligibility

- It will be the Bidder's responsibility to ensure that it meets the eligibility requirement as mentioned under the RFP document.

2.8 General Considerations

- In preparing the Proposal, the Bidder is expected to examine the RFP in detail. Material deficiencies in providing the information requested in the RFP may result in rejection of the Proposal.

2.9 Cost of Preparation of Proposal

- The Bidder shall bear all costs associated with the preparation and submission of its Proposal, and BSDM shall not be responsible or liable for those costs, regardless of the conduct or outcome of the selection process. BSDM is not bound to accept any proposal and reserves the right to annul the selection process at any time prior to Contract award, without thereby incurring any liability to the Bidder.

2.10 Language

- The Proposal, as well as all correspondence and documents shall be written in English Language Only.

2.11 Documents comprising the proposal

- The Proposal shall comprise all the Tech Forms and support and has to be properly scanned and uploaded on the e-proc portal.

2.12 Only One Proposal

- The Bidder shall submit only one Proposal.

2.13 Proposal Validity

- The Bidder's Proposal must remain valid for at least 180 days after the Proposal submission deadline. A bid valid for a shorter period shall be rejected by the BSDM as a non-responsive bid.
- In exceptional circumstances, prior to the expiration of the bid validity period, the BSDM may request bidders to extend the period of validity of their Bids. The EMD shall also be extended for a corresponding period. A bidder may refuse the request without forfeiting its bid security i.e. EMD. A bidder granting the request shall not be required or permitted to modify its bid. The request and the responses shall be made in writing.

2.14 Extension of Validity Period

- BSDM will make its best effort to complete the processing within the proposal's validity period. However, should the need arise, BSDM may request, in writing, all Bidder who submitted Proposals prior to the submission deadline to extend the Proposal's validity.
- If the Bidder agrees to extend the validity of its Proposal, it shall be done without any change in the original Proposal.
- The Bidder has the right to refuse to extend the validity of its Proposal in which case such a Proposal will not be further evaluated.

2.15 Sub-Contracting/Consortium/Joint-Venture

- Bidders shall not Sub-Contract the assignment or any part of it or Scope of work to any other agency or organization. No Consortium or Joint Venture at any stage of bid or execution is allowed.

2.16 Earnest Money Deposit

- Every bidder participating in the bidding process must furnish the required earnest money deposit and, in the form, as specified in the Notice Inviting RFP.
- Refund of EMD: The EMD of unsuccessful bidders shall be refunded soon after final acceptance of bid and award of contract.
- EMD of Successful Bidder: EMD of the successful bidder will be returned on submission of the Performance Guarantee as mentioned in the RFP.
- Forfeiture of EMD: The EMD taken from the bidder shall be forfeited in the following cases: -
  - When the bidder withdraws or modifies his bid proposal after opening of bids.
  - When the bidder does not execute the agreement after placement of order within the specified time.
  - When the bidder does not deposit the required Performance Guarantee after the issuance of Letter of Award/ work order.

2.17 Technical Proposal Format and Content

- Technical Proposal shall not include any financial bid information. Technical Proposal containing financial bid information shall be declared non-responsive. All Technical Bid Documents should be properly scanned, arranged and uploaded on portal.
- The Bidder is required to submit a Complete Technical Proposal using the Standard Forms provided in the RFP.
- **The bidders should ensure that all the required documents as mentioned in the tender document are submitted/ uploaded along with the bid and in the prescribed format only. The bidder shall upload the scanned copies of all the relevant certificates, documents etc., in support of their eligibility criteria / technical bids and other certificate /documents in the e-Procurement web site (https://www.eproc2.bihar.gov.in). This will be the bidder's sole responsibility to ensure that all required documents have been uploaded and all uploaded documents, when downloaded must be legible/readable failing which their bid will be rejected. Hence it is advised that all the documents should be properly scanned and uploaded.**
- **NO Hard Copy of any Documents:** No Documents, whatsoever it may be, has to be submitted in hard copy. Failure to comply the same may result in rejection of Bid.
- Bidder shall submit all the required documents as mentioned in the annexure including Tech Forms. It should be ensured that various formats mentioned in this RFP should be adhered to and no changes in the format should be made.
- The bids submitted by telex/telegram/fax/e-mail/hard-copy etc. shall not be considered. No correspondence will be entertained on this matter.
- BSDM shall not be responsible for any delay or non-receipt/ non delivery/Non-uploading/ Non downloading/ corrupt files/ non legible when downloaded, of the documents. No further correspondence on the subject will be entertained.

2.18 Financial Proposal

- The Financial Proposal shall be prepared using Standard **online Forms only**, the tentative format of which is provided in the RFP for reference only. It shall include all costs associated with the assignment including all travel, lodging, boarding, communication (mobile and landline), computers and consumables as required for the project etc. State will not bear any cost other than the lump-sum

fee mentioned in the financial proposal.

- **Please note that any scanning and then uploading of financial bid is strictly prohibited. The financial bid format shared under this RFP is for reference only. The financial bid will have to be submitted as per standard on-line format (E-proc) only.**
- The Resources has to follow the working hours, working days and Holidays of Government of Bihar. However, resources shall be available on a holiday if so, is required by BSDM. No extra payments will be made for working on extended hours/Saturdays/Sundays/Holidays to meet the committed/required time schedules.

2.19 Confidentiality

- From the time the Proposals are open to the time the Contract is awarded; the Bidder should not contact BSDM on any matter related to its Technical and/or Financial Proposal. Information relating to the evaluation of Proposals and award recommendations shall not be disclosed to the Bidders who submitted the Proposals or to any other party not officially concerned with the process, until the publication of the Contract award information.
- Any attempt by shortlisted Bidders or anyone on behalf of the Bidder to influence improperly the Client in the evaluation of the Proposals or Contract award decisions may result in the rejection of its Proposal
- Notwithstanding the above provisions, from the time of the Proposals‟ opening to the time of Contract award publication, if a Bidder wishes to contact BSDM on any matter related to the selection process, it should do so only in writing.

2.20 Amendment to "RFP"

- At any time prior to the deadline for submission of Proposal, subsequent to the pre offer meet, the BSDM may, for any reason, whether at its own initiative or in response to clarifications requested by a Bidder, modify the "RFP" document by the issuance of Addendum/ Amendment and posting it on the Official Website. In order to afford the Bidders a reasonable time for taking an amendment into account, or for any other reason, the BSDM may, in its sole discretion, extend the Proposal Due Date.

2.21 Bid Preparation

- The Bidder shall be responsible for all costs associated with the preparation of its Bid and its participation in the selection process. BSDM shall not be responsible nor in any way liable for such cost, regardless of the conduct or outcome of the selection process. Please note that the BSDM reserves the right to reject all or any of the offers without assigning any reason whatsoever.

2.22 Withdrawal of Bid

- The Bidder shall be responsible for all costs associated with the preparation of its Bid and its participation in the selection process. BSDM shall not be responsible nor in any way liable for such cost, regardless of the conduct or outcome of the selection process. Please note that the BSDM reserves the right to reject all or any of the offers without assigning any reason whatsoever and cancel the RFP.

2.23 Modification of Proposal

- The Bidder is not permitted to alter or modify its Proposal in any way after the proposal submission deadline. While evaluating the Proposals, the Client will conduct the valuation on the basis of the

uploaded Technical and Financial Proposals. However, BSDM may seek clarification on the information.

- **Please note that any scanning and then uploading of financial bid is strictly prohibited. The financial bid format shared under this RFP is for reference only. The financial bid will have to be submitted as per standard on-line format (E-proc) only.**

2.24 Disqualification

The bid is liable to be disqualified if:

- Not submitted/ uploaded in accordance with this document.
- During validity of the bid or its extended period, if any, the bidder increases its quoted prices. During the bid process, if a bidder indulges in any such deliberate act as would jeopardize or unnecessarily delay the process of bid evaluation and finalization.
- Bid uploaded in incomplete form or not accompanied by bid security amount/all requisite documents.
- Bidder submits conditional bids.
- Bidder indulges in canvassing in any form to win the contract.
- Bidder sub-contracts any part of the project to or employs the goods or services of any of the parties having interest in the project.

2.25 Correction of Errors

I. Activities and items described in the Technical Proposal but not priced in the Financial Proposal, shall be assumed to be included in the prices of other activities or items, and no corrections are made to the proposal.

II. BSDM will (a) correct any computational or arithmetical errors, and (b) adjust the prices if they fail to reflect all input included for the respective activities or items in the Technical Proposal. In case of discrepancy between (i) a partial amount (sub-total) and the total amount, or (ii) between the amount derived by multiplication of unit price with quantity and the total price, or (iii) between words and figures, the former will prevail.

2.26 Award

- After issuance of LOI by BSDM, the selected bidder shall submit Performance Bank Guarantee and shall sign the contract with BSDM within 15 days. BSDM shall then issue the letter of award to the selected bidder and promptly notify the other shortlisted Bidders.
- Failure to comply with the required eligibility in stipulated period, BSDM will be at liberty to invite the next qualified bidder for the award of the project.

2.27 Performance Guarantee (PG)

- Within 15 days from the date of the Letter of Invitation (LOI) from BSDM, the successful Bidder company/firm shall furnish the Performance Guarantee (PG) to Bihar Skill Development Mission of **5% of the total value of the work order**, by way of DD/ Performance Bank Guarantee issued by one of the Nationalized/Scheduled Banks in India for the due performance of the Assignment in acceptable form to BSDM.
  A. The PG submitted will be for 30 months. However, in case of extension of the project, the above performance guarantee will have to be renewed for the extended period of the project.
  B. Refund of PG: The PG shall be refunded within six months of the date of successful completion

of the assignment.

C. Forfeiture of PG: PG shall be forfeited in the following cases:

I. When any terms and conditions of the contract are breached.
II. When the selected Bidder fails to commence the services or fails to provide deliverables after partially executing the purchase/work order

2.28 Limitation of Liability

- Limitation of Liability: In no event shall either party be liable for consequential, incidental, indirect, or punitive loss, damage or expenses (including lost profits). The selected bidder shall not be liable to the other hereunder or in relation hereto (whether in contract, tort, strict liability or otherwise) for more than the value of the fees to be paid (including any amounts invoiced but not yet paid) under this Agreement.

2.29 Change Orders and Contract Amendments

- BSDM may at any time order the selected bidder through Notice, to make changes within the general scope of the Contract in case of services to be provided by the selected bidder.
- If any such change causes an increase or decrease in the cost of, or the time required for, the selected bidder's performance of any provisions under the Contract, an equitable adjustment shall be made to the Contract Price or in the Delivery and Completion Schedule, or both, and the Contract shall accordingly be amended. Any claims by the selected bidder for adjustment under this clause must be asserted within thirty (30) days from the date of the selected bidder's receipt of the BSDM's order. The rate-contract enclosed in the Financial Bid (proportionately escalated) will be used to calculate the cost of the additional work/ change request.
- The Rate-Card will be valid for the period of the contract (36 months) and will have a 5% price escalation for each year after the end of the contract period mentioned in the BID.

2.30 Interpretation

- If the context requires it, singular means plural and vice versa.

2.31 Entire Agreement

- The contract upon execution will constitute the entire agreement between the BSDM and the Selected bidder and supersedes all communications, negotiations and agreements (whether written or oral) of parties with respect thereto made prior to the date of Contract.

2.32 Amendment

- No amendment or other variation of the Contract shall be valid unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each party thereto.

2.33 Non-waiver

- Subject to the condition below, no relaxation, forbearance, delay, or indulgence by either party in enforcing any of the terms and conditions of the Contract or the granting of time by either party to the other shall prejudice, affect, or restrict the rights of that party under the Contract, neither shall any waiver by either party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.

- Any waiver of a party's rights, powers, or remedies under the Contract must be in writing, dated, and signed by an authorized representative of the party granting such waiver, and must specify the right and the extent to which it is being waived.

2.34 Severability

- If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

2.35 Governing Law

- The Contract shall be governed by and interpreted in accordance with the laws of the Bihar State/ the Country (India) and under the jurisdiction of Patna Court.

2.36 Intellectual, Property Right

1. The Intellectual Property Rights in respect of all the deliverables like training materials, equipment, Computer, software as per **Annexure-1 (by whatever name called),** developed and delivered hereunder by the selected bidder, will vest entirely with the BSDM.
2. Each party hereby undertakes to inform the other party of any violation of Intellectual Property Rights or its unlawful use, under prevalent laws of the land. Further, each of the party herein, agrees to co-operate with the other to the extent possible in the process of investigating such cases of any violation of Intellectual Property Rights or its unlawful use and taking legal action against the said infringement.

2.37 Force Majeure

Definition:

- For the purposes of this Agreement, "Force Majeure" means an event which is beyond the reasonable control of a Party, and which makes a Party's performance of its obligations hereunder impossible or so impractical as reasonably to be considered impossible in the circumstances, and includes, but is not limited to, war, riots, civil disorder, earthquake, fire, explosion, storm, flood or other adverse weather conditions, strikes, lockouts or other industrial action (except where such strikes, lockouts or other industrial action are within the power of the Party invoking Force Majeure to prevent), confiscation or any other action by government agencies.
- Force Majeure shall not include (i) any event which is caused by the negligence or intentional action of a Party or agents employees thereof, nor (ii) any event which a diligent Party could reasonably have been expected to both (A) take into account at the time of the conclusion of this Agreement and (B) avoid or overcome in the carrying out of its obligations hereunder
- Force Majeure shall not include insufficiency of funds or failure to make any payment required hereunder
- The Force Majeure would be applied to Patna Districts which have been stated by Director, BSDM in writing; is part of Government of Bihar directives and is agreed by Bidder.
- BSDM will decide the eventuality of Force Majeure which will be binding on both the parties.

No breach of Agreement:

- The failure of a Party to fulfil any of its obligations hereunder shall not be considered to be a breach of, or default under, this Agreement in so far as such inability arises from an event of Force Majeure, provided that the Party affected by such an event has taken all reasonable precautions, due care and

reasonable alternative measures, all with the objective of carrying out the terms and conditions of this Agreement. The Bidder shall not be liable for forfeiture of its PG or/ and BG, if and to the extent that it's delay in performance or other failure to perform its obligations under the Contracts the result of the Force Majeure.

Measures to be taken:

- A Party affected by an event of Force Majeure shall take all reasonable measures to remove such Party's inability to fulfil its obligations herewith a minimum of delay.
- A Party affected by an event of Force Majeure shall notify the other Party of such an event as soon as possible, and in any event not later than fourteen (14) days following the occurrence of such event, providing evidence of the nature and cause of such event, and shall similarly give notice of the restoration of normal conditions as soon as possible.
- The Parties shall take all reasonable measures to minimize the consequences of any event of Force Majeure.

Extension of time:

- Any period within which a Party shall, pursuant to this Agreement, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such actions a result of Force Majeure.

Payments:

- In the event of Force Majeure applied to the Patna District of Bihar, then BSDM will continue to follow the payment schedule by giving concessions to Bidder of non-submission of deliverables for the period of 3 months. Post which, either party is allowed to terminate the contract under the clause Termination for Convenience.

Consultation:

- Not later than thirty (30) days after the Bidder has, as the result of an event of force majeure, become unable to perform a material portion of the Services, the Parties shall consult with each other with a view to agreeing on appropriate measures to be taken in the circumstances.

2.38 Termination Clauses:

Termination for Default:

- BSDM may, without prejudice to any other remedy for breach of contract, by a written notice of default of at least 30 days sent to the selected bidder, terminate the contract in whole or in part provided a cure period of not less than 30 days is given to the selected bidder to rectify the breach:
- If the selected bidder fails to deliver any or all quantities of the service within the time period specified in the contract, or any extension thereof granted by BSDM; or
- If the selected bidder fails to perform any other obligation under the contract within the specified period of delivery of service or any extension granted thereof; or
- If the selected bidder, in the judgment of the BSDM, is found to be engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the contract.
- If the selected bidder commits breach of any condition of the contract
- If BSDM terminates the contract as a whole or in part, the amount of Performance Security may be forfeited. The decision of the CEO, BSDM, will be final and conclusive in this regard.

Termination for Insolvency:

- BSDM may at any time terminate the Contract by giving a written notice of at least 30 days to the selected bidder, if the selected bidder becomes bankrupt or otherwise insolvent. In such an event, termination will be without compensation to the selected bidder, provided that such termination will not prejudice or affect any right of action or remedy that has accrued or will accrue thereafter to BSDM.

Termination for Convenience:

- BSDM, by a written notice of at least 30 days sent to the selected bidder, may terminate the Contract, in whole or in part, at any time for its convenience. The Notice of termination shall specify that termination is for BSDM's convenience, the extent to which performance of the selected bidder under the Contract is terminated, and the date upon which such termination becomes effective.
- In such a case, BSDM will pay for all the pending invoices as well as the work done till that date by the Bidder.
- Depending on the merits of the case the selected bidder may be appropriately compensated on mutually agreed terms for the loss incurred by the contract if any due to such termination.

Termination by BSDM:

- BSDM may at any time terminate the Contract by giving a written notice of at least thirty (30) days written notice of termination to the Bidder, such notice to be given after the occurrence of any of the events, terminate this Agreement if:
- The Bidder fails to remedy any breach hereof or any failure in the performance of its obligations hereunder, as specified in the notice of suspension, within thirty
- (30) days of receipt of such notice of suspension or within such a further period as the BSDM may have subsequently granted in writing.
- The Bidder becomes insolvent or bankrupt or enters into any agreement with its creditors for relief of debt or take advantage of any law for the benefit of debtors or goes into liquidation or receivership whether compulsory or voluntary.
- The Bidder fails to comply with any final decision reached as a result of arbitration proceedings.
- The Bidder submits to the BSDM a statement which has a material effect on the rights, obligations or interests of the BSDM and which the Bidder knows to be false.
- Any document, information, data or statement submitted by the Bidder in its Proposals, based on which the Bidder was considered eligible or successful, is found to be false, incorrect or misleading; or as the result of Force Majeure, the Bidder is unable to perform a material portion of the Services for a period of not less than sixty (60) days
- If the BSDM would like to terminate the contract for reasons not attributable to the Bidder performance, they will need to clear all invoices for the agency services up to the date of their notice along with 1 month fee pro-rata fee out of the project fee for 36 months.
- If the BSDM would like to terminate the contract for reasons attributable related to the Bidder performance, the government will give a rectification notice for 3 months to the agency in writing with specific observations and instructions.

Termination by Bidder:

The Bidder may, by not less than two month (60 days) written notice to the BSDM, such notice to be given after the occurrence of any of the events, terminate this Agreement if:

- The BSDM is in material breach of its obligations pursuant to this Agreement and has not remedied

the same within thirty (30) days (or such longer period as the Bidder may have subsequently agreed in writing) following the receipt by the BSDM of the Bidder's notice specifying such breach.

- If there are more than 2 unpaid invoices and BSDM fails to remedy the same within 45 days of the submission of the last unpaid invoice.
- As the result of Force Majeure, the Bidder is unable to perform a material portion of the Services for a period of not less than sixty (60) days; or
- The BSDM fails to comply with any final decision reached as a result of arbitration.

Payment upon Termination:

- Upon termination of this Agreement all pending payments due till the date of the termination of the contract will be made by BSDM to the Bidder within 30 days of the contract termination.

Suspension:

The BSDM may, by writing notice of suspension to the Bidder, without any obligation (financial or otherwise) suspend all the payments to the Bidder here under if the Bidder shall be in breach of this Agreement or shall fail to perform any of its obligations under this Agreement, including the carrying out of the Services; provided that such notice of suspension:

- shall specify the nature of the breach or failure, and
- Shall provide an opportunity to the Bidder to remedy such breach or failure within a period not exceeding thirty (30) days after receipt by the Bidder of such notice of suspension.

Cessation of rights and obligations:

Upon termination of this Agreement or upon expiration of this Agreement, all rights and obligations of the Parties hereunder shall cease, except:

- Such rights and obligations as may have accrued on the date of termination or expiration,
- The obligation of confidentiality set forth in RFP.

Cessation of Services:

- Upon termination of this Agreement by notice of either Party to the other the Bidder shall, immediately upon dispatch or receipt of such notice, take all necessary steps to bring the Services to a close in a prompt and orderly manner and shall make every reasonable effort to keep expenditures for this purpose to a minimum.

2.39 Disputes Resolution

Amicable Settlement:

- The parties shall use their best efforts to settle amicably all disputes arising out of or in connection with this Agreement or the interpretation thereof. In the event a dispute, differences or claim arises in connection with the interpretation or implementation of this agreement, the aggrieved party shall issue a written notice setting out the Dispute/differences or claim to the other party, parties shall first attempt to resolve such dispute through mutual consultation. If the dispute is not resolved as aforesaid within 15 days from the date of receipt of written notice, the matter will be referred to CEO, BSDM, who will take decision within 30 days after such reference. If the dispute is still not resolved the matter will be referred to for Arbitration.

Arbitration:

- In case the dispute is not resolved, any party may issue a notice of reference, invoking resolution of disputes through arbitration in accordance with the provisions of the Arbitration Conciliation Act,

1996. The arbitral proceedings shall be conducted by a sole arbitrator that may be appointed with the consent of Parties to such dispute. If there is no agreement among the parties to the identity or appointment of such sole arbitrator within 30 days of issue of notice of reference, then the arbitral proceedings will be conducted by a panel of three arbitrators, one arbitrator to be appointed by BSDM and other appointed by Bidder and the third arbitrator to be mutually appointed by the other two arbitrators in accordance with provisions of Arbitration and Conciliation Act, 1996. Arbitration proceedings shall be conducted in, and the award shall be made in English language. Arbitration proceedings shall be conducted at Patna and the following are agreed.

- The arbitration award shall be final and binding on the Parties, and the Parties agree to be bound thereby and to act accordingly.
- The arbitrator may award to the Party that substantially prevails on its merit, its costs and reasonable expenses (including reasonable fees for counsel).
- When any dispute is under arbitration, except for matters under dispute, the Parties shall continue to exercise their remaining respective rights and fulfil their remaining respective obligations under this Agreement.

By executing agreement, the selected bidder undertakes as below:

1. We, the selected bidder, understands that Intellectual Property in the context of BSDM program shall refer to all such patents, trademarks, copyrights in respect of any hardware, software, product documentation, design document, or any other document, whether in printed or in electronic, digital or any other format which is an integral part of the hardware/software or is supplied along with such products which forms the subject matter of the BSDM or its skill development programs. Intellectual Property also includes Course name, Course material, content, methodology, assignments, question papers, educational and promotional content, whether in printed or in electronic, digital or any other format and all business data generated during the period of skill development center operations and creatives etc. developed and delivered to BSDM hereunder by the selected bidder.
2. We understand that the candidate or other data collected in the course of our operations shall be the exclusive property of BSDM and we will not share/disclose these data with anyone except as permitted by BSDM in writing.
3. We shall take appropriate technical and organizational measures against unauthorized or unlawful processing of the personal data/ or of other data collected in course of our operations, its accidental loss, destruction, or damage.
4. We hereby undertake to inform the BSDM of any violation of Intellectual Property Rights or its unlawful use, under prevalent laws of the land. Further, we agree to cooperate with the BSDM to the extent possible in the process of investigating such cases of any violation of Intellectual Property Rights or its unlawful use and taking legal action against the said infringement.
5. **Upon expiration or termination of this Agreement, whichever is earlier, we agree that-**
   We shall not make any claim on the Trade Name, Trademarks, Service Marks, Logo, etc. of the BSDM nor shall it use any trade name, mark, logo which is deceptively or confusingly similar to those belonging to the BSDM,
   a. We shall desist from using the trade names, marks, stationery or other documentation issued by the BSDM embodying the intellectual property of the BSDM.
   b. We will return to the BSDM or certify in writing to the BSDM as destroyed all copies of the intellectual property, in whole or in part, in any form, including partial copies, updates or modifications of the intellectual property received from the BSDM or made in connection with this Agreement.

Section III

3. Evaluation and Eligibility Criteria

The Tender committee of BSDM will **evaluate the RFP in three stages** as per following.

(a) The committee will first undertake the **evaluation** of the **Eligibility criteria** and along with reference to completeness of the proposals and whether the proposals are generally in order. Proposals found to be non-responsive for any reason or not meeting the minimum eligibility criteria, as specified in this RFP will be rejected and not included for further Technical and Financial evaluation.

(b) The committee will then undertake a detailed **Technical Evaluation** of the technical proposals based on their responsiveness to the evaluation criteria, sub criteria, etc. During the evaluation, the committee may ask the bidder for clarification during the time schedule mentioned in the RFP.

(c) Finally, the committee will evaluate the financial bids of the technically qualified bidders and based on the **LCS (Least cost System),** the selection of the successful bidder will be done.

3.1 Preliminary Eligibility Criteria

SN	Basic Requirement	Specific Requirement	Evidence Documents Required	Supporting docs required
1	Document Fee & EMD	Through e-payment only as stipulated in the Tender Notice		
2	Company Registration	The bidder should be: - A company registered under The Companies Act 2013 A partnership firm registered under Indian Partnership Act, 1932. A Limited Liability Partnership firm registered under The Limited Liability Partnership Act, 2008 A Societies formed under Society Registrations Act, 1860 A Trusts registered under Indian Trust Act 1882 / Public trust registered under state specific laws for trust registration		Copy of valid Registration and Incorporation Certificate
3	Turnover from services	Average Annual financial Turnover of the Bidder during the any three financial years out of FY 2021-2022, 2022-23, 2023-24, 2024-25 (as per the audited balance sheets and profit & loss account), should be at least **Rs. 25 Crores.** For the calculating turnover, turnover of Group / Trust / Society / Association in the business line of Education and Skill Development shall be considered.	Copy of Audited Profit & Loss Statement and Balance sheet three FY out of FY 2021-22, FY 2022-23 & FY 2023-24 and FY 2024-25. A Certificate from chartered accountants certifying that the Bidder has an Average Annual Turnover from undertaking **Rs.25 crore (Rupees Twenty-Five Crore Only) during the any three previous financial years** out of FY 2021-22, FY 2022-23 & FY 2023-24, 2024-25	Tech-5
	Positive Net-Worth Certificate	The Agency should have **Positive Net Worth** during Previous Financial Years i.e. FY 2023-24.		

			A Certificate from Chartered Accountant certifying that the Bidder has a **positive Net Worth** during previous Financial Years for FY 2023-24.	
4	Technical Experience *(In case of any Bidder proposing technical know-how through Tie-up with the technology provider/Technology Partner, a copy of letter of engagement from technology provider/ Technology Partner to be furnished.)*	For demonstration of technical capacity and experience (the "Technical experience"), the Bidder/ any Member of Technology Partner should have: Experience in establishment of Center of Excellence/ Advanced Technology Labs in Energy Management/ Automation Technology/ Industry 4.0/ Electrical Technology and should have minimum three orders worth INR 3Cr. each in the last 5 Financial Years. These Centers of Excellence shall be setup at any Govt. Institute/ Department/ PSU/ ITI	Prior Experience (For each Institute /Centre supported with relevant copy of Work order/agreement along with completion certificate/any other documentary proof establishing successful completion of this project, must be submitted.	Tech-1
		Minimum 1,000 Number of candidates trained (Diploma / Certification) in Energy management and Industrial Automation sector, Electrical sector in last 3 years. (Candidate should have been trained by the bidder or technology partner/ OEM of bidder)	Supported with Self Attested Certificate on training of candidates\	
5	OEM Turnover	A technology Partner is envisaged to be Global OEM in electrical and automation technology with Global presence (with physical production facilities in multiple countries including India). The OEM should have an average annual turnover of Rs 1,000 Crore in the last 3 financial years i.e. 2021-22, 2022-23, and 2023-24	CA Certificate mentioning turnover.	Tech-2
6	PAN & GST	The agency should have a valid PAN and GST Registration in India	Copy of PAN card and GST Registration certificate	
7	Blacklisting	The agency should not have been blacklisted by any Central/State Government departments/ Undertakings	Self-Certification	Form-II
8	Manufacturer Authorization Form (MAF)	Manufacturer's Authorization Form (MAF) to be filled by hardware/software OEM as mentioned in RFP	Copy of MAF	Form-III

*Any bid failing to meet the above stated eligibility criteria shall be summarily rejected and will not be considered for further evaluation.

**For determining the eligibility of Bidders hereunder, the following shall apply:

I. The Bidder for qualification and selection shall be a single entity to implement the Project. The bidder, however, must partner with an Industry Major as a Technology Partner as part of this tender. The term Bidder used herein would apply to both a single entity bidder or an entity who may partner with an Industry Major as a Technology Partner. *(JV/Consortium not allowed).*

   a. *A technology Partner is envisaged to be Global OEM in electrical and automation technology with Global presence (with physical production facilities in multiple countries including India). The OEM must have an average Annual Turnover of INR 1000 Cr. in India, in the last 3 financial years i.e. FY 21-22, FY22-23, FY23-24. (Statutory Auditor Certificate to be shared)*

   b. *The technology partner may offer its expertise to multiple bidders as part of this RFP*

II. Qualification of Bidder will be based on meeting the minimum eligibility criteria specified regarding the Bidder's Eligibility, Technical Experience and Financial requirement as demonstrated by the Bidder's responses in the corresponding Bid Schedules.

III. The procuring entity shall assess the capacity and capability of the bidder to successfully execute the scope of work covered under this RFP within stipulated completion period. This assessment shall inter- alia include (i) document verification; (ii) bidders work experience (iii) manpower and financial resources; (iv) details of quality control systems in place; (v) past experience and performance etc.

IV. The Bidder should not have been blacklisted/ debarred by any Department or Undertakings of the Government of Bihar or the Central Government or any other State Governments or Union Territories in the last 5 (Five) years.

V. The Bidder should be authorized with the single OEM (Form-III) filled

3.2 Technical Evaluation Criteria

SN	Criteria	Max Marks	Marking Category
1	**Financial Turnover** The Bidder's average annual turnover should be not less than Rs. 25 crores during the any three audited financial years out of (FY 2021-22, FY 2022-23, FY 2023-24, 2024-25):	15	• 5 Marks: for turnover of 25 Crore • 5 additional Marks: for turnover of 25 -35 Crore • 5 additional marks for turnover more than 35 Crore
2	**Experience** (*In case of any Bidder proposing technical know-how through Tie- up with the technology provider/Partners, a*	25	• 5 marks for 3 order worth INR 3 Cr each

	copy of letter of engagement from technology provider/Partners/ a copy of letter of engagement from technology partner/ Industry Major to be furnished). Experience in establishment of Center of Excellence/ Advanced Technology Labs in Energy Management/ Automation Technology/ Industry 4.0/ Electrical Technology and should have minimum three order worth INR 3Cr. each in the last 4 FYs. These Centers of Excellence shall be setup at any Govt. Institute/ Department/ PSU/ ITI		• 10 additional Marks for each Order worth more than 5 Cr
3	Minimum 1,000 Number of candidates trained (Diploma / Certification) in Energy management and Industrial Automation sector, Electrical sector in last 3 years. (Candidate should have been trained by the bidder or technology partner/ OEM of bidder)	5	• 3 marks for more than 1000 trained participants (*2 additional marks for each extra 1000 participants*) maximum to 5 marks
4	**Quality & Global Presence** Bidder / Technology Partner/ OEM shall have Global organization offering highest quality standards	20	• 7.5 marks for presence in 10 countries (with offices) • 7.5 Marks for minimum 10 production facilities with ISO 9001/14001 standards • 5 marks for Components of the training equipment to be IEC/ CE certified
5	**Presence in Bihar** The bidder/ OEM shall have presence in Bihar (Authorized Dealers/ Service Centre)	5	Documentary proof of Authorized Dealer/ Service Centre in Bihar with necessary details
6	**Approach & Methodology will be of maximum 30 marks.** **Bidder to furnish detailed documentation covering each aspect as below: -** i. Understanding of the Project, List of courses to be offered as part of the MSC, Mode of Training, Training Calendar, Manpower deployment plan, Key personnel, project manager details & Industry engagement plan for the first year of operations (to be submitted with the proposal), and Manpower deployment plan **(5 Marks)** ii. A self-employment plan provided for candidates trained out of CoE at MSC. **(5 Marks)** iii. More than 1500 Channel Partners of the Technology Partner/ OEM in India that can become captive employers of the students trained in the MSC. **(5 Marks)** iv. Layouts of the labs to be provided by the bidder **(5 Marks)** v. Plan for Interior Design of COE to suit international standards **(5 Marks)** vi. Sustainability plan for COE post 1 year of operations by Bidder **(5 Marks)** The selected organizations will be called for Technical Presentation on a scheduled date which will be intimated through email id mentioned in the Tech 3 form of the proposal. The organizations will be needed to produce their presentation in a PPT form and with four copies colored print. The presentation of each organization will be a maximum of five minutes.		

*The bidders will be called for a detailed presentation on each of the above criteria, at a date and time provided by BSDM, in order to facilitate a comprehensive evaluation of their respective proposals. In case of non-attendance of bidders in the presentation, the bid shall be given '0' (zero) marks on technical evaluation.

Bidders, whose bids are responsive, based on minimum qualification criteria as in Preliminary Eligibility Criteria and score at least 70 marks (out of 100) from the technical evaluation criteria would be considered technically qualified.

The technical score would be calculated for each Bidder by the Client and all the Bidders who get at least 70 marks out of 100 would be considered for financial evaluation. Bidders who get a technical score of less than 70 out of 100 would not be considered for the financial evaluation.

3.3 Overview of Bid Evaluation Process

i. The Bid submitted by the Bidder shall consist of a Technical Bid and a Financial Bid. The Technical Bid and Financial Bid along with necessary online payments (Tender Processing Fee, Document Fee and EMD) must be submitted through e-Procurement portal **(https://www.eproc2.bihar.gov.in)** before the date and time specified in the NIT/RFP.

ii. The Bidding process is designed to select the Bidder through a series of parameters, technical qualification / experience parameters followed by cost offered to the Procuring entity by the Bidder

iii. BSDM, Government of Bihar shall open the Bids on the Bid opening Date, at the time and place specified in RFP and in the presence of the Bidders who choose to attend.

iv. Bidders are advised that the qualification of Bids will be entirely at the discretion of the Authority. Bidders will be deemed to have understood and agreed that no explanation or justification on any aspect of the Bidding Process or selection will be given.

v. Any information contained in the Bid shall not in any way be construed as binding on the Authority, its agents, successors or assigns, but shall be binding against the Bidder if the Project is subsequently awarded to it on the basis of such information.

vi. The Authority reserves the right not to proceed with the Bidding Process at any time without notice or liability and to reject any or all Bid(s) without assigning any reasons.

vii. To facilitate the evaluation of Bids, the Authority may, at its sole discretion, seek clarifications in writing from any Bidder regarding its Bid.

viii. The Authority will subsequently examine and evaluate Bids in accordance with the provisions set out in the RFP (Least Selection System).

a) The Bidders should take note that as part of the Qualification Stage, BSDM, Government of Bihar intends the Bidders to make a presentation on their technical capabilities and proposed technology for the proposed Project. The details for date, time and venues will be shared with the Bidders subsequent to the opening of the Technical Bids.

b) The presentation shall be for greater understanding of the Procuring Entity about the Bidder's technical capabilities and shall be considered for evaluation of the Technical Bids, which will be carried out based on the documents furnished in the Technical Bids.

Section IV

4. Terms of Reference

4.1 Broad Scope of Work

1. BSDM to set up Mega Skill Centre (MSC) focused on Energy 4.0 & Industry 4.0 technologies at the selected Industrial Training Institutes (ITI). This Centre is envisaged as a Mega Skill Center with focus points of Training, and industry facilitation center for youth and industries/ start-ups for the state of Bihar.
2. The Request for Proposal is being published by BSDM, Government of Bihar, to invite offers from eligible bidders. The RFP intends participations from the reputed organizations having experience in setting up of Centre/ Institutes in Electricity 4.0, Energy Management, Advanced Automation & Industry 4.0 technologies.
3. The bidder shall carry out the complete installation and commissioning of lab infrastructure at the identified institutions mentioned in the bid, adhering to all applicable safety and quality standards along with necessary electrical works. Each center is expected to be equipped with modern learning stations, electrical and automation panels, software tools, and any other hardware required for hands-on training as per the BoQ specified in Annexure. The MSC shall serve as the primary node for advanced training and faculty development.
4. The Bidder may partner with Technology Partner who possess required expertise/ experience for setting up and operationalize Centre in Energy management, Advanced Automation & Industry 4.0 technologies. In such a case a copy of Manufacturer's Authorization Form (MAF) and a letter of engagement of Technology Partner with roles and responsibilities between the bidder and the technology partner.
5. The Bidder needs to strengthen and support the educational efforts at the proposed Centers. The Bidder is intended to support faculty growth, Curriculum Development and Industry Partnerships. In order to improve the educational experience and outcomes for students, it is intended to establish a relationship that is synergetic.

Further role/ scope of bidder is defined in subsequent sections in the RFP document. The broad scope of work of the partner under this bid shall be as below:

4.1.1 **Turnkey delivery of**

- Physical infrastructure setup as per Annexure-1
- Supply and installation of lab equipment, tools, and software
- Successful bidder to do site preparation and electrification wherever required at the sites.
- Create a replicable and scalable model for skill development clusters that can be extended across other institutions in the state.

4.1.2 **Curriculum Development and Training Delivery**

- Develop and implement industry-aligned training modules
- Deploy qualified trainers with experience in modern electrical, energy management and automation technologies

- Facilitate hands-on and experiential learning integrated with real-world industrial practices

- **Post-setup Operations (for 1 year):**
  - Conduct training sessions, assessments, and certification programs
  - Manage training operations of the MSC for the proposed advanced courses
  - Ensure active industry participation for training, internships, and placement support
  - Train ITI faculty and Mega Skill Centre staff on modern tools, technologies, and teaching methodologies
  - Embed Electricity 4.0, Energy Management, and Industry 4.0 as core skill areas within the Mega Skill Centre ecosystem.
  - Promote job linkages through linkages with public and private sector employers for the placement of trained youth.

- **Industry Certification**:
  - Facilitate certifications from recognized bodies/industry associations
  - Facilitate certifications from recognized Industry Leader
  - Create a scalable and replicable model of industry-integrated training in Bihar's technical institutions.
  - Strengthen the capacity of the state skill development ecosystem to deliver high-quality technical education aligned with future-ready job roles.
  - Enable youth, diploma holders, and field-level technicians to gain employment-ready skills in emerging domains.
  - Support the Government of Bihar's broader goal of making technical education responsive to industrial needs and reducing youth outmigration.

- **Technologies to be Deployed:**

1. Technical Specification Building Installation
2. Home and Building Automation & Programming
3. Building management system
4. Technical Specification Hybrid Solar Energy Solutions Modules
5. Technical Specification for Electric Vehicle charging
6. Technical Specification for LV Panel Installation and Wiring
7. Technical Specification for Smart Panels
8. Technical Specification for Industrial Installation, Controls, Drives and Automation
9. Technical Specification for Automation Programming - HMI, PLC and Sensors
10. Industrial communication and SCADA
11. Technical Specification for Robotics and Motion Controls
12. Technical Specification for Digital Factory
13. Technical Specification for Extended Reality and IIOT
14. OT Cyber Security
15. Smart Power Distribution

Note: *Detailed Specifications given at* ***Annexure 1***

4.2 Roles & Responsibility of the bidder

a. It shall act as proposer, implementer and system integrator for the overall project in active collaboration and assistance with its Technology Partner/ OEM.

b. The successful bidder would be responsible for setting up "Mega Skill Center" in Energy 4.0 & & Industry 4.0 technologies" in line with latest technology requirements given in the bid.

c. Develop certificate/ short term courses, course content, course work, manuals, standard operating procedures (SOPs) and standards to disseminate the same with the overall intent of improving an individual associated with the sector.

d. Supply, Install, Test, Integrate and Commission the hardware, software, and courseware. Details of the Hardware & Software are given in Annexure

e. It shall deploy experienced trainers as mentioned in the RFP

f. It shall conduct training of faculties/ trainers on Technologies and all other supplied modules

g. The bidder shall facilitate signing of non-financial MoUs with sectoral industry leaders in order to provide placement support to the trained candidates under the Mega Skill Centre purview.

h. It shall assist BSDM, Government of Bihar for smooth conduct of the academic programs through:

- Training the students on supplied equipment and courseware
- Certification of students upon successful completion of the training as may be agreed between the procuring entity and the successful bidder.

(Note: The ITI Administration would be responsible for student mobilization, enrolment, fees collection, and other administrative processes with respect to the delivery of skill development programs)

i. It shall provide progress updates on the implementation of the project & utilization certificates of assistance granted by the procuring entity from time to time.

4.3 **Role of the Technology Partner /OEM**

a. The Bidder may collaborate with a technology partner/ OEM offering their technical expertise in the field of Energy management, Advanced Automation & Industry 4.0 technologies in order to provide additional value and quality of service.

b. The technology partner may issue manufacturer authorization form (MAF), in case their authorized Channel Partner is bidding. Additionally, the technology partner to issue engagement letter to the bidder that technology partner will support the bidder in delivery of equipment and services as per the scope of the Mega Skill Centre in Energy 4.0 & technologies 4.0 technologies.

c. It shall act as technology partner and program advisor to the Bidder for successful implementation and training operation of the project.

d. It may provide the experience credentials required under eligibility criteria for multiple bidders

e. It should monitor the quality of the training imparted by the implementer and shall actively assist and collaborate with the successful bidder for the overall implementation and operation of the Centre of

Excellence.

4.4 Placement: Definition & Mandate:

Placement Definition: Placement to be mandatorily done in 3 months from result declaration date (of assessment). Placements by definition would mean that the placed candidate has joined the offered job. Placements can be in the form of wage employment or self-employment.

- **In case of wage employment,** candidates should be placed in jobs that provide wages at least equal to minimum wages prescribed by the State where the deployment is done post recruitment and such candidates should continue to be in jobs for a minimum period of three months, from the date of placement in the same or a higher level with the same or any other employer.
- **In case of self-employment,** candidates should have been employed gainfully in livelihood enhancement occupations which are evidenced in terms of trade license or setting up of an enterprise or becoming a member of a producer group or proof of additional earnings (bank statement) or any other suitable and verifiable document as prescribed by BSDM.

Placement Mandate: Under the Mega Skill Centre project, the partnering agency will have to ensure a minimum of 70 % placement of the total certified candidates of a batch including self-employment. The breakup of placement percentage for wage and self-employment can be decided by the BSDM.

4.5 Placement Documentation:

For Wage Employment:

- Date of Placement
- Name, Address, Sector and contact details of Employer Organization/Company
- Employment Location (City, District, State)
- Salary/wages
- Role/Designation
- Candidates' current contact number
- Declaration of data correctness from Skill Development Centre (SDC) center operator
- Soft copy of offer letter/contract copy / salary slip / self-declaration of the candidate in case of wage employment in informal sector – uploading mandatory

For Self-Employment:

- Date of Successful Completion of Training
- Name, Address, Sector and contact details of Venture – not mandatory
- Monthly earnings
- Candidates' current contact number
- Declaration of data correctness from SDC operator
- Soft copy of venture registration / bank loan documents / bank statement / Self declaration by the candidate of earnings from self-employment for increased earnings – uploading mandatory

4.6 Milestones, Timelines & Deliverables: -

S No.	Milestone	Timeline	Deliverables
1.	Issue of Letter of Award (LoA)	T (Date of issuance of LoA)	NA
2.	Acceptance of a Letter of Award (LoA)	T+ 7 days	Performance Bank Guarantee submission by Bidder (5% of Quoted Project Financial)
3.	Disbursement of Funds for Initiation of Project Work	T+8 days	BSDM will issue the work order to the successful Bidder BSDM will also disburse the initial funds of 30% of Work Order value to the Bidder for commencement of setting up of the MSC at selected ITI.
4.	Inception Report	T+30 Days	Initiation of Delivery of Equipment as per BoQ
5.	Release of Second Tranche of Payment towards the successful bidder	T + 45 Days	BSDM to disburse 40% of funds towards the successful bidder upon successful delivery of equipment as per BoQ on pro-rate basis as per the modules.
6.	Centre Commencement Report	T+ 90 Days	Successful bidder to submit successful setup, installation & manpower deployment report of the Centre of Excellence. BSDM shall disburse the remaining 10% of the total project cost as per the Work Order.
7.	Release of final Tranche of Payment towards the successful Bidder	T+ 100 Days	Manpower Deployment Certificate signed by BSDM On successful installation, Commissioning, deployment of manpower of the center and Placement of at-least 70% of candidate against the total number of certified candidates. BSDM shall disburse the remaining 20% of the total project cost as per the Work Order.

4.7 Payment Schedule

1) 30% advance payment upon allocation of work order to the successfully qualified Bidder and submission of advance bank guarantee.
2) 40% against the successful supply of equipment as per BoQ on a pro-rate basis. Payment against Inspection and documents as under:
    a. Certificate of receipt of Goods (Partial/ fully) in good condition
3) The remaining 10% payment will be done on successful installation and Commissioning, and deployment of manpower of the center, BSDM shall disburse the remaining 20% of the total project cost as per the Work Order.
    a. On-site warranty certificate of OEM

b. Manpower Deployment Certificate signed by BSDM representative
c. Successful Installation & Commissioning of Mega Skill Center
d. Placement of at least 70% of candidates against the total number of certified candidates.

Note: Advance Payment is to be considered after approval of the competent Authority.

Annexure-1

4.8 Bill of Material

Module 1: Technical Specifications for Building Installation

Sl. No	Description	Reqd. Qty in Set
1	**Building Installation** The didactics supplied below must achieve the mentioned learning objectives: • Pack of lose wiring components and home automation system devices for safety and energy savings • Didactic Motor • Household Case for Electrical Installation	
1.1	**Pack of lose wiring components and home automation system devices for safety and energy savings** **Tender Specifications** This home and building installation pack is created with the intention to provide introduction to various components, devices used in residential, commercial, hotels etc. This pack is designed to allow the learner to get hands on experience on working with cable raceways, equipment installation, wiring techniques, powering up sequences and configuration of automated devices. The pack should be created to achieve the following learning objectives: • Operational conditions to help promote safety, wiring standards, products, measuring instruments and tools • Obtain skills of cutting and bending conduits and casing capping at various angles • Circuits and design, estimation and plan an installation • Learn single line diagrams for home and building wiring • Use of programmable timers, mechanical timers, motion and light sensors and energy efficiency control function devices • Install and wire home and building • Upgrade every home into a smart home • Understand and wire buildings in hotel industry **Detailed Product Description:** **Switchgear** • DB 3 tier 36 modules DD – 10 Qty • RCCB xID 2P 40A 30mA AC-type – 10 Qty • MCB xC60 1P 2A C 10000A – 10 Qty • MCB xC60 1P 6A C 10000A – 10 Qty • MCB xC60 1P 10A C 10000A – 10 Qty	1Set

- MCB xC60 1P 16A C 10000A – 10 Qty
- MCB xC60 1P 25A C 10000A – 10 Qty
- RCCB xID 2P 25A 30mA AC-type – 10 Qty
- Surge Arresters iPRD- Type 2, 1P, 230V – 10 Qty
- Isolator, 2pole, 40A – 20 Qty

Control Devices

- Contactor 40A 3NO 220-240 VAC – 10 Qty
- Impulse Relay, 16A 2NO 230/240VAC 50-60HZ 110V – 10 Qty
- Time Switches 24H Without Power Reserve – 10 Qty
- Electronic Timer 30S to 20 MN Mins – 10 Qty
- Wall Mount Occupancy Sensor – 10 Qty

Copper Bus Bar

- Comb Busbar, 63A - 1Length – 10 Qty
- Comb Busbar, 63A - 1Lenght – 10 Qty

Switch

- 6A 1-Way Switch, White – 10 Qty
- 6A 2-Way Switch, White – 20 Qty
- 20A DP Switch with Indicator, White – 10 Qty
- 6A Bellpush Switch 2 Module, White – 10 Qty

Socket

- 6A Universal Socket with Shutter – 10 Qty
- 6A/16A 3-Pin Socket Outlet, White – 10 Qty

Surface Plates

- 2 M Universal Grid & Cover Frame – 10 Qty
- 3 M Universal Grid & Cover Frame – 10 Qty
- 4M Grid & Cover Frame Combined – 10 Qty
- 8M GF AND 8M CF-LINEAR – 10 Qty

Accessories

- Blank Off Cover, White – 100 Qty

Smart Home – Retrofit Solution

- Automation Gateway, Z - Wave network interface, Control up to 120 Z-Wave devices – 2 Qty
- Smart Doorbell, Wi-Fi network interface – 2 Qty
- 4 Channel Automation Relay, 4A per channel – 2 Qty
- IR Controller, Z - Wave network interface – 2 Qty
- Ceiling Mount 360 Degree Occupancy Sensor – 2 Qty
- Curtain Controller – 2 Qty
- Analog Dimmer and Fan Controller – 2 Qty
- Empty Enclosure, 2 holes – 2 Qty
- Led indicator Lamp, 230V, Green – 2 Qty
- Led indicator Lamp, 230V, Red – 2 Qty

Hotel Wiring Devices

- Push Button for Doorbell, 10A, 250V, LED – 2 Qty
- 3 Switch, 1-pole 1-way, Brass Terminal, IP20 – 2 Qty
- Card Switch, 16 A, 250 V – 2 Qty
- Shaver Socket, 115/240V, 20VA – 1 Qty

Electrical Characteristics:

- Voltage: 230V, 1P+N+E

	• Frequency: 50/60 Hz ± 5% **Applicable Software:** • Smart home configuration software: **License Type: Permanent** The equipment should be supported with relevant technical and practical manuals.	
1.2	**Didactic Motor** **Tender Specifications** **Detailed Product Description:** • Three-phase Asynchronous Motors 230/400V, 180 W – 1 Qty **Electrical Characteristics:** • Voltage: 230/400V, • Frequency: 50/60 Hz ± 5% **Mechanical Parameters:** • Minimum Dimension: 400H x 300W x 300D mm • Weight: 4.5Kg	2 Nos
1.3	**Household Case for Electrical Installation** **Tender Specifications:** This box is designed for wiring the basic functions of a residential or small services installation, such as remote-control switches, timers, time switches, or dusk to dawn switches. The transparent cover enables the components to be seen. The components are wired using safety leads. The design of electrical installation bench should be designed to meet the following learning objectives: • Installing components: switches, two-way switches, sockets, etc. • Studying the function of each component • Configuring a programmable timing switch • Studying the remote-control switch function • Studying the occupancy sensor function **Detailed Product Description:** • Miniature circuit breaker, 2P, 10A C – 1 Qty • Miniature circuit breaker, 2P, 16A C – 1 Qty • Two-way switches, 6A – 2 Qty • Pushbutton switches, 6A – 3 Qty • Pushbutton switch with indicator light, 6A, 2module – 1 Qty • Indicator lights, 230V – 3 Qty • RCCB, 2P 25A 30mA AC – 1 Qty • Earth leakage circuit breaker,1P+N, 10A, 30mA – 1 Qty • Timer, 16A – 1 Qty • Timer with early OFF warning, 0.5 to 20mins, 16A – 1 Qty • Remote control switch, 16A, 1NO, 230/240VAC – 1 Qty • Remote control switch with illuminated pushbutton, 16A, 1NO, 230/240VAC - 1 Qty • Programmable time switch, 2Channel, 24h/7d – 1 Qty • Dusk-to-dawn switch, 2-2000lux, 16A – 1 Qty • Occupancy sensor – 1 Qty • Power leads – 1 Qty **Electrical Characteristics:** • Voltage: 230V, 1P+N+E • Frequency: 50/60 Hz ± 5%	2 Sets

	Mechanical Parameters: • Minimum Dimension: 697W x 157D x 575H mm • Weight: 20Kg The equipment should be supported with relevant technical and practical manuals.	
1.4	**Accessories for Building Installation - Lab Infra** • MCB, 4P, 25A- 5 Nos • MCB Box – 5 Nos • Wiring Cubicle, 2.4x1.2x2.4 metres - 5 Nos • Mechanical Work Bench with Bench vice, 1.2x1.2x0.9 M – 2 Nos • Cupboards – 1 No	1 Set
1.5	**Accessories for Building Installation - Other Equip. & Consumables** Perforated Cable Tray, 100x24 mm: 25 Mtr PVC Casing-Capping, 100x50mm: 25 Mtr PVC Casing-Capping, 50mm: 25 Mtr PVC Casing-Capping, 25mm: 25 Mtr PVC Conduit, High density, 19mm: 37 Mtr GI Conduit, 19 mm: 7 Mtr Saddles, 19 mm: 500 Nos PVC Junction Box 19mm, 1 way: 50 Nos PVC Junction Box 19mm, 2 ways: 50 Nos PVC Junction Box 19mm, 3 ways: 50 Nos PVC Junction Box 19mm, 4 ways: 50 Nos Ceiling Plate: 50 Nos Batten Holder: 50 Nos Cable tie, 150mm: 5 Pkts Connector “Dominoes” 4mm: 500 Nos 1- Module Box with surface plate, PVC: 25 Nos 2- Module Box with surface plate, PVC: 25 Nos 3- Module Box with surface plate, PVC: 120 Nos 4-Module Box, PVC: 20 Nos 8-Module Box, PVC: 20 Nos POP screw: 250 Packet 1.5 sq. mm Red: 8 Coils 1.5 sq. mm black: 8 Coils 2.5 sq. mm Red: 3 Coils 2.5 sq. mm black: 3 Coils 2.5 sq. mm yellow green: 1 Coils 4 sq. mm Red: 2 Coils 4 sq. mm black: 2 Coils 4 sq. mm yellow green: 1 Coils	1 Set
1.6	**Accessories for Building Installation – Tools** • 12V Cordless Drill machine: 5 Qty • Spirit Level, 1 Ft: 5 Qty • Steel Rule, 1 Mtr: 5 Qty	1 Set

	• Wire Stripper: 10 Qty • Side cutting plier: 10 Qty • Combination Plier: 10 Qty • Heavy duty cable cutter: 1 Qty • Centre punch: 1 Qty • Try square: 5 Qty • Measurement tape: 10 Qty • Mini Hack Saw : 5 Qty • Ball peen hammer: 3 Qty • Crimping tool, Ring type lugs: 3 Qty • Crimping tool, tube type lugs: 3 Qty • File Set : 1 Qty • Adjustable wrench: 2 Qty • Pipe wrench: 1 Qty • Electrician knife: 10 Qty • Allen key set: 1 Qty • Hole saw, 22 mm: 5 Qty • Heat gun: 1 Qty • Screwdriver set: 10 Qty • Bolt Cutter: 1 Qty • Ratchet spanner set: 3 Qty • Threading Tool set: 1 Qty • Nose plier: 5 Qty • Drill Bit Set: 5 Qty • Mini screwdriver set: 10 Qty • GI Pipe bending tool: 1 Qty • Aluminium Staircase, 3 step: 5 Qty • PVC Pipe bending spring: 10 Qty • Spanner Set: 5 Qty • Soldering Gun and accessories: 3 Qty	
1.7	**Accessories for Building Installation – Measuring Instruments** • Multi meters – CAT III 600 V, Class 2: 5 Nos • Current clamp-meters: 2 Nos • Earth tester with connecting leads and spikes: 1 Nos • Megger, 500 V: 2 Nos	1 Set

Module 2: Building Automation

2	**Home and Building Automation & Programming** The didactic package to be created in following learning levels: • CCTV and access control pack • Fire Alarm and Public Address System • Smart Home Automation – Pack	

2.1	**CCTV and Access Control Pack** **Tender Specifications** The didactic package is designed to study the system architecture, various components used in CCTV and Access Control system used in residential, commercial, and industrial installations. This package is designed in a kit format to enable the learners to achieve the following learning objectives: • Know the analog and IP CCTV System • Different types of cameras, lens, cable types, POE switches etc. • Know different types of recording, storage calculation, analytics • Configure CCTV software and integrate cameras for live viewing and recording playback • Know access control basics like card technologies, reader type, locks, tailgating, anti-pass back • Configure access software, create personnel, access rights and its working • Integrate access control with CCTV VMS so that live viewing can be seen on access alarm • Carry preventive and corrective maintenance of system **Detailed Product Description:** • Bullet camera - IP - 1.3mp HD video – 1 Qty • 1/3" CMOS, Lens 4mm – 1 Qty • Dome camera - IP - 2mp, 1/3" CMOS, 4mm – 1 Qty • 4 channel NVR - 4CH video, 1CH audio, HDMI/VGA resolution, 1SATA (4 TB) – 1 Qty • 8 port 10/100 switch with 4 port POE (53W) – 1 Qty • 1TB hard disk – 1 Qty • 2 door intelligent TCP/IP networkable access controller – 1 Qty • Power supply, 12VDC - 5 Amps – 1 Qty • Card readers proximity – 1 Qty • Card readers smart – 1 Qty • Electronic lock – 2 Qty • Exit push button – 2 Qty • Access card proximity – 2 Qty • Access card smart – 2 Qty • 19-inch LCD display with HDMI and VGA input – 1 Qty • Accessories - 6U rack 1 Qty • CAT 6 cable – 50 Mtr • 2 core 1.0 Sq.mm unarmored cable – 50 Mtr • 8 core 0.75 Sq.mm unarmored cable – 50 Mtr • Activation indicator at top – 1 Qty • 4P 25A MCB – 1 Qty • 6A Socket – 1 Qty • 6A Switch – 6 Qty • 3 Module cover plate – 3 Qty • 2 Module plate for CCTV and access – 2 Qty **Applicable Software's:** • CCTV Configuration tool: License Type - Permanent • Access control software - Licensed Security Management Software:	3 Set

	License Type - Permanent **Electrical Characteristics**: • Voltage: 230V, 1P+N+E • Frequency: 50/60 Hz ± 5% The kit components to be installed on a suitable artwork depicting a particular setup. The equipment should be supported with relevant technical and practical manuals.	
2.2	**Fire Alarm and Public Address System** **Tender Specifications** This bench is designed to introduce the aspect of building safety and general announcement systems. This bench comprises of Fire Alarm and Public Address System. This Fire Alarm and Public Address System allows the learner to understand the system architecture, install the system components based on zones for detection and announcement, create electrical connections, powering up the system and finally configuring them to make it operational as desired. The fire alarm and public addressing pack to designed in a kit format to enable the learners to achieve the following learning objectives: • Study the various standards and regulations relating to a fire alarm system • Know different types of devices and detectors and wiring types • Install and configure graphical software and integrate with BMS software • Carry preventive and corrective maintenance of system. • Know different types of speakers, amplifier selection, zoning concept • Install and connect Public Address System with Fire Alarm System for emergency announcement. **Detailed Product Description:** • Analog addressable fire alarm control panel with minimum 3 programmable discrete inputs – 1 Qty • Multisensory detector - smoke + heat – 1 Qty • Smoke detector – 1 Qty • Heat detector – 1 Qty • Common detector base – 3 Qty • Manual call point – 1 Qty • Sounder/Strobe – 1 Qty • Control IO module for integrate – 2 Qty • indication lamps – 2 Qty • 12v 7AH battery – 1 Qty • 8 Zone voice alarm controller with USB MP3 AM FM with console – 1 Qty • Power amplifier 240W – 1 Qty • 6W Superb quality ceiling speaker module – 3 Qty • Accessories - 6U rack – 1 Qty • Distribution board, 12 Way (1 Tier) – 1 Qty • E-stop – 1 Qty • 2P, 25A MCB – 1 Qty • Rotary warning light – 1 Qty • Connecting cable 2Cx1.0 sq.mm – 50 M – 1 Qty • Power extension – 1 Qty **Applicable Software:** • Fire alarm Programming/Configuration tool: License Type - Permanent **Electrical Characteristics:** • Voltage: 230V, 1P+N+E	3 Set

	• Frequency: 50/60 Hz ± 5% The kit components to be installed on a suitable artwork depicting a particular setup. The equipment should be supported with relevant technical and practical manuals.	
2.3	**Smart Home Automation – Pack** **Tender Specifications** The KNX Home Automation pack is designed to discover the home automation solutions for the residential and the commercial installations. The bench is made up of KNX products that are commonly used. The KNX modules are programmable and offers controllable network. The control functions enhance occupants and owners experience. The system is complete, open, and scalable. The home automation pack to designed in a kit format to enable the learners to achieve the following learning objectives: • Analyze the functionalities and principles of a Home Automation Installation on KNX bus • Fit and connect the components • Configure the system according to various scenarios • Grasp the concepts of energy efficiency **Detailed Product Description:** • Distribution box with 3 rows, 13M each – 1 Qty • Ground-leakage circuit breaker, 10 A 30 mA – 1 Qty • KNX bus power supply, 30VDC, 320mA – 1 Qty • USB interface din rail mounted, type C – 1 Qty • Multi-function pushbutton unit, 2 gang – 1 Qty • Touchscreen, 4 inches, 30VDC – 1 Qty • Presence detector with infrared receiver – 1 Qty • DALI dimmer-Gateway – 1 Qty • Switching and blind actuator, 8 channel, 10A – 1 Qty • USB programming lead – 1 Qty • 10 m EIB cables for KNX bus – 1 Qty • Set of KNX connectors and terminal strips – 1 Qty • Accessories pack – 1 Qty **Applicable Software:** • ETS6 software program, 1 license: **License Type: Permanent License** **Electrical Characteristics:** • Voltage: 230V, 1P+N+E • Frequency: 50/60 Hz ± 5% The kit components to be installed on a suitable artwork depicting a particular setup. The equipment should be supported with relevant technical and practical manuals.	3 Sets
2.4	**Accessories for Home and building automation & programming – Lab Infra** • Computers with two monitor – 3 Qty • Computer table – 3 Qty • MCB 4P, 25A- 3 Qty • MCB Box- 3 Qty • Wiring Cubicle, 2.4x1.6x2.4 M – 3 Qty	1 Set

Module 3: Building Management System

3	**Integrated building management system** **Tender Specifications** This system controls and monitors the building's mechanical and electrical equipment such as ventilation, lighting, power systems, fire systems, and security systems. To efficiently understand and learn BMS a mechanical hardware preferably a HVAC example should be designed so as have real time data from the electrical instruments. This equipment includes a HVAC panel and a BMS panel enabling the learners to achieve the following learning objectives: • Study system architecture guidelines, identification of components and installation of hardware • Learn the various input and output types, defining and parameterizing I/O Variables • Study of field instruments and connection of field instruments to the I/O modules • Create graphics of the given HVAC system and binding of variables to graphical representation • Operate the system as per the planned sequence and study the effect of various interceptions on the system • Connect the integrated building management system to CCTV and Fire Alarm and Public address System and create a building control and command center **Detailed Technical Specifications:** **HVAC test bench to include**: • Hermetically sealed compressor (1ton cap.) – 1 Qty • Air cooled condenser – 1 Qty • Fan motor with blade – 1 Qty • Expansion Device-Capillary & Thermostatic expansion valve – 1 Qty • Sight glass for Refrigerant – 1 Qty • Hand shut off valve-3/8” – 1 Qty • Filter-Drier – 1 Qty • Digital Energy meter with RS 485 compatibility – 1 Qty • Solenoid Valve (3/8”) – 1 Qty • Thermostat – 1 Qty • Pressure/compound gauges – 1 Qty • Temperature transmitters (at various points) – 5 Qty • Selector switches to simulate external intercepts – 5 Qty **BMS Panel to include:** • BMS controller, Lon Works, 2 Qty of RS-485 ports, 2 Qty of 10/100 ethernet ports – 1 Qty • BMS Power supply module, 24VAC or 21-30VDC – 1 Qty • IO Module UI-8/AO-4-H UI/AO V/mA HAND – 1 Qty • IO Module UI-8/DO-FC-4-H UI/DO FRMC HAND – 2 Qty • DC Power supply, 24VDC, 6A – 1 Qty • Miniature circuit breaker, 230 VAC 2 pole 2 Amps – 1 Qty • RCCB, 2P, 25A, 30mA, AC-type – 1 Qty • Emergency Stop switch – 1 Qty • Network Switch – 1 Qty • Network cable and accessories – 1 Qty	2 Sets

	• DDC panel – 1 Qty **Applicable Software:** • Editors, Building Operation • Enterprise server Building Operation **License type: Perpetual license** **Electrical Characteristics:** • Voltage: 230V, 1P+N+E • Frequency: 50/60 Hz ± 5% **Mechanical Parameters:** • Minimum Dimensions: HVAC Bench: 1220 W x 900D x 1345H mm • Minimum Dimension BMS Panel: 600W x 210D x 1330H mm The equipment should be supported with relevant technical and practical manuals.	
3.1	**Accessories for Integrated building management system** • Computers with dual monitor – 2 Qty • Computer table– 2 Qty • Chairs – 2 Qty	1 Set

Module 4: Technical Specifications for Hybrid Solar Modules

4	**Solar Energy Solutions** The didactic package to be created in following learning levels: • Hybrid Solar Home System • Solar AC Micro Grid System • Solar Water Pumping Bench	
4.1	**Hybrid Solar Home System** **Tender Specifications:** The hybrid inverter is the central component of the hybrid solar home system. It has dual input source to charge the battery and can simultaneously charge the battery from solar panels as well as conventional grid. Solar panels connected in series and parallel generate power during the day. In the event of grid failure / absence of grid, the hybrid inverter charges the battery from solar panel and DC power from battery is used to power AC appliances. It should be designed to achieve learning objective • Understand the concept, working principle and overall functionality of the system • Understand sizing of the system based on customer requirement • Install, operate, and maintain the system • DiagQtye and troubleshoot the problems during and after the installation • Learn battery maintenance and perform maintenance of solar lead acid battery **Detailed Product description**: • Solar Panel, 12 V,105 Wp – 4 Qty • Module Mounting Structure – 1 Set • Solar Hybrid Inverter, 850 VA,12 V – 1 Qty • AC Loads - CFL Lamp, 230 V, 11 W – 1 Qty • AC Loads - LED Bulb, 230 V, 9 W – 1 Qty • AC Loads - AC LED Television, 230 V, 55 W – 1 Qty • AC DB with MCB, 230 V, 16 A, AC 2-Pole, C-Curve – 1 Qty • Switchboard, 3-Module, 16 A – 1 Qty • Switchboard, 6-Module, 6 A – 1 Qty	1 Set

	• AC Plug top, 3 Pin, 6A – 1 Qty • Connecting wires – 1 Set • Accessories – PVC pipe fittings – 1 Set • Accessories – Nuts, bolts, etc. – 1 Set • Rubber mat – 1 Set • Metal perforated trolley – 1 Qty **Electrical Characteristics:** • Voltage: 230/400 V • Frequency: 50/60 Hz ± 5% The equipment should be supported with relevant technical and practical manuals.	
4.2	**Solar AC Micro Grid System** **Tender Specification** AC Micro Grid Solution uses a highly energy efficient and reliable MPPT charge controller that tracks the maximum power point of a photovoltaic panel array to deliver the optimum power for charging batteries. The stored energy in the battery bank is then converted from 48V DC to 230V AC by high performance inverter to provide clean and reliable source of electricity to the remote villages and communities. The AC Micro Grid is a robust solution requiring the minimum of skilled maintenance and intervention for the duration of its lifetime. Its superior reliable design neatly integrated inverter and MPPT charger to help ensure high performance of the micro grid system. The system should be designed to achieve the following learning objectives: • Understand the concept, working principle and overall functionality of AC Micro Grid System • Understand sizing of AC Micro Grid System based on village, households' energy requirement. • Install, operate, and maintain the AC Micro Grid in remote off grid villages. • DiagQtye and troubleshoot the problems during and after the installation. • Learn Battery Maintenance and perform maintenance of solar lead acid battery. **Detailed Product Description:** • AC Micro - Solar Panel, 24V, 335 Wp – 6 Qty • Module Mounting Structure – 1 Qty • Off-grid Inverter 3kW – 1 Qty • Junction box (with Busbars and DC MCB) – 1 Qty • DC MCB - 32A,2 pole DC MCB – 1 Qty • AC Distribution box (with busbars and AC MCB) – 1 Qty • AC MCB - 30A, 2pole AC MCB – 1 Qty • Distribution unit – 1 Qty • Pole Junction Box – 1 Qty • AC MCB, 25A,2 pole, AC MCB – 1 Qty • AC MCB - 6A, 2 pole AC MCB – 2 Qty • AC Loads - CFL Lamp, 12 W with holders – 4 Qty • AC Loads - LED Lamp, 9 W with holders – 4 Qty • AC LED television with plug, 70W – 1 Qty • AC Pedestal Fan – 2 Qty • Switchboard with sockets and switch – 4 Qty	1 Set

	• Lightning Arrestor, 1.1KV – 1 Qty • Interconnecting cables – 1 Qty • Accessories - PVC pipe fittings – 1 Qty • Accessories - Nuts, bolts, etc. – 1 Qty • Rubber mat – 1 Qty • Metal perforated trolley – 1 Qty **Electrical Characteristics:** • Voltage: 230/400 V • Frequency: 50/60 Hz ± 5% The equipment should be supported with relevant technical and practical manuals.	
4.3	**Solar Water Pumping Bench** **Tender Specifications** This bench reproduces a stand-alone solar pumping solution in areas where connection to the electricity grid is not possible. The electrical energy supplied by photovoltaic panels directly feeds a specific variable speed drive. The system operates without batteries, the aim being to help enable the permanent supply of water by dimensioning the tank according to the water requires and the daily sunshine. The system should be designed to achieve the following learning objectives: • Discover and implement the drawing bench • Study the operation, setup, and maintenance of the • Solar drive controller • Determine the photovoltaic panels necessary for the operation of the bench: **Detailed Product Description:** • Solar Panel, 24V,335Wp – 15 Qty • Solar Panel Mounting Structure – 2 Sets • Solar Drive Enclosure with Solar Variable Frequency Drive, Solar 4 kW/5 HP, 3Ph 400 V – 1 Qty • Solar DC cable, 1 core 4.0Sqmm multistrand copper wire (Red & Black) – 50 Mtr (each) • AC Monoblock Surface Pump, 0.75kW/1HP, 3Ph, 400VAC, 50Hz – 1 Qty • Inlet water tank, Plastic, 50 lts – 1 Qty • Outlet water tank, Plastic, 50 lts – 1 Qty • PV Array DB, PVC DB – 1 Qty • Water level controller – 1 Qty • Lighting arrestor, 1.1kV – 1 Qty • Wiring accessories – 1 Set • PVC piping accessories – 1 Set • Metal perforated lab trolley (3 sides) No Tray – 1 Qty • Rubber mat – 1 Qty **Programming Software:** • Solar drive configuration software: License Type - Permanent **Electrical Characteristics:** • Voltage: 400 V	1 Set

	• Frequency: 50/60 Hz ± 5% The equipment should be supported with relevant technical and practical manuals.	
4.4	**Accessories for Solar Energy Solutions** • Utility table (1.2 x 0.6 x 0.85 M) – 1 Qty	1 Set

Module 5: Technical Specifications for Electric Vehicle Charging

Sl No.	Description	Reqd. Qty in Set
5	**Electric Vehicle charging** **Tender Specifications:** EV Charging infrastructure offers energy metering capabilities as well as the connectivity needed to help ensure user authentication, generate reports, allocate costs to individual users, and perform remote maintenance. The terminal is used to charge an electric vehicle in the apartment or small building. The components are supplied as a pack allowing the cabinet to be wired with power management. The installation will be tested with the test tool. Load operation will be simulated with a simulation kit. It should be designed to achieve learning objectives: • To understand EV link control system • Preparing a construction site • Installing and connecting a charging station Test installation • Parameterizing the power • Parameterizing the power limiting and delayed start function • To learn configuring RF tags **Detailed technical specifications:** The Electric Vehicle charging Infrastructure pack to include: • EV Charger AC, 22kW, 3Ph, 32A, attached cable T2, Includes 5 RFID badges – 1 Qty • EV Charge Controller, able to support up to 5 charging stations – 1 Qty • Vehicle presence simulation– 1 Qty **Programming software:** • EV charging expert software license – License Type: Permanent **Electrical Characteristics:** • Voltage: 230/400 V • Frequency: 50/60 Hz ± 5% The equipment should be supported with relevant technical and practical manuals.	2 Set
5.1	**Accessories for EV charging** Metal enclosure 12 Ways: 1 Nos PG Gland PG 16: 3 Nos PVC Cable 5C, 2.5 SQMM: 5 Meters Flexible conduit 20 MM: 10 Meters Undervoltage release : 1 Nos Surge arrester 3P + N: 1 Nos Ethernet Switch: 1 Nos Power Supply 24V, 5 Amps: 1 Nos Tubular Lug 2.5 SQMM: 1 Pkt PVC Wire 2.5 SQMM: 15 Meters Nut and bolts M4X25 MM: 25 Nos	2 Sets

	Industrial Plug 5 Pins, 32 Amps: 1 Nos RCCB 4P, 25 Amps, 30 mA: 1 Nos MCB 2P, 6 Amps: 1 Nos MCB 2P, 2 Amps: 1 Nos Washers OD - 25 MM: 25 Nos Cable tie 200 MM: 1 Pkt Insulation Tape 10 MM: 1 Nos Ethernet patch cord Cat6, 0.5 M: 1 Nos Ethernet patch cord Cat6, 2 M: 1 Nos EV Charger Mounting Frame: 1 Nos	

Module 6: Technical Specifications for LV Panel Installation:

6	**LV Panel Installation and Wiring** **Tender Specifications:** This main LV switchboard cabinet for vocational training makes it possible to carry out the wiring operations of a low voltage switchboard. It has a rear access door with a key different from the front door in order to avoid electrical risks. The main LV switchboard cabinet for vocational training is delivered assembled with the components mounted in place, depending on the version the equipment may or may not be wired. The equipment should be designed to achieve learning objectives: • Perform wiring and clearance tasks with busbar intervention. • Identify components. • Perform wiring tasks according to the rules of the art. • Mechanical and electrical control of the wiring • Connect an educational system for energy measurements. **Detailed Product Description:** • Industrial Cabinet – 1 Qty • Circuit breaker, 4P, 160A, complete with 1C/O, – 1 Qty • Switch with visible cut-off, 4P, 160A – 1 Qty • Trip unit with overload protection (long time), short time short-circuit protection with fixed delay, instantaneous short-circuit protection, earth-leakage protection, 4P, 440V – 1 Qty • Set of Bus bars, 4P, 160A – 1 Qty • Power meter, Modbus, up to 15th Harmonic, 1DO 33 alarms – 1 Qty • Current Transformer, Solid core 27mm dia, 150/5A CT – 3 Qty • Emergency stop, red, 40mm stop, 22mm trigger and latching key release – 1 Qty • Door Safety limit switch, 1NO+1NC – 1 Qty • Outgoing Circuit (circuit breakers + differential blocks + contactors): - Contactors, 3P, 12A. Coil 24VAC – 1 Qty - Contactors, 3P, 18A, Coil 24VAC – 1 Qty - Contactors, 3P, 32A, Coil 24VAC – 1 Qty - Contactors, 4P, 32A, Coil 24VAC – 1 Qty - Contactors, 4P, 80A, Coil 24VAC – 2 Qty • Power Sockets – 2 Qty • On/off push buttons with signage for departure control – 1 Set • Modular Light beacon, 2 steps, 24V AC/DC – 1 Qty • Power connection terminals – 1 Set • LV/LV transformers, 230-400V / 1x24V, 400VA – 1 Qty	2 Sets

	• LV/LV transformers, 230-400V / 2x115V, 2500VA – 1 Qty **Electrical Characteristics:** • Voltage: 400 V, 3P+N+E • Frequency: 50/60 Hz ± 5% • Power: 63A max. The equipment should be supported with relevant technical and practical manuals	
6.1	**Accessories for LV Panel Installation & Wiring - Other Equipment & Consumables** Wire, 50 sq.mm – 15Mtr Wire, 16 sq.mm – 15Mtr Wire, 10 sq.mm – 15Mtr Wire, 6 sq.mm, Red – 15Mtr Wire, 6 sq.mm, Yellow – 15Mtr Wire, 6 sq.mm, Blue – 15Mtr Wire, 6 sq.mm, Black – 15Mtr Wires, 2.5 sq.mm, Red – 3Coils Wires, 2.5 sq.mm, Yellow – 3Coils Wires, 2.5 sq.mm, Blue – 3Coils Wires, 2.5 sq.mm, Black – 3Coils Wires, 2.5 sq.mm, Green – 3Coils Wires, 0.75 sq.mm, Gray – 7 Coils Crimp-type lugs 502 Ø 8 – 25 Qty Crimp-type lugs 162 Ø 6 – 25 Qty Crimp-type lugs 102 Ø 6 – 25 Qty Crimp-type lugs 62 Ø 6 – 25 Qty Crimp-type lugs 2.52 Ø 6 – 25 Qty Tube-type lugs 0.752 Ø 6 – 100 Qty	1 Set
6.2	**Accessories for LV Panel Installation & Wiring – Tools** 5 Meter Measurement tape – 1 Qty Wire Stripper – 2 Qty Side Cutting Plier – 2 Qty Long Qtye Plier – 1 Qty Combination Plier – 1 Qty Flat head screwdriver set – 2 Qty Phillip head screwdriver set – 2 Qty Mini Ratchet spanner set – 1 Qty Mini screwdriver set – 2 Qty Crimping tool, 6sq.mm to 50 sq.mm – 1 Qty Crimping tool, tube type – 1 Qty Mini Hack saw with blade – 1 Qty Electrician Knife – 2 Qty Allen key set – 1 Qty Aluminium Staircase, 3 step – 2 Qty	1 Set
6.3	**Accessories for LV Panel Installation & Wiring – Measuring Instruments** • Megger – 1 Qty • Digital multi meter – 1 Qty • Digital Clamp meter – 1 Qty	1 Set

Module 7: Technical Specifications for Smart Panels:

Sl No	Description	Reqd. Qty in Set
7	**Smart Panels** The didactics supplied below must achieve the mentioned learning objectives: • Training bench for HMI and PLC • Sensor case	1 Set

Module 8: Technical Specifications for Industrial Controls Module

Sl No	Description	Reqd. Qty in Set
8	**Industrial Installation, Controls, Drives and Automation** The didactics supplied below must achieve the mentioned learning objectives: • Motor Starter Pack • Ultra Motor Starter Pack/Compact Motor Starter Pack • Variable speed control add-on Motor Starter Pack • Three-phase Asynchronous 400 V/690 V Training Motor • Power and Control pack with PLC wiring and sensors	1 Set
8.1	**Motor Starter Pack** **Tender Specifications** This assembly allows electromechanics to design, assemble, wire and troubleshoot power control equipment. This didactic package should be designed to study the industrial components and learn to read industrial diagrams. Furthermore, this Didactic package should consider motor starting methods to relate to the industrial concepts. It should be designed to achieve learning objectives: • Acquire knowledge of LV switchgear, understand the role and composition of the items implemented in a motor feeder • Study, build and test the various motor feeder diagrams. • Build power control equipment from industrial components essential in all automated systems. • The power distributed through electromechanical products performs four main functions stipulated by regulations: - Separation or disconnection - Control or switching - Short-circuit protection - Overload protection **Detailed Product Description:** • Control Transformer, 230-400/24V, 400VA – 1 Qty • Cable trunking, PVC, 50x25mm – 1 Set • Connectors, 4 sq.mm – 1 Set • Connectors, 6 sq.mm – 1 Set • Circuit Breaker, 1P, 16A – 1 Qty • Circuit Breaker, 4P, 10A – 1 Qty • Differential Block, 4P, 25A, 30mA, 400-415V – 1 Qty • Din Rail, 500mm – 1 Set • Perforated mesh, 750x550mm – 1 Qty • NFC cylindrical cartridge fuses, 10 mm x 38 mm, fuse type a M, 500VAC,	20 Sets

	• 4 A, without striker – 1 Qty • Aux. Contact Block, 2NO+2NC – 1 Qty • Time delays auxiliary contact block, 1NO+1NC, 1-30s, for star-delta applications – 1 Qty • Time delays auxiliary contact block, 1NO+1NC, 1-30s – 1 Qty • Contactor, 9A, 3P, 440V, 24VAC Coil – 3 Qty • Reversing Contactor, with mechanical interlock, 9A, 3P, 440V, 24VAC Coil – 1 Qty • Thermal Overload Relay, 2.5-4A, 1NO+1NC, direct contactor bottom terminals mounting type – 1 Qty • Fuse-disconnector, 3P, 30A, fuse size 10 x 38 mm – 1 Qty • Push Button station - green flush/red flush/green flush pushbuttons Ø22 – 1 Qty • Empty control station, 8 openings in 2 columns – 1 Qty • Push button, plastic, flush, green, Ø22, spring return, unmarked, 1 NO – 1 Qty • Push button, plastic, flush, red, Ø22, spring return, unmarked, 1 NO – 1 Qty • Selector switch, plastic, black, Ø22, 3 positions, stay put, 2 No – 1 Qty • Single contact block with body/fixing collar, plastic, screw clamp terminal, 1 NO + 1 NC – 1 Qty • Emergency stop head, switching off, plastic, red mushroom Ø40, trigger and latching turn to release – 1 Qty • Pilot light, plastic, green, Ø22, 24V AC/DC – 1 Qty • Pilot light, plastic, red, Ø22, 24V AC/DC – 1 Qty • Pilot light, plastic, orange, Ø22, 24V AC/DC – 1 Qty • Tightening tool for fixing nut – 1 Qty • Limit switch - thermoplastic roller lever - 1NC+1NO – 1 Qty • Loose bolt and clip nuts – 1 Set **Electrical Characteristics:** • Voltage: 400V, 3P+N+E • Frequency: 50/60 Hz ± 5% The equipment should be supported with relevant technical and practical manuals.	
8.2	**Compact Motor Starter Pack** Detailed Product Description: • Advanced power base, 3P, 12A/690V, 5.5kW, 1NO+1NC – 1 Qty • Signaling contacts, 2NO, 5A, 250VAC/DC – 1 Qty • Auxiliary contacts, 1NO+1NC, 5A, 24-250VAC/DC – 1 Qty • Standard control unit, 1.25-5A, 3P motors, thermal magnetic protection, class 10, coil 24VAC – 1 Qty • Reverser block, vertical mounting, 32A/690V, coil 24V AC – 1 Qty • Control terminal block - for reversing motor starter – 1 Qty • Control circuit pre-wired connector - for reversing motor starter – 1 Qty **Electrical Characteristics:** • Voltage: 400V, 3P+N+E • Frequency: 50/60 Hz ± 5% The equipment should be supported with relevant technical and practical manuals.	20 Sets
8.3	**Variable speed control add-on motor starter pack** **Detailed Product description:** • Motor Circuit Breaker, 3P, 10A, 440V, magnetic, rotary handle – 1 Qty	20 Sets

	• Motor Protection Circuit Breaker, 3P, 2.5-4A, 440V, thermal & magnetic – 1 Qty • Variable Speed Drive, 1.5kW/2Hp, 400V, 3Ph, Modbus serial – 1 Qty • Soft Starter, 6A, 1.5 to 3kW, 380 to 415V – 1 Qty • Potentiometer, 2.2kΩ – 1 Qty • Din Rail Mounting Base – 1 Qty • Drive communication cable i.e. USB: RJ45 – 1 Qty **Electrical Characteristics:** • Voltage: 400V, 3P+N+E • Frequency: 50/60 Hz ± 5% **Applicable Software:** • Variable speed drive configuration software – 1 Qty **License type: Permanent** The equipment should be supported with relevant technical and practical manuals.	
8.4	**Three-phase Asynchronous 400 V/690 V Training Motor** **Detailed Product Description:** • 3-phase Asynchronous Motors 400/690V, 180W – 1 Qty • The motor to be supplied with terminal box having the windings wired on the terminal box with 4mm banana connectors. **Electrical Characteristics:** • Voltage: 400/690V, • Frequency: 50/60 Hz ± 5%	5 Sets
8.5	**Power and Control pack with PLC wiring and sensors** **Tender Specifications** The wiring plates reproduces the control and power circuits of a EOT crane system. This pack can be used as a media for intermediate certification concerning two professional training units: preparation for execution of an electrical installation and checking the operation of an electrical installation. To achieve the professional training, the package designed should achieve the following learning objectives: • Unwired version: - Install components as per the drawing, - wire up the power and control components, - wire up the Ethernet components, - configure the power meter, - load the test program in the PLC, - test general operation **Detailed Product Description:** • Mesh plate for components installation, 800x600mm – 1 Qty • Power incomer terminal block – 1 Qty • Transformer, 230-400 V to 24 V, 63VA – 1 Qty • DC power supply,24VDC, 1.2A – 1 Qty • Control Circuit breakers 1P+N, 0.5A, Icu 50 kA@240V – 1 Qty • Control Circuit breakers, 1P+N, 1A, Id=14 A – 1 Qty • Control Circuit breakers, 1P+N, 2A, Icu=15 kA@240 V – 1 Qty • Control Circuit breakers, 1P+N, 3A, Id = 40A – 1 Qty • Isolating switch, 3P, 25 A – 1 Qty • Fuse Switch disconnector, 32A, 690VAC – 1 Qty • Contactor, 9A, 1NO, 1NC, 24VAC COIL, 400V – 1 Qty • Changeover contactor, 9A, 5.5KW, 24VAC COIL, 400V – 1 Qty	5 Sets

	• Thermal magnetic circuit breaker, 3P, 2.5A to 4A – 1 Qty
	• Compact Motor Starter with Modbus port, 3P, 12A/690V, coil 24VDC – 1 Qty
	• Brick PLC with 4 fast inputs, 16 regular inputs & 16 relay outputs, input voltage of 24V DC, an output voltage of 24V DC/220V AC, output current of 2A,mini B USB 2.0, serial link 1 and RS485, serial link 2 and RS232/RS485, ethernet Modbus TCP/IP, and serial link 2 and RS485 – 1 Qty
	• Power meter, 200 to 480VAC, Modbus RTU, RS485 – 1 Qty
	• Current transformer, 40/5, inner dia 21mm – 3 Qty
	• Control boxes with buttons and indicators
	  • Box is used to start up and shut down the system, it contains an emergency stop pushbutton – 1 Qty
	  • control box enables to control the M1 and M2 motors in both rotation directions – 1 Qty
	• Emergency stops push button, 40mm dia – 2 Qty
	• Push button, NO, Black – 3 Qty
	• Push button, NO, Green – 1 Qty
	• Selector switch – 2 Qty
	• Pilot lamp, 24V AC/DC – 4 Qty
	• Limit switches, 1NO+1NC – 5 Qty
	Electrical Characteristics:
	• Voltage: 400V, 3P+N+E
	• Frequency: 50/60 Hz ± 5%
	Applicable Software:
	• PLC Programming Software – 1 Qty
	License type: Permanent
	The equipment should be supported with relevant technical and practical manuals.	

8.6	**Accessories for Industrial Installation, Controls, Drives and Automation - Lab Infra** • MCB, 4P, 25A – 5 Qty • MCB Box, 4 way – 5 Qty • WiringMesh with table and power supply for Module– 5 Qty • Cupboard – 2 Qty • Laptops for PLC configuration – 5 Qty Processor: Intel Core i5 or above Operating System: Microsoft Windows 10 Office Suite: Microsoft Office 365 Memory (RAM): 8-16 GB of RAM Storage: 240 GB SSD, or larger.	1 Set
8.7	**Accessories for Industrial Installation, Controls, Drives and Automation – Tools** • Steel Rule, 1 Mtr – 10 Nos • Wire Stripper – 10 Nos • Side cutting plier – 10 Nos • Combination Plier – 10 Nos • Crimping tool, Ring type lugs – 2 Nos • Crimping tool, tube type lugs - 10 Nos • File Set - 1 No • Adjustable wrench – 1 No	1 Set

	• Allen key set – 1 No • Hole saw, 22 mm – 5 No • Heat gun – 1 No • Screwdriver set- 10 No • Nose plier – 5 No • Mini screwdriver set – 10 Nos	
8.8	**Accessories for Industrial Installation, Controls, Drives and Automation – Consumables** • Slotted Trunks, 40x40 mm - 7 Mtr • Push Button Control Station, 4 holes – 10 Nos • Push Button, Green – 10 Nos • Push Button, Red - 10 Nos • Push Button, Black – 10 Nos • Push Button, Emergency Stop – 10 Nos • Indicator 24V, Red - 10 Nos • Indicator 24V, Blue – 10 Nos • Indicator 24V, white – 10 Nos • Indicator 24V, Green – 10 Nos • 1 sq. mm Grey -10 Coils • 2.5 sq. mm Red – 3 Coils • 2.5 sq. mm blue -3 Coils • 2.5 sq. mm yellow -3 Coils • 2.5 sq. mm black -3 Coils • 2.5 sq. mm yellow green – 2 Coils • 3C x 2,5 sq.mm, Cable - 75 Mtr • 5C x 2,5 sq.mm, Cable - 75 Mtr	1 Set
8.9	**Accessories for Industrial Installation, Controls, Drives and Automation – Measuring Instruments** • Multimeters – CAT III 600 V, Class 2 - 5 Nos • Current clamp-meters - 2 Nos • Earth tester with connecting leads and spikes – 1 Nos • Megger, 500 V -2 Nos	1 Set

Module 9: Technical Specifications for Automation Programming – HMI, PLC and Sensors

9	**Automation Programming - HMI, PLC and Sensors** The didactics supplied below must achieve the mentioned learning objectives: • Training bench for HMI and PLC • Sensor case	
9.1	**Training bench for HMI and PLC** **Tender Specifications** The console consists of an industrial grade, modular type PLC/equivalent with expandable I/O's mounted and wired on front surface plate. The surface plate is mounted on a metal enclosure with the IO's and the power supply. The I/Os from the PLC are wired out to the front surface using 4mm banana sockets. This IO's mounted	4 Sets

	on the surface can be connected to an external operational equipment in form of push buttons, limit switches and the indicators using suitable stackable patch cords. An HMI display unit enables operator dialogue. This PLC-HMI bench should be designed to achieve the following learning objectives: • Program and configure a modular PLC • Study the display unit • Program and configure the HMI terminal • Control and operate the terminal • Manage breakdowns(troubleshooting) via feedback from the terminal **Detailed Product Description:** • Back plane, 8 slots – 1 Qty • Central Processing Unit for PLC, max 1024 discrete + 256 analog I/O, Modbus and/or Ethernet – 1 Qty • DC Power supply for PLC, 24VDC, 16.8W – 1 Qty • Module digital input, 16I, 24VDC, positive discrete input – 1 Qty • Module digital outputs, 16Q relays, 24VDC/24V to 240VAC – 1 Qty • Analog IO module - 4 inputs supporting Current 0~20 mA/Current 4~20 mA, Voltage +/- 10V, Voltage 0~10V, Voltage 0~5V, Voltage 1~5V /2 Analog outputs supporting Current: 0~20 mA, Current: 4~20 mA, Voltage: +/- 10V – 1 Qty • 7" HMI Ethernet colour touch screen terminal – 1 Qty • Unmanaged switch, 8 copper ports – 1 Qty • DC Power Supply, 24VDC, 3A – 1 Qty • Miniature circuit breaker, 2P, 6A, Curve C, 415V – 1 Qty • RCCB, 2P, 25A, 30mA, AC-type – 1 Qty • Contactor, 3P, 9A, 4KW, 1NO+1NC, 220VAC COIL – 1 Qty • Set of programming cables for the PLC and display unit – 1 Qty • Set of cables with round male connectors and flying leads, 4mm – 1 Set **Electrical Characteristics**: • Voltage: 230V, 1P+N+E • Frequency: 50/60 Hz ± 5% **Mechanical Parameters:** • Minimum Dimensions: 690 W x 360D x 795H mm • Tabletop **Applicable Software:** • PLC Programming Software (100 user permanent license) • HMI Programming Software (single user permanent license) The equipment should be supported with relevant technical and practical manuals.	
9.2	**Static Applications panel** The application panels should be designed to wire out various digital/ analogue inputs and outputs from the PLC. The output of the PLC program can be visualized through the LEDs on the application panels. • Traffic light module – 1 Qty • Vehicle parking module – 1 Qty • Elevator Lift module – 1 Qty • Washing machine control module – 1 Qty	1 set

	• Bottle filler control module – 1 Qty • Packaging module – 1 Qty • Level & Pump control module – 1 Qty • Fan control module – 1 Qty • Star- Delta control module – 1 Qty • Safety door control module – 1 Qty • Conveyor belt control module – 1 Qty • Stepper motor module – 1 Qty • DC motor control module – 1 Qty **Electrical Characteristics:** • Voltage: 24V, DC	
9.3	**Sensor Case** **Tender Specifications** The didactic package should be designed to study various industrial sensors. The various types of detectors and targets should be representative of the equipment found in an industrial environment. The power supply box should be equipped with indicator lights to show the states of the detectors. The package should be designed to achieve the following learning objectives: **Finding out about the various sensor technologies used in industrial detection:** - Photoelectric detectors (barrier, reflex, fibre optics, background obliteration, etc.) - Inductive and capacitive detectors for detection of various materials, - Detection of rectilinear or angular movement via position switches. • I implement detectors • Making adjustments • Setting up a detection chain **Detailed Product Description:** • A grooved Aluminium plate with sliding profiles possible to hold & slide the aluminium vices in X & Y axis – 1 Qty • Fast-opening vices with fine screw tightening system – 2 Qty • Cam with 15°, 30°, 45°, and 90° angles – 1 Qty • Limit switch, metal end plunger with elastomer boot 1NO + 1 NC PG11 – 1 Qty • Limit switch plastic thermoplastic roller lever 1 NO + 1NC PG-11 cable – 1 Qty • Limit switch thermoplastic roller lever plunger horizontal action in 1 direction 1 NO+1NC PG-11 cable entry – 1 Qty • Inductive sensor M12 sensing distances 8mm 1 NO – 1 Qty • Inductive sensor M18 sensing distances 8mm PNP – 1 Qty • Inductive sensor M30 sensing distances 8mm – 1 Qty • Capacitive Proximity sensor M18 sensing distances 5 mm – 1 Qty • Photo electric sensor sensing distance 30m through beam need a transmitter – 1 Qty • Photo electric sensor sensing distance 30m through beam need an emitter – 1 Qty • Photo electric sensor nominal sensing distances 1m defuse – 1 Qty • Photo electric fibre amplifier – 1 Qty	2 Set

	• Plastic fibre optic for sensor 3m long – 1 Qty
	• Fibre optic amplifier – 1 Qty
	• Various types of Reflectors (Glass, Aluminium, mirror, brass, copper, acrylic) – 1 Qty
	• Power supply box – 1 Qty
	  • With regulator 0-24 V variable direct current power supply
	  • NPN sensors powering outlets
	  • PNP sensors powering outlet
	  • DC motor power outlet with potentiometer control
	  • Digital counter output panel with bits input
	Electrical Characteristics:
	• Voltage: 230V, 1P+N+E
	• Frequency: 50/60 Hz ± 5%
	The equipment should be supported with relevant technical and practical manuals.	

9.4	**Accessories for Automation Programming - Infra Details** • Computers with two monitors – 4 Qty Processor: Intel Core i5 or above Operating System: Microsoft Windows 10 Office Suite: Microsoft Office 365 Memory (RAM): 8-16 GB of RAM Storage: 240 GB solid state drive, or larger. Monitor: Desktop: 14″ – 19″ widescreen flat-panel display (dual monitors) • Tables, 3.45 Mx1.2 M, with Storage and Power supply – 2 Qty	1 Set

Module 10: Technical Specifications for SCADA

10	**Industrial communication and SCADA** **Tender Specifications** SCADA (Supervisory Control and Data Acquisition) is a software application for monitoring and controlling industrial processes, which gathers data in real time from remote locations and displays at single platform in order to monitor and control process. The SCADA bench should be designed based on a two-factory scenario each factory representing its respective station with the following learning objectives: • PLC communication protocols • PLC and HMI programming • Software to design supervision system • Alarms and report management • Variety of graphics and animations • Extensive data and event logging • Real-time and historical trending • Wizards for screen development • Communication: CAN Open, Ethernet, TCP/IP • Extensive tags and database management • Script based excel report generation • Advance component library • Open database connectivity • OLE for process control (OPC Client)	2 Sets

Detailed Product Description:

- Station-1: Master Process
- Back plane, 8 slots – 1 Qty
- Back plane, 6 slots – 1 Qty
- Power Supply for PLC, 24VDC, 16.8 W – 2 Qty
- Central Processing Unit for PLC, max 1024 discrete + 256 analog I/O – 1 Qty
- Remote IO Adaptor module – 1 Qty
- Ethernet module - flash memory card - 1 x RJ45 10/100 – 1 Qty
- Ethernet module, 4 x RJ45 10/100 – 1 Qty
- Digital input module, 16I, positive discrete input 24VDC – 1 Qty
- Digital output module, 16 relays, 24VDC/24V to 240VAC – 1 Qty
- Analog IO module - 4 inputs supporting Current 0~20 mA/Current 4~20 mA, Voltage +/- 10V, Voltage 0~10V, Voltage 0~5V, Voltage 1~5V /2 Analog outputs supporting Current: 0~20 mA, Current: 4~20 mA, Voltage: +/- 10V – 1 Qty
- Standard Network Interface Module, Ethernet/IP 10...100 Mbit/s – 1 Qty
- Metal enclosure suitable printed – 1 Qty
- Station-2: Slave Process
- Power supply for the standard network interface module
- Basic digital input kit, 24VDC, 16I – 1 Qty
- Basic digital output kit, 24VDC, 16I – 1 Qty
- Brick PLC, 40IO, 24VDC – 1 Qty
- Variable Speed drive, 0,37KW, 200V, 1PH – 1 Qty
- Unmanaged hub switch – 2 Qty
- HMI 7" screen, 2 serial ports,1 Ethernet port – 1 Qty
- HMI 10.1" screen, 2 serial ports,1 Ethernet port – 1 Qty
- DC Power supply, 24VDC, 5A – 2 Qty
- Contactor, 3P, 12A, 220VAC coil – 2 Qty
- Indicators, dia 22mm, 24VDC – 18 Qty
- Push buttons, dia 22mm – 18 Qty
- Selector Switch – 2 Qty
- Tower light, 40 MM, 100-240 V, BUZZER, BLINKING, LED, GREEN, ORANGE, – 2 Qty
- Metal enclosure suitable printed – 1 Qty

Electrical Characteristics:

- Voltage: 230V, 1P+N+E
- Frequency: 50/60 Hz ± 5%

Mechanical Parameters:

- Minimum Dimensions: 690 W x 360D x 795H mm
- Weight: 50Kg

Applicable Software:

- PLC Programming Software (100 user permanent license)
- PLC Programming Software, Machine Basic (10 user permanent license)
- Drive Configuration Software (10 user permanent license)
- HMI Programming Software (single user permanent license)
- SCADA Build and Runtime Software with minimum 100 Tags (single user permanent license)

	• This equipment to be supplied with one fully developed project utilising the complete architecture as used in the equipment. • The equipment should be supported with relevant technical and practical manuals.	
10.1	**Accessories for Industrial communication and SCADA - Infra Details** • Computers with Two monitors – 2 Qty Processor: Intel Core i5 or above Operating System: Microsoft Windows 10 Office Suite: Microsoft Office 365 Memory (RAM): 8-16 GB of RAM Storage: 240 GB solid state drive, or larger. Monitor: Desktop: 14″ – 19″ widescreen flat-panel display (dual monitors) • Computer table- 2 Qty • Tables, 3.45 Mx1.2 M, with Storage and Power supply – 2 Qty	1 Set

Module 11: Technical Specifications for Robotics

11	**Robotics and Motion Controls** The didactics supplied below must achieve the mentioned learning objectives: 6 Axis COBOT Training Bench Liner Axis Pack with Motor and Controller 2 Axis Robots with Motor and Controller	
11.1	6 Axis COBOT Training Bench **Tender Specifications** Collaborative robots (COBOT) are a form of robotic automation designed to work alongside human workers in a shared, collaborative workspace. The accuracy, uptime and repeatability of collaborative robots are designed to complement the intelligence and problem-solving capabilities of a human worker. To understand and learn the operation capabilities of COBOT there should be a standalone station of COBOT with PLC and HMI interface should allow to independently program and configure each controller and also should have a working application showing the basic operations of COBOT like sorting, picking, assembling, placing with coordination with smart sensors & PLC/HMI controllers. Aligning to the above aspects, the cobot design should achieve the following learning objectives: • Understand the basics of articulated robot and its terminologies. • Know the difference between an articulated robot and collaborative robot. • Know about the different motion interpolations. • Configure the settings inside a COBOT controller according to ISO/TS 15066 • Understand the operation of gripper and its integration with COBOT manipulator. • Understand the hardwiring and programming of collaborative robots. • Understand the programming of collaborative robot with PLC & HMI • Experience different applications using collaborative robots. • Understand the programming of collaborative robots with Vision camera & I/O Link sensors. **Detailed Product Description:** • Collaborative Robot with 6 degrees of freedom; Payload 3 KG; Operating radius 626mm – 1 Qty	1 Sets

- COBOT Controller – 1 Qty
- HMI controller' 5”7 color – 1 Qty
- Back plane, 8 slots – 1 Qty
- Central Processing Unit for PLC, max 1024 discrete + 256 analog I/O, Modbus and/or Ethernet – 1 Qty
- DC Power supply for PLC, 24VDC, 16.8W – 1 Qty
- Module digital input, 16I, 24VDC, positive discrete input – 1 Qty
- Module digital outputs, 16Q relays, 24VDC/24V to 240VAC – 1 Qty
- Unmanaged switch, 8 copper ports – 1 Qty
- DC Power Supply, 24VDC, 3A – 1 Qty
- Miniature circuit breaker, 2P, 6A, Curve C, 415V – 1 Qty
- RCCB, 2P, 25A, 30mA, AC-type – 1 Qty
- Operating Terminal (Android Tablet) – 1 Qty
- Electric Jaw Gripper- Size: 40, Standard flange, digital I/O, Stroke per jaw: 6 mm, Power supply: 24 V DC, Max. gripping force: 140 N – 1 Qty
- Mobile Workstation with application – 1 Qty
- Terminals – 1 Qty
- Cables – 1 Qty
- LED Tower for Status Indication – 1 Qty
- Push Buttons – 2 Qty
- Selector Switch – 1 Qty
- Emergency Switch – 1 Qty
- Vision camera – Monochrome - Autofocus (liquid lens) 6.2 mm – 1 Qty
- Conveyor running with 24V DC motor– 1 Qty
- Pneumatic clamping cylinder – 100mm stroke – 1Qty
- Pneumatic clamping cylinder with storage magazine – 100 mm stroke – 1 Qty
- Storage plates – 4 Qty
- Circular workpieces – 9 Qty
- I/O link-based Color sensor - White LED, Operating range 30-500 mm, Spot size from 3.5mm - 18mm, NPN / PNP – 2 Qty
- I/O link based Photoelectric sensors, Diffused type - 30m sensing range – 8 Qty
- Circular Connector, 4 Contacts, Cable Mount, M12 Connector, Plug, IP67 – 1 Qty
- M12 A Coded 4 Pin Male 90° Un-Shielded Screw Type Field Wirable Connector – 16 Qty
- IO-Link Master Compact67 EtherNet IP, 8x Class A, IO-Link V1.1.2, max. 16 I/O, 8xM12 A-code 5pin female, 2xM12 D-code 4pin female, 2x7/8" 5pin male + female – 1 Qty
- Photoelectric Sensor, Block Sensor, 2 mm - 120 mm Detection Range – 1 Qty
- IO-Link Sensor Hub V1.1.3 Class A Base module with M12 5-pin connector 8xM12, 3-pole, 24VDC, LED, 16DI/DO, PNP – 1 Qty
- Conduent Gland – PG 16 & 36 – 1 Qty each
- Cable trunking, PVC, 50x25mm – 1 Set

Electrical Characteristics:

- Voltage: 230V, 1P+N+E
- Frequency: 50/60 Hz ± 5%

Mechanical Parameters:

	• Dimensions: 1200 W x 1550D x 1200H mm • Self-standing structure **Applicable Software:** • COBOT Configuration Software (single user permanent license) – 1 Qty • PLC Programming Software (single user permanent license) – 1 Qty • HMI Programming Software (single user permanent license) – 1 Qty The equipment should be supported with relevant technical and practical manuals.	
11.2	**Linear Axis Pack with Motor and Controller** **Tender Specifications** The one axis packs should make it possible to produce a machine with robotic movements. They should be composed of one or more axes with linear displacement, with toothed belt drive and roller guides. The packages should be delivered by mounted servo motor. This pack should be designed to allow us to integrate and wire a linear axis robot to achieve the following learning objectives: • Make technical choices concerning speed / positioning / size • Study the mechanical calculation of an axis • Implement products • Set up axes with drive software's • Implement CANOpen bus. • Manage end-of-line security • Perform an original take and a manual control of type JOG • Discover automated motion control, synchronize axis **Detailed Product Description** • 40x40mm profile – 1 Qty • 1000mm stroke, 2 end of line sensors PNP – 1 Qty • Payload 4 kg, speed 2 m/s, acc. 15 m/s2 – 1 Qty • servo motor BSH, 0.9N.m, 4000rpm, 55mm, untapped shaft, Sincos single turn, without brake, IP50– 1 Qty • Planetary reducer 1:3 – 1 Qty • Motor mounted on the right, reversible on the left – 1 Qty • CAN Open communication 0.35-0.4 kW 1.8-1.5 A – 1 Qty • Motion servo drive, 6A, 3Ph, supply voltage 208 to 480V, 0.4kW – 1 Qty • Inductive proximity sensors, M8, 24VDC – 2 Qty **Electrical Characteristics:** • Voltage: 230V, 1P+N+E • Frequency: 50/60 Hz ± 5% **Applicable Software:** • Servo drive configuration Software (single user permanent license) The equipment should be supported with relevant technical and practical manuals.	2 Sets
11.3	**2 Axis Robots with Motor and Controller** **Tender Specifications** The two axis packs should be possible to produce a machine with robotic movements. They should be composed of one or more axes with linear displacement, with toothed belt drive and roller guides. The packs are delivered with mounted servo motors. This pack should be designed to allow us to integrate and wire a 2-axis axis robot to achieve the following learning objectives: • Make technical choices concerning speed / positioning / size • Study the mechanical calculation of an axis • Implement products • Set up axes with drive software's	2 Sets

	• Implement CAN Open bus. • Manage end-of-line security • Perform an original take and a manual control of type JOG • Discover automated motion control, synchronize axis **Detailed Product Description:** • 40x40mm profile 40 – 1 Qty • Stroke 350 x 350 mm – 1 Qty • PNP limit switch 4 – 1 Qty • Payload 5 kg, speed 2 m/s, acc. 15 m/s2 – 1 Qty • Motion servo drive, 9A, single phase, supply voltage 115 to 230V, 0.3 to 0.5kW– 1 Qty • Servo-MOTOR – 1 Qty **Electrical Characteristics:** • Voltage: 230V, 1P+N+E • Frequency: 50/60 Hz ± 5% **Applicable Software:** • Servo drive configuration Software (single user permanent license) The equipment should be supported with relevant technical and practical manuals.	
11.4	**Accessories for Robots and control automation - Infra Details** • Computers – 2 Qty Processor: Intel Core i5 or above Operating System: Microsoft Windows 10 Office Suite: Microsoft Office 365 Memory (RAM): 8-16 GB of RAM Storage: 240 GB solid state drive, or larger.	1 Set
11.5	**Accessories for Robotics and Motion Controls – Tools** • Wire Stripper – 2 Qty • Side cutting plier – 2 Qty • Combination Plier – 2 Qty • Measurement tape – 2 Qty • Mini Hack Saw – 2 Qty • Crimping tool, tube type lugs – 1 Qty • Electrician knife – 2 Qty • Allen key set – 1 Qty • Screwdriver set – 2 Qty • Spanner set – 1 Qty • Q type plier – 2 Qty • Mini screwdriver set – 1 Qty • Soldering Gun and accessories – 1 Qty	1 Set

Module 12: Technical Specifications for Digital Factory Module

12	**Digital Factory** Tender Specifications: **Consider the following product development scenario to develop the automated modular production line:**	1 set

	The production line should implicate the pharmacy automation line where the empty bottle must be filled with solid fillings then must be capped and inspected for the quality and should be finally stored. This functional modular production station must have all kinds of actuators like electrical DC, AC & Servo motors with drives & pneumatic rotary and linear cylinders with smart solenoid packs. The automatic operation must include I/O link-based sensors, analogue sensors etc. This system should be controlled by industrial automation controllers like PLC & HMI provided with industrial communication protocols such as TCP/IP, Modbus & OPC UA. The entire production system should have Client level application with SCADA, IIOT, MES, ERP & OEE solutions, these solutions must be provided with built time software and configurable dashboards. The entire system should be protected with OT cyber security solution; the Firewall should be allowed to change the configuration as per the need of the project functionality. The Augmented reality solution should be provided to use as real time maintenance solution for the modular station and act as training Adi for the users. The mechanical built up of the system must be modular to be able to use each functional operation individually before combining entire system. The mechanical components should be easily assembled and disassembled to encourage mechanical alignment learning for the users, the sensors used should be allowed to reconfigure and recommission as per need of the program. This modular system should be the entire DIY project starting from building mechanical components to entire software programming. With the technical writeup above, the automated process line developed should deliver the following learning objectives: • Know-how and assessing an automatic industrial control system. • Learning component involving various technologies: Pneumatic, Digital & analogue sensors, energy management, I-O link, Wireless sensors, servo drives, motor controllers, COBOT, RFID, Grippers, PLC, SCADA, Electrical actuators, VFD, Vision camera etc. • Learning different software like MES, ERP & AR/MR etc • Making a functional and structural analysis • Build & test modular production system from basic components for individual station. • Studying electrical diagrams • Analysing components and an electrical wiring system • Commissioning different Automation unit • Design multiple production lines. • Use Extended Reality to control the process. • Analyse statistical production data and machine states using ERP & OEE. • Powering a system to service. • Operating and piloting a line. • Programming, modifying a PLC/HMI/COBOT/SCADA program. • Understand the Technologies adopted in smart factory like all Industrial communication (MODBUS, Ethernet IP) & MES system. • Importance of implementing OT cyber security. • Developing digital twin for the production line using AR software	

- Use of Supervision tool.
- Troubleshooting.

The modular production line should implicate the following functionality in individual stations to achieve the above learning objectives

Feeder Station: Empty bottles in the rotary feeder move to the clamping cylinder, where the blowing unit cleans them. RFID tags are written with product information during cleaning. Bottles then connect to the filling conveyor.

Sorting & Filling Station: The hopper collects colored balls, sorted by a color sensor into different containers. The servo controls the hopper's movement. RFID tags read at the filling conveyor determine where empty bottles stop for filling.

Bottles are filled with the specified color and quantity of balls as per the RFID data.

The pick-and-place unit transfers the filled bottles to the servo linear drive.

Capping Station: A cap dispenser floats the correct cap onto the conveyor. The pneumatic capping unit places and secures the cap onto the bottle.

Visual Inspection Station: Finished bottles are placed on Buffer Cylinder, then moved to the Rotary Inspection Table for quality checks using a vision camera. Good bottles are placed on the weighing table.

Storage station: The COBOT places the capped bottle on the load sensor.

The RFID head encodes the bottle's data.

The COBOT transfers the bottle to the conveyor, which leads to ACS storage.

ACS storage can hold the bottle in 12 locations based on the program.

COBOT station: Final Bottles are sealed as "OK" by the COBOT sealer. The COBOT gripper transfers capped bottles to finished storage by color/pattern, while rejected bottles are set aside.

The automated process line to include minimum following stations and digital technologies:

- Feeder Station
- Sorting & Filling Station
- Capping Station
- Visual Inspection Station
- Storing Station
- COBOT Station

Detailed industrial station description:

- **Feeder Station**

Desired functionality:

- The empty bottles in the rotary feeder to will transversed to rotary cylinder stopping at the clamping cylinder, the blowing unit cleans the empty bottle. The bottle with RFID tag inbuilt will be written with demanded product by RFID header during cleaning process. The bottles continue to travel connecting to Filling conveyor.

Station Composition:

- **PLC – 1 set**
  - Rated supply voltage - 100...240 V AC
  - Discrete input number - 24, discrete input 8fast input conforming to IEC 61131-2 Type 1
  - Discrete output type - Relay & Transistor
  - Discrete output number - 4 transistor 4 fast output, 12 relay

- Discrete output voltage - 5...125 V DC for relay output
- 5...250 V AC for relay output
- 24 V DC for transistor output
- Discrete input logic - Sink or source
- Discrete input voltage - 24V DC
- Discrete output current - 0.1 A for fast output (PTO mode)
- 2 A for relay output
- 0.5 A for transistor output
- Discrete output logic Positive logic (source)
- Output voltage limits - 125 V DC relay output
- 30 V DC transistor output
- 277 V AC relay output
- Communication port protocol - Modbus TCP
- Ethernet/IP
- Analogue input number – 2
- Analogue input type- current 4...20 mA
- current 0...20 mA
- voltage 0...10 V

- HMI – 7" wide screen touch panel, 16M colours, COM x 2, ETH x 1, USB host / device, RTC, DC24V – 1 Qty
- Ethernet switch (unmanaged) – 1 Qty
- AC- DC convertor (230v to 24v / 3A) – 1 Qty
- Tower lamp (3 lamps) – 1 Qty
- Push Button – 4 Qty
- MCB (Control & Power circuit) – 2 Qty
- Distributor (Main switch) – 1 Qty
- Servo Motor - 400W – 1 Qty
- Servo Motor Drive - 400W – 1 Qty
- Gear box for Servo Motor – 1 Qty
- Indexing Table – 1 Qty
- Conveyor module – 1 Qty
- DC – 24V Motor - 1 Qty
- I/O Link Master (Ethernet I/P) - 1 Qty
- I/O Link Hub – 1 Qty
- 5 Pin M12 Connector - 8 Qty
- Pneumatic Valve Bank (I/O link) - 1 Qty
- Pneumatic Cylinders and Connectors – 1 Qty
- RFID head & tags – 1 Qty
- The equipment should be supported with relevant technical and practical manuals.

Electrical Characteristics:

- Voltage: 230V, 1P+N+E
- Frequency: 50/60 Hz ± 5%

Mechanical Parameters:

- Min Dimensions: 1174L x 815W x 1373H mm
- Self-standing

Sorting & Filling Station

Desired functionality:

- The Hopper in "Sorting and Filling station" will have collection of all the coloured balls and these balls will be sorted in different container based on the colour identified by colour sensor, the movement of Hopper is precisely controlled by Servo.
- The bottle RFID tag will be read with the requirement at the beginning of the filling conveyor and empty bottle will be made to stop at the respective coloured container as per the demand. The bottle will be filled with demanded colour and number of balls as read in RFID tag.

Station Composition:

- **PLC – 1 set**
  - Rated supply voltage - 100...240 V AC
  - Discrete input number - 24, discrete input 8 fast input conforming to IEC 61131-2 Type 1
  - Discrete output type - Relay & Transistor
  - Discrete output number - 4 transistor 4 fast output, 12 relay
  - Discrete output voltage - 5...125 V DC for relay output
  - 5...250 V AC for relay output
  - 24 V DC for transistor output
  - Discrete input logic - Sink or source
  - Discrete input voltage - 24V DC
  - Discrete output current - 0.1 A for fast output (PTO mode)
  - 2 A for relay output
  - 0.5 A for transistor output
  - Discrete output logic Positive logic (source)
  - Output voltage limits - 125 V DC relay output
  - 30 V DC transistor output
  - 277 V AC relay output
  - Communication port protocol - Modbus TCP
  - Ethernet/IP
  - Analogue input number – 2
  - Analogue input type- current 4...20 mA
  - current 0...20 mA
  - voltage 0...10 V
- HMI – 7" wide screen touch panel, 16M colours, COM x 2, ETH x 1, USB host / device, RTC, DC24V – 1 Qty
- Ethernet switch (unmanaged) – 1 Qty
- AC- DC convertor (230v to 24v / 3A) – 1 Qty
- Tower lamp (3 lamps) – 1 Qty
- Push Button – 4 Qty
- MCB (Control & Power circuit) – 2 Qty

- Distributor (Main switch) – 1 Qty
- Conveyor module – 1 Qty
- DC – 24V Motor - 1 Qty
- I/O Link Master (Ethernet I/P) - 1 Qty
- I/O Link Hub – 1 Qty
- 5 Pin M12 Connector – 8 Qty
- Dispensing Bottles – 12 Qty
- Pneumatic Valve Bank (I/O link) – 1 Qty
- Pneumatic Cylinders and Connectors - 1 Qty
- Servo Slide – 1 Qty
- Servo Motor - 400W – 1 Qty
- Servo Motor Drive - 400W - 1 Qty
- Gear box for Servo Motor – 1 Qty
- Colour Sensor – 1 Qty
- Photo sensor – 6 Qty
- RFID head – 1 Qty

The equipment should be supported with relevant technical and practical manuals.

Electrical Characteristics:

- Voltage: 230V, 1P+N+E
- Frequency: 50/60 Hz ± 5%

Mechanical Parameters:

- Min Dimensions 1195L x 820W x 1710H mm
- Self-standing

Capping Station

Desired functionality:

- The bottle will be picked and placed on the Servo linear drive by Pick and place unit.
- The cap dispenser floats the correct cap on the Rotary plate through slider; the Pneumatic capping unit grab the cap and drop on the bottle and rotates to fix the threaded cap to the ball filled bottle

Station Composition:

- PLC – 1 set
  - Rated supply voltage - 100...240 V AC
  - Discrete input number - 24, discrete input 8fast input conforming to IEC 61131-2 Type 1
  - Discrete output type - Relay & Transistor
  - Discrete output number - 4 transistor 4 fast output, 12 relay
  - Discrete output voltage - 5...125 V DC for relay output
  - 5...250 V AC for relay output
  - 24 V DC for transistor output
  - Discrete input logic - Sink or source
  - Discrete input voltage - 24V DC
  - Discrete output current - 0.1 A for fast output (PTO mode)
  - 2 A for relay output

- 0.5 A for transistor output
- Discrete output logic Positive logic (source)
- Output voltage limits - 125 V DC relay output
- 30 V DC transistor output
- 277 V AC relay output
- Communication port protocol - Modbus TCP
- Ethernet/IP
- Analogue input number – 2
- Analogue input type- current 4...20 mA
- current 0...20 mA
- voltage 0...10 V

- HMI – 7" wide screen touch panel, 16M colours, COM x 2, ETH x 1, USB host / device, RTC, DC24V – 1 Qty
- Ethernet switch (unmanaged) – 1 Qty
- AC- DC convertor (230v to 24v / 3A) – 1 Qty
- Tower lamp (3 lamps) - 1 Qty
- Push Button – 4 Qty
- MCB (Control & Power circuit) – 2 Qty
- Distributor (Main switch) – 1 Qty
- Servo Slide – 1 Qty
- Servo Motor - 400W - 1 Qty
- Servo Motor Drive - 400W – 1 Qty
- Rotary Vane Motor (Pneumatic) – 1 Qty
- Parallel Gripper – 1 Qty
- Pneumatic Valve Bank (I/O link) - 1 Qty
- Pneumatic Cylinders – 6 Qty
- I/O Link Master (8 Port) – 1 Qty
- 5 Pin M12 Connector – 8 Qty
- Vacuum unit – 1 Qty

The equipment should be supported with relevant technical and practical manuals.

Electrical Characteristics:

- Voltage: 230V, 1P+N+E
- Frequency: 50/60 Hz ± 5%

Mechanical Parameters:

- Min Dimensions: 1102L x 722W x 1485H mm
- Self-standing

<u>Visual Inspection Station</u>

Desired functionality:

- The final bottle will be placed on Buffer cylinder 1, and gripper unit places on the Rotary Inspection table for Quality Inspection using Vision camera, all good bottles will be placed on the Buffer cylinder by gripper unit.

Station Composition:

- PLC – 1 set
  - Rated supply voltage - 100...240 V AC

- Discrete input number - 24, discrete input 8 fast input conforming to IEC 61131-2 Type 1
- Discrete output type - Relay & Transistor
- Discrete output number - 4 transistor 4 fast output, 12 relay
- Discrete output voltage - 5...125 V DC for relay output
- 5...250 V AC for relay output
- 24 V DC for transistor output
- Discrete input logic - Sink or source
- Discrete input voltage - 24V DC
- Discrete output current - 0.1 A for fast output (PTO mode)
- 2 A for relay output
- 0.5 A for transistor output
- Discrete output logic Positive logic (source)
- Output voltage limits - 125 V DC relay output
- 30 V DC transistor output
- 277 V AC relay output
- Communication port protocol - Modbus TCP
- Ethernet/IP
- Analogue input number – 2
- Analogue input type- current 4...20 mA
- current 0...20 mA
- voltage 0...10 V

- HMI – 7" wide screen touch panel, 16M colours, COM x 2, ETH x 1, USB host / device, RTC, DC24V – 1 Qty
- Ethernet switch (unmanaged) – 1 Qty
- AC- DC convertor (230v to 24v / 3A) – 1 Qty
- Tower lamp (3 lamps) – 1 Qty
- Push Button – 4 Qty
- MCB (Control & Power circuit) – 2 Qty
- Distributor (Main switch) – 1 Qty
- Conveyor module - 1 Qty
- Rodless Cylinder – 1 Qty
- Rotary Vane Motor – 1 Qty
- Parallel Gripper – 1 Qty
- Vision Camera – 1 Qty
- Pneumatic Valve Bank – 1 Qty
- Pneumatic Cylinders – 1 Qty
- I/O Link Master – 1 Qty
- 5 Pin M12 Connector – 1 Qty

The equipment should be supported with relevant technical and practical manuals.

Electrical Characteristics:

- Voltage: 230V, 1P+N+E
- Frequency: 50/60 Hz ± 5%

Mechanical Parameters:

- Min Dimensions: 1030L x 818W x 1350H mm
- Self-standing

Storing Station

Desired functionality:

- The Capped bottle placed by COBOT on the load sensor.
- The RFID head writes the data of the bottle
- The bottle is placed to the conveyor by COBOT
- The bottle further reached to ACS storage
- The ACS storage can store the bottle in 12 different locations based on program

Station Composition:

- PLC – 1 set
  - Rated supply voltage - 100...240 V AC
  - Discrete input number -24, discrete input 8 fast input conforming to IEC 61131-2 Type 1
  - Discrete output type - Relay & Transistor
  - Discrete output number - 4 transistor 4 fast output, 12 relay
  - Discrete output voltage - 5...125 V DC for relay output
  - 5...250 V AC for relay output
  - 24 V DC for transistor output
  - Discrete input logic - Sink or source
  - Discrete input voltage - 24V DC
  - Discrete output current - 0.1 A for fast output (PTO mode)
  - 2 A for relay output
  - 0.5 A for transistor output
  - Discrete output logic Positive logic (source)
  - Output voltage limits - 125 V DC relay output
  - 30 V DC transistor output
  - 277 V AC relay output
  - Communication port protocol - Modbus TCP
  - Ethernet/IP
  - Analogue input number – 2
  - Analogue input type- current 4...20 mA
  - current 0...20 mA
  - voltage 0...10 V
- HMI – 7" wide screen touch panel, 16M colours, COM x 2, ETH x 1, USB host / device, RTC, DC24V – 1 Qty
- Ethernet switch (unmanaged) – 1 Qty
- AC- DC convertor (230v to 24v / 3A) – 1 Qty
- Tower lamp (3 lamps) – 1 Qty
- Push Button – 4 Qty
- MCB (Control & Power circuit) – 2 Qty
- Distributor (Main switch) – 1 Qty

- Conveyor module – 1 Qty
- Load sensor – 1 Qty
- Pneumatic cylinder – 1 Qty
- RFID head – 1 Qty
- Photo sensors – 12 Qty
- Servo Motor – 400 W - 1 Qty
- Servo Drive – 400 W – 1 Qty
- Pneumatic gripper – 1 Qty

The equipment should be supported with relevant technical and practical manuals.

Electrical Characteristics:

- Voltage: 230V, 1P+N+E
- Frequency: 50/60 Hz ± 5%

Mechanical Parameters:

- Min Dimensions: 1232L x 992W x 1506H mm
- Self-standing

COBOT Station

Desired functionality:

- The bottle stopped by the stopper at the edge of the cylinder will be sealed as "OK" by Sealer mounted on the COBOT.
- The gripper in COBOT grabs the sealed bottle and place on the conveyor

Station Composition:

- PLC – 1 set
  - Rated supply voltage - 100...240 V AC
  - Discrete input number - 24, discrete input 8 fast input conforming to IEC 61131-2 Type 1
  - Discrete output type - Relay & Transistor
  - Discrete output number - 4 transistor 4 fast output, 12 relay
  - Discrete output voltage - 5...125 V DC for relay output
  - 5...250 V AC for relay output
  - 24 V DC for transistor output
  - Discrete input logic - Sink or source
  - Discrete input voltage - 24V DC
  - Discrete output current - 0.1 A for fast output (PTO mode)
  - 2 A for relay output
  - 0.5 A for transistor output
  - Discrete output logic Positive logic (source)
  - Output voltage limits - 125 V DC relay output
  - 30 V DC transistor output
  - 277 V AC relay output
  - Communication port protocol - Modbus TCP
  - Ethernet/IP
  - Analogue input number – 2
  - Analogue input type- current 4...20 mA
  - current 0...20 mA

	• voltage 0...10 V • HMI – 7" wide screen touch panel, 16M colours, COM x 2, ETH x 1, USB host / device, RTC, DC24V – 1 Qty • Ethernet switch (unmanaged) - 1 Qty • AC- DC convertor (230v to 24v / 3A) – 1 Qty • Tower lamp (3 lamps) – 1 Qty • Push Button – 4 Qty • MCB (Control & Power circuit) – 2 Qty • Distributor (Main switch) – 1 Qty • Servo Motor - 700W – 1 Qty • Servo Motor Drive - 700W – 1 Qty • 6 Axis COBOT – 1 Qty • Linear drive – 1 Qty • Load sensor – 1 Qty • Conveyor module – 1 Qty • Pneumatic cylinder – 1 Qty The equipment should be supported with relevant technical and practical manuals. **Electrical Characteristics:** • Voltage: 230V, 1P+N+E • Frequency: 50/60 Hz ± 5% **Mechanical Parameters:** • Min Dimensions: 1085L x 818W x 1582H mm • Self-standing **Applicable Software's:** • PLC Programming Software (single user permanent license) • HMI Configuration tool (single user permanent license) • Configurable Extended reality developer tool (single user 1 year term license) • SCADA supervision software (single user 1 year term license) • IOT solution software with cloud solution (single user 1 year term license) • Customised & Configurable MES/ERP software (single user 1 year term license) • Overall Efficiency Equipment & Energy management (single user 1 year term license) • Cyber security configuration software (single user 1 year term license)	

Module 13: Technical Specifications for IIOT and Extended Reality

Sl No	Description	Reqd. Qty in Set
13	**IIOT Supervision Development & Predictive Maintenance Bench** **Tender Specifications** **This module is comprised of two discrete technologies.** • The Industrial Internet of Things (IIOT) & Extended Reality	2 Sets

	• IIOT is at the heart of modern industry. Measuring and analysing product and process characteristics makes it possible to anticipate and predict failures & to make responsible decisions. • Extended Reality allows maintenance and operations technicians to work more efficiently on their tasks and to intervene under conditions to help promote safety. • This equipment should be able to design and implement IIOT applications, should also have Installation and connection of measurement (wireless & wired) sensors, Real-time visualisation of machine and process states and must give easy access to actionable information in the cloud & must allow to manage operations and assets in the cloud—from anywhere, at any time, alongside the extended reality software should allow Development and presentation of statistical analysis control maps and also this equipment should make it possible to design and implement all the accessible applications using the configurable Extended Reality software, the IIOT & Extended reality solutions should be implemented with actual application panel having all provisions to connect different sensors and also must have operational actuators The package should be designed to achieve the following learning objectives: • Transform industrial equipment by integrating connected objects • Develop or modify a product and process monitoring application using the measured data • Build control maps and analyze the data • Performing maintenance, adjustment, and logging procedures in a guided manner, • Real-time visualization of machine states: operation, efficiency, production, • Visualization of machine components and virtual security zone • Access to documentation, • Follow-up of the operations carried out and sharing between the various stakeholders • Rendering useful documentation accessible from dynamic links and QR codes • Alerting to hazards through image recognition and measurement feedback • Real-time access to the operational and monitoring data of the equipment • Guiding stakeholders in maintenance and operations **Detailed Product Description:** The starter pack includes It should be an enclosure with following components • RCBO, 10A, 30mA – 1 Qty • Wireless to Modbus/TCP, 24~240 V AC/DC, transmission frequency 2405~2480 MHz – 1 Qty • Modular box PC, Windows 10 IoT Enterprise 64 bitmulti-language, 250 GB M.2 SSD TLC, 4 GB RAM DDR3 internal – 1 Qty • DC Power supply, 100~240VAC to 24VDC, 5A, 120W – 1 • Compact industrial Wi-Fi access point and client, data rates up to 300 Mbps - Wi-Fi 802.11n - MIMO 2T2R - 2.4/5 GHz – 1 Qty	

- Unmanaged Switch, 10/100BASE-TX - 5 port(s) copper cable, 12~24VDC, 2.2W – 1 Qty
- Enclosure with handle – 1 Qty

The application pack includes It should be an enclosure with following components

- Mesh plate for components installation with Enclosure, 800x600mm – 1 Qty
- Power incomer terminal block – 1 Qty
- Transformer, 230 to 400 V to 24 V, 63VA – 1 Qty
- DC power supply,24VDC, 1.2A – 1 Qty
- Control Circuit breakers 1P+N, 0.5A, Icu 50 kA@240V – 1 Qty
- Control Circuit breakers, 1P+N, 1A, Id=14 A – 1 Qty
- Control Circuit breakers, 1P+N, 2A, Icu=15 kA@240 V – 1 Qty
- Control Circuit breakers, 1P+N, 3A, Id = 40A – 1 Qty
- Isolating switch, 3P, 25 A – 1 Qty
- Fuse Switch disconnector, 32A, 690VAC – 1 Qty
- Contactor, 9A, 1NO, 1NC, 24VAC COIL, 400V – 1 Qty
- Changeover contactor, 9A, 5.5KW, 24VAC COIL, 400V – 1 Qty
- Thermal magnetic circuit breaker, 3P, 2.5A to 4A – 1 Qty
- Compact Motor Starter with Modbus port, 3P, 12A/690V, coil 24VDC – 1 Qty
- Brick PLC with 4 fast inputs, 16 regular inputs & 16 relay outputs, input voltage of 24V DC, an output voltage of 24V DC/220V AC, output current of 2A, mini B USB 2.0, serial link 1 and RS485, serial link 2 and RS232/RS485, ethernet Modbus TCP/IP, and serial link 2 and RS485 – 1 Qty
- Power meter, 200 to 480VAC, Modbus RTU, RS485 – 1 Qty
- Current transformer, 40/5, inner dia 21mm – 3 Qty
- Control boxes with buttons and indicators – 2 Qty
- Emergency stops push button, 40mm dia – 2 Qty
- Push button, NO, Black – 3 Qty
- Push button, NO, Green – 1 Qty
- Selector switch – 2 Qty
- Pilot lamp, 24V AC/DC – 4 Qty
- Limit switches, 1NO+1NC – 5 Qty
- 3-phase Asynchronous Motors 400V/690, 180W – 2 Qty
- The motor is to be supplied with a terminal box having the windings wired on the terminal box with 4mm banana connectors

The sensor pack includes:

- Two push buttons with wireless control – 1 Qty
- Wireless contact temperature and humidity probes – 1Qty
- Wireless room temperature sensors – 4 Qty
- Single-phase power tags – 2 Qty
- Tetrapolar power tags – 1 Qty
- Wireless limit switch – 1 Qty
- Straight M12, 4-pin female connector – 1 Qty
- Straight M12, 5-pin male connector – 1 Qty

Applicable Software:

- Extended Reality Development software (single user 1 year term license) – 1 Qty

	• SCADA Expert development software (single user 1 year term license) – 1 Qty • SCADA Expert builder license (single user 1 year term license) – 1 Qty • Open-source software Node-RED – 1 Qty • PLC Programming Software (single user permanent license) – 1Qty • Variable speed drive configuration software (single user permanent license) – 1 Qty **Electrical Characteristics:** • Voltage: 230/400 V • Frequency: 50/60 Hz ± 5% The equipment should be supported with relevant technical and practical manuals.	
13.1	**Accessories for Extended Reality Development** • Desktop monitor with DP cable – 1 Qty Processor: Intel Core i5 or above Operating System: Microsoft Windows 10 Office Suite: Microsoft Office 365 Memory (RAM): 8-16 GB of RAM Storage: 240 GB solid state drive, or larger. Monitor: Desktop: 14″ – 19″ widescreen flat-panel display • Android or iOS tablet – 1 Qty • VR headset – 1 Qtys	2 Sets

Module 14: OT Cybersecurity

14	**OT Cybersecurity** **Tender Specifications** In industry all equipment is connected and communicated through various and varied protocols, cybersecurity becomes indispensable. The Operational technology (OT) Cybersecurity research equipment should help raise awareness of the risks of hacking and implement techniques to counter attacks by having the set of industrial controllers like PLC,HMI & drive with actuators simulating operational application, this application must have all major industrial communication protocols like Ethernet/IP, Modbus, CANOPEN etc. The equipment should provide provision of implementing the firewall network into application and should allow configuration & commissioning of the entire system to implicate the OT cyber security. The package should be designed to achieve the following learning objectives: • Understand industrial networks and their applications • Understand the risks associated with equipment networking • Implement industrial communication buses • Set up a machine and an industrial firewall to help prevent cybersecurity risks • Configuration & commissioning of Firewall • Resetting, registration & initial settings of firewall • Configuration of policies for same & different network devices • Allowing internet access via Firewall **Detailed Product Description:** • RCBO, 2P, 10A, 30mA – 1 Qty • MCB, 2P, 1A, Curve C – 1 Qty • MCB, 2P, 4A, Curve C – 1 Qty	2 Set

	• MCB, 2P,2A, Curve D – 1 Qty • DC POWER SUPPLY, 100~240V AC, 24V, 2.5A, 60W – 1 Qty • DC POWER SUPPLY, 100~240V AC, 12V, 2.5A, 60W – 1 Qty • Motor circuit breaker, 3P, 4 A – 1 Qty • PLC Back Plane, 8 slots – 1 Qty • DC Power supply module for PLC, 24VDC, 16.8W – 1 Qty • CPU for PLC, 1024 Digital I/O, Analog 256 I/O, 3 Standard Ethernet Ports – 1 Qty • CANOpen Communication module for PLC – 1 Qty • Ethernet Control network module for PLC – 1 Qty • HMI, 5.7" TFT LCD – 1 Qty • Variable speed drive, 0.37kW, 240V, 1Ph – 1 Qty • Fire wall - 10 x GE RJ45 ports (including 7 x Internal Ports, 2 x WAN Ports, 1 x DMZ Port) – 1 Qty • Manageable switch, L2 Switch - 8 x GE RJ45 ports, 2 x GE SFP, Fanless, 12V/3A power adapter of input voltage 100 - 240VAC and PSE dual powered L2+ management switch– 1 Qty • PC USB/RJ45 connection cable – 1 Qty **Applicable Software:** • PLC programming software (single user permanent license) – 1 Qty • HMI programming software (single user permanent license) – 1 Qty • Fire Wall configuration tool (single user permanent license) – 1 Qty **Electrical Characteristics:** • Voltage: 230 V • Frequency: 50/60 Hz ± 5% The equipment should be supported with relevant technical and practical manuals.	
14.1	**Accessories for OT Cybersecurity** • Desktop Computer – 1 Qty	2 Set

Module 15: Smart Power Distribution

14	**Smart IOT Power Distribution Learning System** **Tender Specifications** Intelligent IOT Power Distribution Learning System includes Intelligent IOT Power Distribution Learning Platform and power monitoring software. The learning platform consists of intelligent electrical components, operator console and supporting accessories, and the intelligent electrical components are configured with cabinet door display unit, intelligent moulded case circuit breaker and its accessories, intelligent miniature circuit breaker and its accessories, contactor, relay, and other accessories. Electrical components, power meters, temperature sensors, CTs, wired gateways, wireless gateways, wireless communication modules, switching power supplies, switches, motors used as loads, incandescent lamps, etc., which enables the students to master the power distribution system. While installing and electrically connecting the relevant devices of the system, one should be able to achieve specialized skills such as communication connection, device configuration, debugging, and software deployment of the relevant intelligent devices.	2 Set

	The learning equipment should be designed as tabletop bench, with all the equipment visible and mounted on a perforated mesh plate. This equipment should be completed wired and should be operational. The equipment should be designed to achieve learning objectives: • Understand the working principles and functional characteristics of intelligent terminal devices. • Learn the fundamentals and working with power system monitoring and management software. • Introduction to network cabling, communication protocols • Implementation and configuration of communication gateways, ethernet switch • Configuration and parameterization of micrologic control units, intelligent energy meters **Detailed Product Description:** • Table with perforated mesh and power supply module – 1 Nos • HMI, 7", 24VDC, Ethernet port – 1 Nos • HMI, 5.7", 24VDC – 1 Nos • Full-featured IIoT cloud gateway - 1 Nos • Unmanaged network switch, 8 ports copper, 12 to 24VDC – 1 Nos • Ethernet gateway, with RS485 interface and ZigBee support – 1 Nos • Ethernet interface and gateway, Ethernet, Modbus TCP/IP, HTTP, FTP, SMTP, NTP, SNMP10/100 Mbit/s on 2-port RJ45, Universal Logic Plug on 2-port RJ45, Modbus TCP/IP, Modbus TCP master – 1 Nos • Modbus Communication interface module, 24VDC - 1 Nos • Modbus TCP/IP and wireless module, 24VDC – 1 Nos • Power meter, THD, Modbus RTU and ASCII – 1 Nos • Molded case circuit breaker, 4P, 40A, 690VAC – 1 Nos • Molded case circuit breaker, 3P, 40A, 690VAC – 1 Nos • Electric operating mechanism with wireless communication function, 220VAC – 1 Nos • Earth Leakage protection module, 200VAC to 440VAC, 30mA to 30A – 1 Nos • Industrial sockets, 3P+N+E, 16A – 1 Nos • Industrial plugs, 3P+N+E, 16A – 1 Nos • Current transformer Din rail mounting, 40/5A, D21mm – 3 Nos • Fuse, 1P, 32A – 4 Nos • Energy sensor, 250A, 230V to 400VAC – 1 Nos • Miniature Circuit Breaker, 2P, 10A, C Curve – 1 Nos • Miniature circuit breaker, 2P, 2A, C Curve – 3 Nos • Miniature Circuit Breaker, 4P, 16A, D Curve – 1 Nos • Wireless Energy sensor, top/bottom connect, 3P, 63A – 1 Nos • Wireless Energy sensor, top/bottom connect, 2P, 63A – 4 Nos • Auxiliary contact for circuit breaker, OC and fault contact, 1NO+1NC – 3 Nos • Impulse relay, 2P, 16A, Coil 240VAC – 1 Nos • Control and remote indication for impulse relay, 240VAC, 1NO – 1 Nos	

	• Integrated control circuit breaker, 3P, 10A, D Curve – 1 Nos • Contactor, 3P, 440V, Coil 220VAC – 1 Nos • Thermal relay, 0.63 to 1A, 1NO+1NC – 1 Nos • Push button, green, Ø22, Spring return, 1NO – 1 Nos • Push button, red, Ø22, Spring return,1NC – 1 Nos • Push Button Station, 2 holes, Ø22 – 1 nos • Push Button Station, 3 holes, Ø22 – 1 nos • Indicator, 230V – 6 Nos • DC Power Supply, 24VDC, 5A – 1 Nos • Wireless multiphase temperature sensor, 24VDC/220VAC/380VAC, -200 C to 2000 C – 1 Nos • Earth Leakage add-on block, 4P, 40A, 300mA, C Curve – 1 Nos • Single-gang switch, 10A, 250V AC – 1 Nos • Five-pin socket, 10A,250V – 2 Nos • Ethernet port, with surface plate – 1 Nos • Auxiliary contact for MCCB, 1NO/NC – 1 Nos • Squirrel cage asynchronous motor, 3P, 180W – 1 Nos • LED bulb, 5W – 3 Nos • Stainless steel mesh plate for component mounting – 1 Nos **Electrical Characteristics:** • Voltage: 400 V, 3P+N+E • Frequency: 50/60 Hz ± 5% The equipment should be supported with relevant technical and practical manuals.	
	Motor Control Cabinet Tender Specifications: This Electrical panel cabinet assembly is similar to existing motor control centres, however, with a difference of motor feeders resembling a cabinet drawer organization. This electrical panel should have 10 drawable feeders housing various motor starter functions. Each drawer includes components such as circuit breakers, contactors, thermal overload relays, push buttons, pilot lights. A very special feature of this panel is the drawers are provided with contact mechanism when closed gets connected with main power and communication bus. This arrangement allows very high uptime, making this arrangement most reliable for critical power applications. This learning equipment should be designed as a self-standing panel. This panel should have modular withdrawable feeder arrangement, and these feeders should hold the DOL starters. There should be minimum 10 trays, and these withdrawable feeders will plug in to the main power supply bus bar. Each tray should be equipment switch isolator, power indications, on-off switches and energy monitoring devices. This equipment should be completed wired and should be operational. The equipment should be designed to achieve learning objectives: • Learn a new methodology in the field of MCC, an integrated MCC • Interpret electrical schematics and diagrams for MCC panels • Learn function and operation of various components within an MCC panel such as circuit breakers, contactors, thermal overload relays, push buttons, pilot lights. • Learn to install and wire a feeder based on given electrical schematics.	2 sets

	• Test, commission, and maintain power panels. **Detailed Product description:** **LV Distribution cabinet, with 10 drawable racks with each drawable rack to include:** • Motor circuit breaker, 3P, 0.63-1 A, 440V – 1 Nos • Auxiliary contact, 1NO+1NC – 1 Nos • Contactor, 3P, 440V, 9A, Coil 220VAV – 1 Nos • Contactor, Add-on block, 3NO+1NC – 1 Nos • Thermal overload relay, 0.63-1A, Class 10A – 1 Nos • Power meter, RS485, 2 digital inputs, 2 relay output, LED display, 80~270V AC/DC – 1 Nos • Current transformer, 150/5A, Class 1-2 – 1 Nos • Fuse, 4A, 10x38, Cylindrical fuse – 1 Nos • Indicator (red, green, amber), 220V, Φ22 – 3 Nos • Start and stop push button (red and green), Φ22 – 2 Nos • Selector switch, 2 put, Φ22 – 1 Nos **Electrical Characteristics:** • Voltage: 400 V, 3P+N+E • Frequency: 50/60 Hz ± 5% The equipment should be supported with relevant technical and practical manuals.	
	Critical power supply operation and maintenance training device **Tender Specifications:** The UPS training equipment should be designed for small and medium-sized power environments, which is easy to install, easy to operate and easy to maintain, and can realize the teaching functions related to daily maintenance and troubleshooting of the UPS, including the ability to view and deal with system alarms, the ability to set alarm thresholds, the ability to conduct battery tests and battery alarms, the ability to replace parts, and the ability to make log inquiries. This learning equipment should be designed as tabletop bench, with all the equipment visible and mounted on a perforated mesh plate. The learning equipment should be supplied with a UPS and associated batteries. This equipment should also include a battery holder to contain the UPS batteries, where it should be convenient for the learners make battery connections easily. This equipment should be completed wired and should be operational. The equipment should be designed to achieve learning objectives: • Understand and learn the function of various components of the UPS • Learn UPS input and output wiring. • Learn the process to commission an UPS • Learn UPS parameterization. • Understand common UPS faults and troubleshooting. • Learn to obtain and interpret the UPS operating log • Learn to set the UPS alarm threshold. • Learn to view UPS system alarm messages. Detailed Product description: • Table with perforated mesh and power supply module – 1 Nos • 3-phase in, 3-phase out, (minimum) 10KVA, 380/400V, max. 18A, online UPS – 1 Nos • UPS Network management card – 1 Nos • DC Circuit Breaker for Battery, 3P, 63A – 1 Nos • Under voltage trip coil, 24V - 1 Nos	2 sets

	• Miniature Circuit breaker, 4P, 32A, C Curve – 1 Nos • Industrial plug and socket, 3P+N+E, 32A – 1 Nos • Fuse holder, 1P, 32A - 1 Nos • Indicators, 230V, Φ 22 – 3 Nos • Load, Bulb, 9W, 230V – 3 Nos • Battery 12V, 18Ah – 32 Nos • Battery Stand – 1 Nos **Electrical Characteristics:** • Voltage: 400 V, 3P+N+E • Frequency: 50/60 Hz ± 5% The equipment should be supported with relevant technical and practical manuals.	

Manpower deputation

Sr. No.	Description
1	Deputation of 4 trainers for 2 years for delivering the training on above modules, the trainers must be certified by Technology Partner/ OEM to deliver these trainings

Bid Submission Forms and Annexures

The bidders are expected to respond to the RFP using the forms given in this section with all supporting documents.

Proposal shall comprise of following forms:

Form 1: Covering Letter with Correspondence Details

Technical Proposal checklist:
Tech 1: Bidder's Organization and Experience.
Tech 2: OEM Experience and Turnover
Tech 3: Approach & Methodology and detailed Work Plan for Performing the Assignment.
Tech 4: Details of the bidder organization and eligibility related information
Tech 5: CA Certificate
Form I: Affidavit
Form II: Power of Attorney in favour of Authorised Representative. "Board Resolution may also be accepted".
Form III: Manufacturer's Authorisation Form

FINANCIAL PROPOSAL TEMPLATE

Forms to be used in Commercial Proposal

Fin I: Financial Proposal

Note: One Copy of this RFP document with each page signed and stamped by the authorised representative has to be submitted along with proposal document as an acknowledgement and acceptance of the terms and conditions and scope of work under this RFP.

Section V

5. Bid Submission Forms and Annexures

5.1 Proposal Submission Letter

(should be filled, scanned and uploaded)

(On the letter head)
{Location, Date}

To:
The CEO
Bihar Skill Development Mission
A-wing, 5th Floor, Niyojan Bhawan, Bailey Road, Patna-01

Dear Sir,

With reference to your RFP document dated _____, we, having examined all relevant documents and understood their contents, hereby submit our Technical and Financial Proposal (through e-proc and as per standard online forms) for selection as an agency for _____ **(Name of RFP)**. The Proposal is unconditional and unqualified. We are submitting our Proposal as [_____name of the Bidder]. We understand you are not bound to accept any Proposal you receive. Further:

1. We acknowledge that Client will be relying on the information provided in the Proposal and the documents accompanying the Proposal for selection of the bidder, and we certify that all information provided in the Proposal and in the supporting documents is true and correct, nothing has been omitted which renders such information misleading; and all documents accompanying such Proposal are true copies of their respective originals.
2. This statement is made for the express purpose of appointment as the PR agency for the aforesaid Project.
3. We shall make available to Client any additional information it may deem necessary or require for supplementing or authenticating the Proposal.
4. We acknowledge the right of Client to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
5. We certify that in the last 3 (three) years, we have neither failed to perform on any assignment or contract, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award against the Bidder, nor been expelled from any project, assignment or contract by any public authority nor have had any assignment or contract terminated by any public authority for breach on our part.
6. We hereby declare that:
    A. We have examined and have no reservations for the RFP, including any Addendum issued by the Authority.
    B. We do not have any conflict of interest in accordance with the terms of the RFP.
    C. We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the RFP document, in respect of any tender or request for proposal issued by or

agreement entered into with Client or any other public sector enterprise or any Government, Central or State; and

D. We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.
E. All the information and statements made in this Proposal are true and we accept that any misrepresentation contained in this Proposal may lead to our disqualification by BSDM.

7. We understand that you may cancel the selection process at any time and that you are neither bound to accept any Proposal that you may receive nor to select the agency, without incurring any liability to the Bidders
8. We declare that we are not associated with or affiliated with any other Bidder applying for Selection under this RFP.
9. We declare that we are not a member of any other Consortium/JV applying for selection hereunder.
10. We certify that we or any of our affiliates have not been convicted by a court of law or indicted or adverse orders passed by a regulatory authority which would cast doubt on our ability to undertake the Project, or which relates to a grave offence that outrages the moral sense of the community.
11. We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any Agency of the Government or convicted by a court of law for any offence committed by us or by any of our affiliates. We further certify that we have not been barred by the Central Government, any State Government, a statutory body or any public sector undertaking, as the case may be, from participating in any project or bid, and that such bar, if any, does not subsist as on the date of this RFP.
12. We further certify that no investigation by a regulatory authority is pending either against us or against our affiliates or against our CEO or any of our Directors/ Managers/ employees.
13. We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by Client in connection with the selection of PR agency or in connection with the selection process itself in respect of the above-mentioned Project
14. We agree and understand that the proposal is subject to the provisions of the RFP document. In no case shall we have any claim or right of whatsoever nature if the Project is not awarded to us or our proposal is not open or rejected.
15. We undertake that our Proposal shall be valid and remain binding upon us till the bid validity period.
16. We agree and undertake to abide by all the terms and conditions of the RFP Document.
17. Our Proposal is binding upon us and subject to any modifications resulting from the Contract negotiations.
18. We undertake, if our Proposal is accepted and the Contract is signed, to initiate the Services related to the assignment no later than the period mentioned in the RFP.

We remain,

Yours sincerely,

Authorized Signature {In full and initials:

Name and Title of Signatory: _____

Name of Bidder: _____

In the capacity of: _____

Address: _____

Contact information (phone and e-mail): _____

5.2 FORM TECH-1

Bidder's Organization and Experience

From TECH-1: a brief description of the Bidder's organization and an outline of the recent experience of the Bidder that is most relevant to the assignment. The outline should indicate the names of the Bidder's Key Experts who participated, the duration of the assignment, the contract amount, and then Bidder's role/involvement

A. Bidder's Organization

1. Provide here a brief description of the background and of the Company
2. Include organizational chart, a list of Board of Directors, and beneficial ownership

B. Bidder's Technical Experience *(In case of any Bidder proposing technical know-how through Tie- up with the Technology Partner/OEM, a copy of letter of engagement from Technology Partner/OEM to be furnished.)*

For demonstration of technical capacity and experience (the "Technical experience"), the Bidder/ any Member of Technology Partner should have:

Experience in establishment of Center of Excellence/ Advanced Technology Labs in Energy Management/ Automation Technology/ Industry 4.0/ Electrical Technology and should have minimum three order worth INR 3Cr. each in the last 5 FYs. These Centers of Excellence shall be setup at any Govt. Institute/ Department/ PSU/ ITI

Format for Experience is as follows:

Duration	**Assignment name/& brief description of main deliverables/outputs**	**Name of Client & Address**	**Approx. Contract value (in Rs equivalent)/ Amount paid to your firm**	**Role on the Assignment**	**No Work order/agreement along with completion certificate/any other documentary proof establishing successful completion of this project, must be submitted.**
{e.g., Jan.2016– Apr.2019}	Name of assignment	{e.g., Ministry of……., country}	Amount in Lakhs	{e.g., Lead partner in a JV A&B&C}	Order No.

Minimum 1,000 Number of candidates trained (Diploma / Certification) in Energy management and Industrial Automation sector, Electrical sector in last 3 years. (Candidate should have been trained by the bidder or technology partner/ OEM of bidder

Duration	**Assignment name/& brief description of main deliverables/outputs**	**Name of Client & Address**	**Name of Centre**	**No candidate trained**	**Training Area (Sector)**

5.3 FORM TECH-2

OEM's Organization Experience and Turnover

OEM's Experience

A technology Partner is envisaged to be Global OEM in electrical and automation technology with Global presence (with physical production facilities in multiple countries including India).

Name of OEM	Address with Email ID	Name of Country

OEM's Turnover

The OEM must have an average Annual Turnover of INR 1000 Cr. in India, in the last 3 financial years i.e. FY 21-22, FY22-23, FY23-24.

CA Certificate

This is to certify the details below for the _____ (OEM Name):

SN	Financial Year	Turnover (Rs. In Crore)
		Total
1	2021-22	
2	2022-23	
3	2023-24	
Average Annual Turnover of above 03 FYs		

(Signature & Seal)
Certified by CA
Name of CA:
Membership Number:
Firm Name:
UDIN:

5.4 FORM TECH-3

Description of Approach, Methodology and Work Plan (Not more than 10 A4 size pages)

From TECH-2: a description of the approach, methodology and work plan for performing the assignment.

Bidder to furnish detailed documentation covering each aspect as below: -

i. Understanding of the Project, List of courses to be offered as part of the MSC, Mode of Training, Training Calendar, Manpower deployment plan, Key personnel, project manager details & Industry engagement plan for the first year of operations (to be submitted with the proposal), and Manpower deployment plan **(5 Marks)**
ii. A self-employment plan provided for candidates trained out of CoE at MSC. **(5 Marks)**
iii. More than 1500 Channel Partners of the Technology Partner/ OEM in India that can become captive employers of the students trained in the MSC. **(5 Marks)**
iv. Layouts of the labs to be provided by the bidder **(5 Marks)**
v. Plan for Interior Design of COE to suit international standards **(5 Marks)**
vi. Sustainability plan for COE post 1 year of operations by Bidder **(5 Marks)**

Organization and Staffing.

Please describe the structure and composition of your team, including the list of the Key Experts

5.4 FORM TECH-4:

TECH-4

Important Information and Details

S.N.	Particulars	Details
1	Name of the Organization:	
2	Name and Designation of the Contact Person	
3	Address and Contact Details (E-Mail and Mobile No.) of the Contact Person	
4	Corporate website URL.	
5	Legal Status (Type of Organization)	
6	Address of Head Office:	
7	Incorporation/ Registration status of the Agency	Submit Incorporation Certificate Page *No. at which enclosed:* _____
8	Date of Incorporation/ Registration	
9	Proposal Submission Letter (Refer 5.1)	*Page No.* _____ *to*_____
10	TECH-1 (Refer 5.2)	*Page No.* _____ *to*_____
11	TECH-2 (Refer 5.3)	*Page No.* _____ *to*_____
12	TECH-3 (Refer 5.4)	*Page No.* _____ *to*_____
13	Average Annual Turnover of the Bidder during the any three financial years out of 2021-2022, 2022-23, 2023-24, 2024-25 (as per the audited balance sheets), should be at least **Rs. 25 Crores.**	FY 2021-22: _____ /- _____ /- FY 2022-23: _____ /-_____ /- FY 2023-24: _____ /- _____ / A Certificate from chartered accountant certifies that the Bidder has an Average Annual Turnover from undertaking **Rs.25 crore (Rupees Twenty Five Crore Only) during the any three previous financial years** out of for FY 2021-22, FY 2022-23 & FY 2023-24, 2024-25.
14	The Agency should have Net Profit and positive Net Worth during the previous Financial Years i.e. FY 2023-24.	A Certificate from chartered accountants certifying that the Bidder has a positive Net Worth during previous Financial Years for FY 2023-24
15	PAN Number	Page No. at which enclosed: __
16	GSTIN Number	Page No. at which enclosed: __
17	For demonstration of technical capacity and experience (the "Technical experience"), the Bidder/ any Member of Technology Partner should have: Experience in establishment of Center of Excellence/ Advanced Technology Labs in Energy Management/ Automation Technology/ Industry 4.0/ Electrical Technology and should have minimum three order worth INR 3Cr. each in the last 4 FYs. These Centers of Excellence shall be setup at any Govt. Institute/ Department/ PSU/ ITI	Prior Experience (For each order to Center of Excellence/ Advanced Technology Labs in Energy Management/ Automation Technology/ Industry 4.0/ Electrical Technology supported with relevant copy of Work Order / MoU / Agreement) (Page No. From ____ to_____ at which enclosed) Tech-1

	Minimum 1,000 Number of candidates trained (Diploma / Certification) in Energy management and Industrial Automation sector, Electrical sector in last 3 years. (Candidate should have been trained by the bidder or technology partner/ OEM of bidder	Supported with Self Attested Certificate on training of candidates (Page No. From ____ to__ at which enclosed) Tech-1
18	A technology Partner is envisaged to be Global OEM in electrical and automation technology with Global presence (with physical production facilities in multiple countries including India).	OEM declaration with location and address of different countries. (Page No. From ____ to_____ at which enclosed) Tech-2
	The OEM must have an average Annual Turnover of INR 1000 Cr. in India, in the last 3 financial years i.e. FY 21-22, FY22-23, FY23-24.	A CA Certificate mentioning turnover. (Page No. From ____ to_____ at which enclosed) Tech-2
19	A Notarized Affidavit stating that the Company has not been blacklisted by any Central / State Government / Public Sector	Page No. at which Affidavit has been enclosed: __ (Form-I)
20	Power of Attorney/ Board Resolution in the name of the Authorized signatory	*Page No. at which enclosed:* _____ (Form-II
21	Manufacturing Authorization Form	Page No. at which enclosed: __ (Form-III)

5.5 FORM TECH-5 (CA Certificate)

CA Certificate

This is to certify the details below for the _____ (Company Name):

Turnover Details

SN	Financial Year	Turnover (Rs. In Lakhs)
		Total
1	2021-22	
2	2022-23	
3	2023-24	
4	2024-25	
Average Annual Turnover of any 03 FYs out of above FY		

Net worth as on 31.03.2024 (in Rs. Lakhs):

Important Note: The CA is expected to write all the above details in the https://udin.icai.org/search-udin to verify the UDIN certificate, otherwise the CA certificate and accordingly the proposal of applicant organization will be outrightly rejected and no further evaluation of the proposal will be made.

If all the above details cannot be verifiable and cross checked through the https://udin.icai.org/search-udin , the proposal will not be evaluated further and rejected.

(Signature & Seal)
Certified by CA
Name of CA:
Membership Number:
Firm Name:
UDIN:

5.6 Form-I (AFFIDAVIT)

(Affidavit on non-judicial stamp paper of Rs. 100/- by Authorized Representative of the applicant with his / her dated signature and enterprise seal)

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1. I/We do hereby certify that all the statements made in our bids in response to the RFP Reference No..... Dated..... and in the required attachments are true, correct and complete. I / we am / are well aware of the fact that furnishing of any false information / fabricated document would lead to rejection of my bid at any stage besides liabilities towards prosecution under appropriate law.
2. I/We, on behalf of ..... (Name of the Agency), with its registered office at ..... do hereby declare that the above-mentioned bidder is not under a declaration of ineligibility for corrupt and fraudulent practises or for any other reason, whatsoever and has not been blacklisted / debarred by the Government of India or any of its agencies, including public enterprises and or by any State Government or any of its agencies.
3. I/We on behalf of ..... (Name of the Agency) do hereby affirm and undertake that we have carefully read and understood the whole tender documents and will unconditionally abide by all the terms and conditions given in the above-mentioned RFP.

For and on behalf of:
Signature:
Name:
Designation:
Date:
(Organization Seal)

5.7 Form-II (POA)

(Power of Attorney in favour of Authorized Representative)

(Note: To be executed on a non-judicial stamp paper of Rs. 100/- or more or on Company Letter Head certified by the Board of Directors)

Know all men by these presents that We…… …… ……. (name of the enterprise and address of the registered office do hereby irrevocably constitute, nominate, appoint and authorize Mr./ Ms. (name) …….son / daughter / wife of …….and presently residing at ……..who is presently employed with us and holding the position of…….. as our true and lawful attorney (hereinafter referred to as the "Attorney") to do in our name and on our behalf, all such acts, deeds and things including to enter into negotiation, as are necessary or required in connection with or incidental to submission of our Bid for the RFP Reference No..... Dated.....

The attorney is fully authorized for providing information/ responses to the tendering authority, representing us in all matters before the tendering authority including negotiations with the tendering authority, signing and execution of all affidavits, undertakings and agreements consequent to acceptance of our bid, and generally dealing with the tendering authority in all matters in connection with or relating to or arising out of our bid for the said tender.

AND we hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, ……,
THE ABOVE-NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS ……. DAY OF …….

For ……...

{Signature, name, designation and address}

Accepted
……
(Signature)

(Name, Title and Address of the Attorney)

Witnesses: 1.
2.

5.8 Form-III (Manufacturing Authorization Form)

(should be filled, scanned and uploaded)

(On the letter head)
{Location, Date}

To:
The CEO
Bihar Skill Development Mission
A-wing, 5th Floor, Niyojan Bhawan, Bailey Road, Patna-01

Dear Sir,

Sub.: Manufacturing Authorisation Form

We, _____, who are official manufacturers of ……. having factories at ……. ……. ……., do hereby permit …… to submit a Bid in relation to the Invitation for Bid indicated above, the purpose of which is to supply …… ……. manufactured by us on our standard terms and conditions.

We hereby extend our warranty on our standard terms and conditions with respect to the Goods offered by the above firm.
The address and contract details of M/s …… is as follows:

Contact Person:

The Authorization shall be valid for a period of one year from the date of issue.

Thanking you.

Name: Mr.
Designation:
Signed …….
Duly authorized to sign the Authorization for and on behalf of ……
Date:

FINANCIAL BID

(For reference only. Not to be filled/scanned)

FORM FIN-I: Format of Commercial bid

Sl No	Particular	Amount (Rs in Lakhs)
1.	Module 1: Technical Specifications for Building Installation	***INR***
2.	Module 2: Building Automation	***INR***
3.	Module 3: Building Management System	***INR***
4.	Module 4: Technical Specifications for Solar Modules	***INR***
5.	Module 5: Technical Specifications for Electric Vehicle Charging	***INR***
6.	Module 6: Technical Specifications for LV Panel Installation:	***INR***
7.	Module 7: Technical Specifications for Smart Panels:	***INR***
8.	Module 8: Technical Specifications for Industrial Controls Module	***INR***
9.	Module 9: Technical Specifications for Automation Programming – HMI, PLC and Sensors	***INR***
10.	Module 10: Technical Specifications for SCADA	***INR***
11.	Module 11: Technical Specifications for Robotics	***INR***
12.	Module 12: Technical Specifications for Digital Factory Module	***INR***
13.	Module 13: Technical Specifications for IIOT and Extended Reality	***INR***
14.	Module 14: OT Cybersecurity	***INR***
15.	Module 15: Smart Power Distribution	***INR***
16	Other Expenses including manpower, training cost, certification cost travel, lodging, boarding, communication (mobile and landline), computers and consumables as required for the project period of 1 year. The same amount shall be considered for subsequent years i.e. Years 2 and Years 3	***INR***
	Total Cost (1 to 16)	***INR***
	GST (As per Government norms)	***INR***
	Gross Total	***INR***

Amount in Word: -

Note:

(i) The Financial Proposal shall be prepared using the Standard online Excel Form only. The format as provided above is for reference only.

(ii) It shall include all costs associated with the assignment including cost of all modules (15 module) including Manpower, training cost, certification cost, travel, lodging, boarding, communication (mobile and landline), computers and consumables as required for the project etc. The Tendering Authority will not bear any cost other than the lump-sum fee mentioned in the financial proposal.

(iii) Please note that any scanning and then uploading of financial bid is strictly prohibited. The financial bid format shared under this RFP is for reference only. The financial bid will have to be submitted as per standard on-line format (E-proc) only.

(iv) During Evaluation of Financial proposals, the quoted Total Cost including GST shall be considered.

(v) Statutory Deduction, if applicable, shall be deducted at source from the payment to the Selected Bidder as per the law in force at the time of execution of contract.