

Using online e-Tendering system of: MKCL EDUMART (HTTPS://EDUMART.SETS.CO.IN)
Unit Name : SIES Graduate School of Technology
Kindly go through the details, In case of any problems/ issues related to the reported data email to PoojaSingh@sies.edu.in

TENDER DETAILS	
Tender Code	349(Amendment - 1)
Mode	Rate Contract
Is Over All	No
Tender Type	Open
Tender Category Type	EDUMARTITEMS
Section	SIESGST
Type Of Bid	Two Bid
Material Description	Supply of Nuclear Power Plant Simulator, Desktop Computer, & Printer under SERB Project SUR/2022/000347
Submission Date	Monday, 15 April, 2024 5:00:00 PM
Tender Validity	90 Days
Delivery Period	15 Days
Tender Document Fees [In INR]	2360.0
Tender Document Fees In Words	two thousand three hundred sixty Rupees
Edumart Fees [In INR]	590.0
Edumart Fees In Words	five hundred ninety Rupees
Contact Email Id	PoojaSingh@sies.edu.in
Commencement Period	2 days from 'First order'
Basis Of Prices	Firm Price
Sample Required	Not Required
Deviation	No
EMD [In Rupees]	20000
EMD In Words	twenty thousand Rupees
BID OPENING DETAILS	
Techno-Commercial Bid	Will be declared later
Price bid	Will be declared later

TENDER DOCUMENTS	
Total Number of documents :	1



# SIES Graduate School of Technology, Nerul. District- Navi Mumbai.

Sri Chandrasekarendra Saraswati Vidyapuram, Sec-V, Nerul, Navi Mumbai- 400706  
Tel No : 022-61082400, E-mail : [poojasingh@sies.edu.in](mailto:poojasingh@sies.edu.in), Website : [www.sies.edu.in](http://www.sies.edu.in)

## **E- TENDER DOCUMENT FOR**

# **Supply of Nuclear Power Plant Simulator, Desktop Computer, & Printer**

**2024**



## SIES Graduate School of Technology, Nerul. District- Navi Mumbai.

Sri Chandrasekarendra Saraswati Vidyapuram, Sec-V, Nerul, Navi Mumbai- 400706

Tel No : 022-61082400, E-mail : [poojasingh@sies.edu.in](mailto:poojasingh@sies.edu.in), Website : [www.sies.edu.in](http://www.sies.edu.in)

SIES Graduate School of Technology, Nerul, invites e-tender for Nuclear Power Plant Simulator, Desktop Computer, & Printer from the authorized dealers/distributors/suppliers/manufacturers or agencies or representative to participate in the competitive bidding process.

Sr. No.	Name of work	Estimated cost in (Rs.)	EMD (Rs.)	Cost of Blank tender form (Rs.)
1	Nuclear Power Plant Simulator & hardware	11,76,000/-	20000	2000/- plus tax (Non-refundable)
2	Desktop	35000/-		
3	Printer	21200/-		

1	<b>Tender Publishing Date</b>	30-03-2024 - 10:00 am
2	<b>Date of Commencement for issue of Tender:</b>	30-03-2024 – 10:00 am
3	<b>Time and last date of submission of Tender</b>	15-04-2024 – 5:00 pm
4	<b>Cover No. I (Technical Bid) Opening</b>	
5	<b>Cover No. I (Financial Bid) Opening</b>	
5	<b>Place &amp; Address for opening of tender document</b>	SIES Graduate School of Technology, Nerul. District- Navi Mumbai. Sri Chandrasekarendra Saraswati Vidyapuram, Sec-V, Nerul, Navi Mumbai- 400706

**Note: The College reserves the right to accept or reject any or all the tenders from any or all the parties without assigning any reason.**

**Principal**  
SIES Graduate School of Technology, Nerul, Navi  
Mumbai - 400706.

### Instruction for Filling of E-Tender

The, Principal, SIES Graduate School of Technology, Nerul invites e-tender for Supply of Nuclear Power Plant Simulator & hardware, a Desktop & a Printer from the authorized dealers/distributors/ suppliers/manufacturers or agencies or representative to participate in the competitive bidding process.

The details in this regard are given below.

1. **Procedure to submit the tender:** All eligible /interested tenderer are required to be enrolled on portal <https://edumart.sets.co.in> before downloading tender documents and participate in e-tendering. The response to the tender should be submitted online tender in two parts viz. Technical Bid & Financial Bid (BOQ). No tender will be accepted in hard copy, fax, e-mail or any other such means.
2. **Technical Bid:** The technical bid shall contain the following documents. The Bidder must scan the documents and upload all these documents online with first page in technical bid compulsorily. All the documents must be valid and self-attested by bidder. Non-submission of following requested documents may lead to rejection of offers.

Sr. No.	Name of Document
i)	Scanned Copy of receipt of Payment of tender fee
ii)	Information of the bidder (Annexure – A)
iii)	Whether manufacturer, if yes, please attach scanned copy of manufacturing license / certificate. If No, authorization certificate /dealer/ supplier and undertaking on firms letterhead.
iv)	Copy of Sales/GST registration certificate
v)	Copy of PAN/TAN card
vi)	Copies of Income tax return filed during last three financial years.
vii)	GST fill certificate in last month
viii)	Instruction for Filling of E-Tender and General Terms And Condition of The Tender
ix)	Annual turnover certificate (last 3 yrs)
x)	Bidder's Declaration (Annexure – B)
xi)	Declaration Regarding Blacklisting / Debarring For Taking Part In Tender (Annexure - C)
xii)	Specifications of the equipments (Annexure-D)
xiii)	Experience Certificate/Tax invoice/Bill/ purchase order etc. of the similar types of supply /work ( minimum 2)
xiv)	Warranty certificate/ ISO/ISI Certificate, if required

3. **Financial Bid:** The tendering authority will first open the Technical Bid documents of all bidders and after scrutinizing these documents will shortlist the bidders who are eligible for Financial Bidding process. Otherwise the tender may be disqualified. The detail description of equipment is provided in the tender documents.
4. The Technical and Financial bid shall be submitted online as per the schedule.
5. The bidders are strictly advised to follow the dates and times allocated to each stage. As indicated in the time schedule. All the online activities are time tracked and the Electronic Tendering System enforces time-locks that ensure that no activity or transaction can take place outside the

Start and End Dates and Time of the Stage as defined in the tender schedule. At the sole discretion of the Tender Authority, the time schedule of the Tender stages may be extended.

6. College has reserves the right for change in the number of items to be maintained in schedule.
7. The College reserves the right to decide whether to open or not open the commercial Bid of the tenderer and no objection of any tenderer shall be entertained on any ground what so ever it may be regarding this.
8. No Bid shall be accepted without payment of cost of tender.
9. The rate should be a single Unit quoting ie. For Single Quantity.
10. The rate should be inclusive of all taxes, duties, surcharges, packing, freight, and rubber printing of college name F.O.R. delivery at SIES Graduate School of Technology, Nerul, Navi Mumbai-400706.
11. The college is not bound to accept lowest rates and reserves the right of accept/cancel any or all tenders without assigning any reason thereof.
12. The intending supplier shall also have to mention the name of manufacture/make, model of the article and has to enclose the pamphlets / pictures /information brochures of the appliances for which the rates are quoted. In the absence of the above, the items offered may not be considered.
13. The preference will be given to (a) Manufacturer, (b) Authorized Dealers of manufacturer or (c) authorized suppliers. Such agencies must enclose adequate documents to prove their claims. The preference will be given to the items bearing ISO 9001-2015 quality control mark for the Equipments.

**I/We have read all the enclosed Terms and Conditions carefully and ready to accept, accordingly I/We are submitting herewith the tender.**

**Signature and Seal of Bidder/ Vender**

TENDER-349/AMENDMENT-1/28-Mar-2024 10:39:13 AM  
**GENERAL TERMS AND CONDITION OF THE TENDER**

1. Cost of Tender - Bidders are required to pay online for Rs.2000/- (Non-refundable) Tender fee as mentioned on dates above.
2. Cost of EMD – Rs.20000/- are required to pay online <https://edumart.sets.co.in>
3. Security Deposit: The successful bidder to whom the work order is given shall be required to deposit the extent of 5% of total cost of the estimated cost as a security deposit within **15** days from the date of acceptance of tender. Security may be furnished in the form of an Account payee Demand Draft or Bank Guarantee from a Scheduled bank in an acceptable form. The security deposit will not carry any interest which shall be refunded after supply and successful installation of the system as per guidelines of RUSA and Maharashtra government. If the bidder fails to keep the security deposit, then the purchasing officer will be taken necessary action as per government resolution.
4. E-tenders are invited from the respective OEM/ authorized dealers/firms etc. for Supply & Installation of Nuclear Power Plant Simulator & hardware, a Desktop and a Printer, as per, “Annexure D” with the following Details:-

Sl. No.	Particular	Quantity	Amount of EMD
1.	Nuclear Power Plant Simulator & hardware	1	<b>Rs 20,000/-</b>
2.	Desktop Computer	1	
3.	Printer All in One (Laser)	1	

5. Performance Security equivalent to 5% of the ordered value will have to be furnished by supplier within 15 days of the award of contract. Performance Security may be furnished in the form of an Account payee Demand Draft or Bank Guarantee/FDR from a Scheduled bank in an acceptable form, safeguarding the university’s interest in all respects. Performance Security should be valid up to two months beyond the expiry date of warranty obligation.
6. Delivery Period: - All items as per purchase order must be supply and install within 15 days from the date of receipt of purchase order. If the bidder fails to deliver goods/ material within the stipulated period then the purchasing officer will take necessary action as per government resolution and the College reserves the right, without liability, to cancel the order for undelivered material not yet supplied and to purchase the same from another vendor. If the vendor is unable to complete performance at the time specified for delivery, by reason of strikes, labour disputes, riot, war fire, lockdown or other causes beyond the Vendor’s reasonable control, the College at its option, may elect to take delivery of material later on and to pay such proportion of the contract price as deemed reasonable by the College after delivery of those equipments.

7. Cancellation of purchase order: College reserves the right to cancel the purchase order in case bidder fails to supply of material within the stipulated or extended time or particulars mention in the tender document.

If due to the above mentioned reason purchase order is canceled, earnest money/ security deposit shall be forfeited and also the tender may be allotted to the next lowest tender or the purchasing officer reserves the right to take any other appropriate decision including legal action against the bidder to whom work order was given.

8. Payment: No advance payment will be granted for this order. 100 % payment shall ordinarily be made within 15 days from the date of complete satisfactory supply as per purchase order. All payments will be done through PFMS only.
9. Duration: Tender offer must be valid for a period 60 days from the date of opening of commercial/Financial bid.
10. The vendors ought to mention separate GST in their bills
11. Vendor should have certified ISO 9001-2015 by valid ISO Audit Company
12. The College reserves the right to delete / increase / decrease items from the schedule of requirement specified in the tender.
13. The Equipment must be of the best quality, sound and/ or as per the detail specifications and subject to the approval of the Principal, SIES Graduate School of Technology, Nerul. District- Navi Mumbai.
14. The goods should be dispatched at suppliers risk; however, the supplier will be responsible until the entire items are supplied in good condition. Default/Defect item should be rejected.
15. Installation/ fitting and demonstration of Equipment/Instrument with satisfactory performance should be given before the payment is made to the supplier. Payment will be made after satisfactory report is received from the concerned users/ department.
16. Even though the tender is technically accepted but after receiving of the said Equipments/ Instruments etc., if it is found that the technical specifications given in the tender document do not match with supplied equipment, the Principal of College reserves the right to reject the purchase order and then will be taken necessary action will be taken as per government resolution.
17. All the rights to change terms and condition in tender and right to reject any or all tenders without any reason thereof whatsoever is reserved with Principal, SIES Graduate School of Technology, Nerul. District- Navi Mumbai. The firm will arrange to impart training in operating the equipment & instruments.

**18. Rejection of Bids:**

- a) If bidders give wrong information in their bid, College reserves the right to reject such bids at any stage and forfeit the Earnest Money Deposit / Bank Guarantee and cancel the order, if awarded.
  - b) Incomplete bids are liable to be rejected.
  - c) If the technical offer contains any price information the offer will be summarily rejected.
  - d) Canvassing in any form in connection with the tender is strictly prohibited and the bids submitted by the bidder who resort to canvassing are liable for rejection.
  - e) Conditional e-tender shall be rejected.
  - g) Bids submitted without supporting documents as mentioned or required to submit with bids are liable to be rejected.
  - h) The Tenderers must confirm in their bid acceptance in full of the terms and conditions in this enquiry. Any non-acceptance or deviations from the terms and conditions must be clearly brought out. However, tenderers must note carefully that any conditional offer or any deviation from the terms and conditions of this enquiry may render the quotation liable for rejection.
  - i) If bidder not signs on each page of the tender document including all annexure along with the page numbered.
19. Jurisdiction: The courts at Navi Mumbai alone will have the jurisdiction to try any matter, dispute or difference of opinion between parties arising out of this tender /contract. It is specifically agreed that no court outside and other than Navi Mumbai court shall have jurisdiction in the mater. Vender/bidder should be paying all fees of the disputes for both parties.
20. For more details read the resolution of government of Maharashtra dated: 1 December 2016.

**I/We have read all the enclosed Terms and Conditions carefully and ready to accept and according to that I/We are submitting herewith the tender.**

**Signature and Seal of Bidder/Vender**



**INFORMATION OF THE BIDDER (Vendor Details)**

1. Name of the Company / Firm /Dealer/Vendor	
2. Registered office Address and Contact	
3. Details of contact person name, designation, address, mobile no & email	
4. Type of the Organization / (Proprietary / Partnership / Pvt. Ltd. / PSU / Govt. /Public Ltd)	
5. Shop act license No. and Date	
6. Manufacturing license / certificate / dealer/ supplier / authorization certificate Number and Date	
7. Year of Establishment and Experience in business /Supply (In Years)	
8. Annual Turnover (last 3 yrs)	
9. GST Registration No.	
10. PAN Card No.	
11. Capacity in which bid is signed by the bidder (Proprietor /Partner /Director Etc.)	

**Signature & Seal of the bidder**

**DECLARATION**  
**(On letter head only)**

Annexure - B.

**To,**

**The Principal,**

**SIES Graduate School of Technology, Nerul. District- Navi Mumbai.**

Subject: Nuclear Power Plant Simulator, Desktop Computer, & Printer

Dear Sir,

With reference to above cited subject, I / We are submitting herewith our rates for the above item. I/We have examined all the requirement with specifications and carefully read the General conditions of contract, Instruction for Filling of E-Tender, Articles of Agreement, Bill of Quantities etc.

I/We agree to sign agreement and submission of security deposit within stipulated time from the acceptance letter.

I / We hereby ready to supply the above mentioned equipments, within the stipulated time specified in the purchase order and hereto at the rates quoted in Bill of Quantities of in accordance in all respects with the specifications, conditions of contract and as per the instructions.

I /We also hereby certify that the rates quoted in financial/commercial bid (BOQ) are not more than the rate charged to any other Institution / Department / Organization.

Power of Attorney authorizing undersigned to bid on our behalf is enclosed herewith.

I /We hereby certify that I / We have gone through all the information and terms and conditions stipulated in the tender document and hereby confirm to abide by the same.

Date:

Yours faithfully

Full Name:

Signature & Seal

Address :

Annexure -C.

**DECLARATION REGARDING BLACKLISTING / DEBARRING FOR TAKING PART IN  
TENDER**

(To be executed & attested by Public Notary / Executive Magistrate on Rs. 100/- non judicial Stamp Paper by the bidder)

I / We \_\_\_\_\_ Manufacture /Partner (s)

/authorized distributor / agent of M/S \_\_\_\_\_ hereby

declare that the firm /company namely M/S. \_\_\_\_\_

has not been blacklisted or debarred in the past by Union / State Government / SIES Graduate School of Technology or by any other organization from taking part in tenders in India.

In case the above information found false I / we are fully aware that the tender / contract will be rejected/cancelled by College and EMD shall be forfeited. In addition to the above College will not be responsible to pay the bills for any completed / partially completed work.

DEPONENT

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Attested:

(Public Notary / Executive Magistrate)

**Annexure-D****SPECIFICATIONS OF THE EQUIPMENTS/ INSTRUMENTS**

<b>Sr. No.</b>	<b>Item Description / Specification</b>	<b>Brand /Model</b>
1	<b>Nuclear Power Plant Simulator (including hardware): Quantity – 1</b> <b>Detailed Technical Specification is attached</b>	Flownex
2	<b>Computer : Quantity – 1</b> <b>Dell Intel Core i5 15.6 Inch Laptop ( Windows 11 Home )</b> (Dell Vostro)	Dell
3	<b>Printer : Quantity - 01</b> <b>Brother Laser Mono Computer Printers for A4 paper size</b> <b>(HL-L2366DW)</b>	Brother

Note: Quote the item wise rate in the BOQ on Suppliers Company Letter Head. Please make sure that amount quoted in price bid in online system and quote on letterhead should be same. In case it differs, amount quoted in online system will be considered as final price bid.

**Signature, Name & Seal of the bidder**

## Check list

Sr. No.	Name of Document	(Y/N)	Page No.
i)	Scanned Copy of receipt of Payment of tender fee		
ii)	Information of the bidder (Annexure – A)		
iii)	Whether manufacturer, if yes, please attach scanned copy of manufacturing license / certificate. If No, authorization certificate /dealer/ supplier and undertaking on firms letterhead.		
iv)	Copy of Sales/GST registration certificate		
v)	Copy of PAN/TAN card		
vi)	Copies of Income tax return filed during last three financial years.		
vii)	GST fill certificate in last month		
viii)	Instruction for Filling of E-Tender and General Terms And Condition of The Tender		
ix)	Annual turnover certificate (last 3 yrs)		
x)	Bidder's Declaration (Annexure – B)		
xi)	Declaration Regarding Blacklisting / Debarring For Taking Part In Tender (Annexure - C)		
xii)	Specifications of the equipments instruments (Annexure-D)		
xiii)	Experience Certificate/Tax invoice/Bill/ purchase order etc. of the similar types of supply /work ( minimum 2)		
xiv)	Warranty certificate/ ISO/ISI Certificate if required		

**Note: Upload with tender document**

**Signature, Name & Seal of the bidder**

## TECHNICAL SPECIFICATION OF NPP SIMULATOR

### A. Simulation Types

1. Integrated simultaneous seamless simulation of thermal, mechanical, electrical, control systems including automatic integration based on the fluid type selected and should be possible to switch to any option at any stage of the analysis, No limitation on integration
2. **Capability to simulate following simulation types**
  - a. Steady State Analysis
  - b. Dynamic Analysis capability considering momentum, mechanical inertia and thermal inertia, with ease to run the dynamic scenarios without any additional scripting
  - c. Transient Event Simulation Capability with ease to specify a sequence of events dependent on time or on the state of other properties and change at point of time
  - d. Mass Conservation Studies [Mass Flow]
  - e. Momentum Conservation Studies [Pressure]
  - f. Energy Conservation [Temperature /Enthalpy]
  - g. Integrated visualisation capabilities with 3DPACT
  - h. Automated Fluid structure interaction studies with ANSYS Structural and ANSYS Fluent
  - i. Inbuilt Engineering Equation Solver (EES)
  - j. The ability to export a network as an FMU (Functional Mockup Unit).
  - k. Integrated simulation capabilities with 6Sigma DC, MATLAB, LABVIEW, CAESAR II, ROHR Software
  - l. Fluid Capabilities with Mixtures (Gas, Liquid, Solid, Particles), Solids, Pure Fluids, Two Phase Fluids and ready databAse

### 3. Simulation Capabilities

Simultaneous **integrated** simulation of:

- 3.1 Incompressible fluid networks
- 3.2 Compressible fluid networks
- 3.3 Two phase fluid networks
- 3.4 Incondensable fluid networks
- 3.5 Gas Mixtures
- 3.6 Heat transfer
- 3.7 Mechanical systems

- 3.8 Control systems
- 3.9 Electrical systems
- 3.10 User defined or external components and software from other vendors, links to existing proprietary codes and legacy software

#### **4 Capable to perform Simulation of**

- 4.1 Liquids - with Constant or non-constant density support
- 4.2 Gasses – with ideal and non-ideal gasses support
- 4.3 Gas Mixtures – with ideal and non- ideal gasses support
- 4.4 Two Phase Flow – with homogenous two phase and supercritical flow
- 4.5 Incondensable mixtures – with mixtures of any liquid-gas or two-phase fluid with any gas allowed
- 4.6 Slurry - Mixture of any particle solid with any liquid allowed
- 4.7 Non-Newtonian flows
- 4.8 Heat transfer –with unlimited heat transfer capability with convection, many layers of conduction and radiation possible
- 4.9 Combustion - simple combustion charts supported as well as the full Gordon and McBride combustion model
- 4.10 Electrical System Simulation
- 4.11 Mechanical System Elements
- 4.12 Control System Simulation with built in library of Full control system including PID controllers and analog and digital control building blocks found in most DCS
- 4.13 Chemical Reactions – during combustion is possible

#### **5 Turbo Machinery Simulation Capabilities**

##### **5.1 General Capabilities**

- 5.1.1 Capable of Simulating Integrated systems, subsystem and component level for combustion chamber design, secondary flow design, blade cooling, lubrications, oil supply and other associated systems
- 5.1.2 Capable of simulating co-simulating with ANSYS CFX, ANSYS Workbench and ANSYS Fluent models to predict the stress, flow behaviour
- 5.1.3 Capable of simulating co-simulating with test facility through OPC Client -Server for real-time capture of flow and heat transfer behaviour
- 5.1.4 Capable of co-simulating with control systems modelled in MATLAB/LabView

##### **5.2 Integrated combustion chamber design & optimization including coolant flow**

- 5.2.1 Simulation of complex phenomena like combustion, heat transfer and multi-phase
- 5.2.2 Includes flow distribution and heat transfer

- 5.2.3 Combustion product gas composition calculation.
- 5.2.4 Combustion process adiabatic flame temperature calculation.
- 5.2.5 Flow distribution between cooling slots and main flow path.
- 5.2.6 Thermal capacitance in solids for transient modelling.
- 5.2.7 Linear and solid conduction heat transfer.
- 5.2.8 Axial (2D) conduction.
- 5.2.9 Jet impingement cooling.
- 5.2.10 Film convection heat transfer.
- 5.2.11 Solid-Solid radiation heat transfer.
- 5.2.12 Gas-Solid radiation heat transfer.
- 5.2.13 Convection heat transfer.

### **5.3 Internal cooling system pressure, flowrate, power and heat transfer distribution for ensuring effective film cooling on hot surfaces.**

- 5.3.1 Swirl calculation through integrated swirl solver.
- 5.3.2 Labyrinth seal pressure drop calculation.
- 5.3.3 Rotor-Rotor pressure differential and power transfer calculation.
- 5.3.4 Rotor-Stator pressure differential and power transfer calculation.
- 5.3.5 Free Vortex pressure differential and power transfer calculation.
- 5.3.6 Forced Vortex pressure differential and power transfer calculation.
- 5.3.7 Rotating nozzle pressure differential and power transfer calculation.
- 5.3.8 Rotating channel pressure differential and power transfer calculation.
- 5.3.9 Convection heat transfer between solids and cooling air.
- 5.3.10 Full library of secondary air system components
- 5.3.11 Windage temperature rise and heat transfer to surfaces.
- 5.3.12 Calculation of coolant air continuously extracted in compressor stages to supply film coolant air to turbine surfaces and internals.

### **5.4 Gas Turbine Integrated System Analysis**

- 5.4.1 Complete flexibility in system layout and configuration, therefore applicable to both industrial as well as aero-derivative turbine systems.
- 5.4.2 Perform power matching and determine operating points on compressor and turbine characteristics.
- 5.4.3 Simulate transient events such as start-up or load change.
- 5.4.4 Calculate surge margins for compressors.
- 5.4.5 Determine heat-exchanger performance.
- 5.4.6 Expansion thrust calculation.
- 5.4.7 Multiple shafts speeds modelled through a gearbox connection.



- 5.4.8 Integrate with auxiliary systems.
- 5.4.9 Calculate two-phase pressure drop
- 5.4.10 Supply pump and scavenge pump integration
- 5.4.11 Determine oil sump size and oil level
- 5.4.12 Flow through labyrinth seals
- 5.4.13 Bearing housing
- 5.4.14 Air vent

## 6 Integrated Charts and Tables

- 6.1 Torque Speed Curve
- 6.2 Combustion Chart
- 6.3 Lumped Resistive Duct, Pressure Ratio, Pressure Drop Charts
- 6.4 Generic 4D Charts, Junction Charts
- 6.5 Heat Exchanger Charts
- 6.6 Materials and fluids – Mixed fluid, pure fluid, solid, trace elements, two phase fluids – inbuilt database and manual addition
- 6.7 Turbos & Pumps: Compressor Charts, Compressor Stage Charts, Labyrinth Seal Charts, Positive Displacement Pump charts, Pump and Fan Charts, Turbine Charts, Variable Speed pump Charts,
- 6.8 Valves Charts – with loss coefficient, ANSI Control, Pressure Relief Charts

## 7 Solvers

- 7.1 Thermal Fluid Solver
- 7.2 Distributed Network Solver
- 7.3 EES Solver
- 7.4 Control System Solver
- 7.5 Mathcad Solver

## 8 Integration with other software

- 8.1 The ability to export a network as an FMU (Functional Mockup Unit).
- 8.2 Supports seamless integration with external commercial and internal proprietary tools
- 8.3 Integrated Fluid Property Database with DWSim, CAPE OPEN, NIST Fluid Properties
- 8.4 Realtime Co-Simulation with ANSYS CFX, FLUENT and Mechanical
- 8.5 Realtime Co-Simulation with MATLAB, LABVIEW, RELAP
- 8.6 Easy Programming Interface with Python and Integrated Script Generation Mechanics
- 8.7 Integrated EES – Engineering Equation Solver

- 8.8 Integrated Mathcad – Engineering Calculations Software
- 8.9 Integrated Charts and Tables – Torque Speed Curve, Combustion
- 8.10 Excel Sheet Integration – possibility to use excel workbooks as part simulations, networks can be defined and imported from excel, reports generation in Excel
- 8.11 ANSYS ANF File import
- 8.12 Autodesk DXF File Import
- 8.13 Cad importing facility with PCF file format
- 8.14 Interfaces to other software - MPCCI link that enables coupling to most other FEM and CFD tools
- 8.15 Open Architecture - User has full ability to add own - component library, solvers
- 8.16 Extended User Interface
- 8.17 Interface to hardware control systems
- 8.18 Integration with 3D Visualisation Software 3DPACT
- 8.19 Visual Studio 2019 compatibility to the extendibility feature

## 9 Reporting and interaction

- 9.1 Excel Reporting
- 9.2 Text Reporting
- 9.3 Visualisation of Results -Result and input-based coloration of network. Dynamic graphs. Dynamic dials gauges and displays. Text displays. The ability to plot a property, for example, the total pressure through a network
- 9.4 Human Machine Interface
- 9.5 PH Diagram: The option to plot a pressure and enthalpy diagram for two phase fluids
- 9.6 Psychrometric Charts: Ability to plot psychrometric chart for humid air.
- 9.7 The Result Layers to show density, energy source, mass source and an indication if choking is present

## 10 Design and optimisation capabilities

- 10.1 **Parametric studies** - Any input/combination of inputs can be varied and any result monitored.
- 10.2 **Statistic sensitivity analysis** - Any input/combination of inputs can be varied and any result monitored.
- 10.3 **Designer** - Constraint design to size pumps, pipes or any other system parameter to achieve certain flows, temperatures or other results allowed
- 10.4 **Optimiser** - Evolutionary and BOBYQA minimization of maximization of any result parameter, user function or combination of parameters allowed
- 10.5 **Exergy analysis** - Irreversible work and entropy generation is calculated throughout the network to allow optimization of system efficiency

**B. User guidance**

- a. Help files - Full help files including general user interface help, library specific help and theory
- b. Tutorials - Videos and PDFs
- c. Examples - Demonstration networks
- d. Error and warning system
- e. Debugging tools - Can turn off parts of network for solving, can verify input and results in grid editor, colouring network by inputs also help in fault finding

**C. Libraries**

- a. Comprehensive library of industry components - Full set of flow system components, including inlets, outlets, losses, valves, turbo machinery heat exchangers etc.
- b. Built in fluid and material properties libraries - Comprehensive material and fluid library
- c. User expandable fluid and material properties libraries
- d. Built in component characteristic libraries including Ducting components in line with the ASHRAE standards.
- e. User expandable component characteristic libraries

**D. Software customisation / extending**

- a. Re-usable model builder (compounds) - Extensive support, allowing project or installation wide deployment of built models
- b. User definable solvers and components - Fully open architecture allows users to add their own solvers and components. Customization of existing components also possible.
- c. Scripting - Fully compiled script supported that allows customization and testing without slowing down simulations. Ability to Search and replace functionality to all the script editors

**E. Productivity enhancement tools**

- a. General equations as input - Equations can be typed directly into input fields like in SolidWorks
- b. Unit conversion - Support for a large array of unit types and units. Allows user customization and very easy to use.
- c. Multi-processor support - Full support for multiple processors at no extra cost
- d. Discretization of components - Single components can be discretized to get detailed results without having to modify network diagram.
- e. Unlimited model size - No limit, also no limit by licensing
- f. Built in standards - ISO, ASME, SANS
- g. User rights - Rights to modify network can be restricted
- h. Collaboration support - Easy merging and comparison of networks worked on in groups

## TECHNO-COMMERCIAL BID

### BID DOCUMENTS

S No.	Document Name	Document Details
1	Scanned Copy of receipt of Payment of tender fee *	
2	Experience Certificate/Tax invoice/Bill/ purchase order etc. of the similar types of supply /work ( minimum 2) *	
3	Specifications of the equipments (Annexure-D) *	
4	Declaration Regarding Blacklisting / Debarring For Taking Part In Tender (Annexure - C) *	
5	Bidder's Declaration (Annexure B) *	
6	Annual turnover certificate (last 3 yrs) *	
7	Instruction for Filling of E-Tender and General Terms And Condition of The Tender *	
8	GST Fill Certificate in last month *	
9	Copies of Income tax return filed during last three financial years *	
10	Copy of GST registration certificate *	
11	Copy of PAN Card *	
12	Whether manufacturer, if yes, please attach scanned copy of manufacturing license / certificate. Or undertaking from dealer/ supplier on firms letterhead *	
13	Information of the bidder (Annexure A) *	
14	Warranty certificate/ ISO/ISI Certificate *	

\* - Indicates Mandatory Document to Fill (to participate in tender)

### ITEM DETAILS

S. No.	Item Code	Item Name	Category	Version	Specification	Drawing	Documents Req. from Vendors	Comments
1	01-06-111 *	SUPPLY<>EQUIPMENT ITEMS<>NUCLEAR POWER PLANT SIMULATOR (INCLUDING HARDWARE) MODEL: FLOWNEX	EDUMART ITEMS	0	No	No	No Documents Selected	N.A.
2	01-17-098 *	SUPPLY<>IT ITEMS<>BROTHER LASER MONO COMPUTER PRINTERS FOR A4 PAPER SIZE (HL-L2366DW)	EDUMART ITEMS	0	No	No	No Documents Selected	N.A.
3	01-17-099 *	SUPPLY<>IT ITEMS<>DELL INTEL CORE I5 15.6 INCH LAPTOP (WINDOWS 11 HOME) (DELL VOSTRO)	EDUMART ITEMS	0	No	No	No Documents Selected	N.A.

\* - Indicates Mandatory Item to Quote (or to participate in tender)

<b>PRICE BID</b>
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<b>BID DOCUMENTS</b>
NOT REQUIRED

<b>FORMULA DETAILS</b>	
Category Name	Formula
EDUMARTITEMS	RATEPERUNITINCLUDINGALLTAXES

## Price Schedule : EDUMARTITEMS

S No.	Item Code	RATE PER UNIT INCLUDING ALL TAXES (in Rupees)	Total
1	[SUPPLY<>EQUIPMENT ITEMS<>NUCLEAR POWER PLANT SIMULATOR (INCLUDING HARDWARE) MODEL: FLOWNEX] 01-06-111 *		
2	[SUPPLY<>IT ITEMS<>BROTHER LASER MONO COMPUTER PRINTERS FOR A4 PAPER SIZE (HL-L2366DW)] 01-17-098 *		
3	[SUPPLY<>IT ITEMS<>DELL INTEL CORE I5 15.6 INCH LAPTOP (WINDOWS 11 HOME) (DELL VOSTRO)] 01-17-099 *		

\* - Indicate Price required for this item.