भारतीय समुद्रीय विश्वविद्यालय
Indian Maritime University
(केन्द्रीय विश्वविद्यालय, भारत सरकार / A Central University, Govt. of India)
कोलकता परिसर / Kolkata Campus

IMU-KC/Software/20-21 Date: 10.06.2020

Sub: Quotation for Supply, Installation & Commissioning of Structural and Thermal Software for IMU-KC

Quotations are invited from eligible and qualified original software manufacturers or their Authorised Distributor/Dealer through official E-mail towards supply, installation and Commissioning of Structural and Thermal Software version to IMU-KC. Bidders are requested to submit their rates against the following specifications for the required software:

Technical Specifications for the Required Software:

The software should encompass the design, research, analysis, simulate, validate and view graphically the results that are pertinent to

Mechanical Engineering and in particular to structural and thermal studies with the following capabilities:

- The licensing type sought is: Research grade unlimited node at least 5 user perpetual
- **Reference software include for full functionality compliance –**
    - **ANSYS –**

Features Offered in ANSYS Academic (Mech) (Latest Version)

- ANSYS License Manager (ansyslmd)
- **Solver Capability**
- ANSYS AIM Pro
- ANSYS Mechanical Enterprise (Includes Autodyn, Fatigue Module, Asas, Aqwa)
- ANSYS Rigid Dynamics (Rigid Body Dynamics)
- ANSYS Mechanical User Programmable Features (USER300 & related commands)
- ANSYS Aqwa Suite with Coupled Cable Dynamics (Legacy, replaced by Mechanical Enterprise)
- ANSYS Additive Suite & Additive Print
- **Discovery**
- Discovery Ultimate Enterprise
- ANSYS Space Claim Direct Modeler (includes Faceted Data Toolkit)

पी-19, तारातला रोड़, कोलकता -700 088 / P-19, Taratala Road, Kolkata - 700 088
Phone : (033) 2401 4673 / 74 / 76 / 78 / 1946, Fax : (033) 2401 4333, Hostel : 2401 4675
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Website : www.merical.ac.in & www.imu.edu.in

- **MCAD Geometry Interfaces**
- Neutral File Import (IGES, STEP)
- Import most common MCAD formats via SpaceClaim (Replaces Alinks for MCAD)
- ANSYS Geometry Interfaces for Parasolid & SAT
- ANSYS Geometry Interfaces for SolidEdge, Autodesk, NX
- ANSYS Geometry Interface for CATIA V5 & V6 Reader
- ANSYS Geometry Interface for Creo Parametric & Elements/Direct Modeling Geometry Interface for JT
- **Pre & Post Processing Features & Workbench Applications**
- ANSYS PrepPost (Includes ANSYS M-APDL Prep7, Post1)
- Workbench Schematic (Project Page)
- ANSYS Design Modeler
- ANSYS Customization Suite (ACT)
- ANSYS Workbench Meshing (Includes Extended Meshing)
- ANSYS Workbench System Coupling (FSI with ONE license)
- ANSYS Workbench Acoustics
- ANSYS Workbench Topolgical Optimization
- ANSYS DesignXplorer
- ANSYS Workbench Mechanical Application (Simulation)
- ANSYS Workbench Resources (Engineering Data)
- ANSYS Workbench Design Point Updates
- ANSYS Composite PrepPost]

  - **MSC Nastran** –

[Capabilities

- Optimized for large scale systems, assemblies, dynamics and NVH simulations
- Strength, durability and vibrations assessment of structures
- Structural dynamic response simulation of loads that vary with time or frequency
- Automated Component Modal Synthesis (ACMS) for large modal based analyses and NVH solutions
- Simulation of interior and exterior acoustics for coupled structural acoustic analysis

- Static and transient analysis of structures involving material, geometric and boundary condition nonlinearities
- Linear and nonlinear contact analyses with intuitive contact definitions
- Heat transfer analysis with contact including conduction, convection and radiation
- Failure analysis of structures and composites
- Rotor dynamic stability studies of rotating machinery
- Aeroelastic analysis
- Efficient optimization using sizing, shape and topology optimization with manufacturing constraints
- Optimize large model sections through Automatic External Superelements
- Enhanced iterative and in-core sparse solvers
- Multi-model optimization to simultaneously optimize two or more structural models
- Stochastic simulation
- Use Graphics Processing Units (GPUs) for improved solver efficiency
- Add customized element formulations, materials, contact definition, and more with User Defined Services (UDS)]

General capabilities of the software being supplied –

i) Graphical geometry modeller

ii) Graphical manual meshing

iii) CAD import for all the popular softwares such as .par, .jt, solidworks, creo, autodesk, ansys, altair etc.,

iv) Different Units should be facilitated.

v) Linear static

vi) Nonlinear - large displacements

vii) Nonlinear – contact

viii) Transient linear

ix) Transient nonlinear

x) Frequency and modal analysis

xi) Linear buckling

xii) Heat transfer

xiii) Electric/ Magnetic

xiv) Fluid Structure Interaction

xv) Solid elements

xvi) Beam/Rod/Tie

xvii) Anisotropic materials

xviii) Composites

xix) Viscosity/ Creep

xx) Piezoelectric

xi) Rotodynamics

The software should have in addition the following specifications:

Detail Stress Analysis - Finite Element Analysis (FEA) for design and analysis of pressure vessels and its support structures.

1. Analysis of shell and head away from discontinuity for all loadings including thermal.
2. Complete stress analysis of each nozzle at all discontinuities including welds - Bottom head to outlet nozzle, shell to Bottom Head and Skirt Junction - Internal supports to Shell/head Junction - Manway to Head, Shell to Top Head - Shell to Quench Nozzle Junction
3. Stress analysis of complete equipment and including skirt base assembly for all lifting (with all internals fitted)
4. Stress analysis for other portions/areas where design details are not covered by ASME code formulas and rules
    a. To perform Fatigue and Creep analysis
    b. When using FEM for justifying the Code compliance of the design, a complete FEA report having the elements listed below is required. Some important requirements for stress analysis are:
    c. Finite Element Analysis for local stresses at discontinuities
    d. Appropriate boundary conditions shall be facilitated so that the stresses at or near the boundary are reasonably close to the state of stress in the absence of the discontinuity.
    e. The elements used in the discretization of the FEM model shall be well shaped. In making a finite element model, use smooth transitions to avoid abrupt changes in mesh sizes.
5. Internationally recognized FEA software like Ansys or Abaqus or based on NASTRAN and such shall be provided.

a. The FEA used should be able to support the complete design, viz modelling, (GUI based), assigning material properties, meshing (surface, solids, and various other geometry), defining the load and constraints, simulating the model and viewing the results. The FEA should facilitate report generation and conclusions relating to the analyses. The results must be facilitated for suitable presentation as pdf or spreadsheets or document formats.

b. Description of analysis results (membrane, bending and total) at critical locations/sections for all individual load cases separately (e.g. pressure load, individual nozzle load components, thermal load, seismic load) as well as for all relevant load case combinations. The locations of these stresses must be clearly shown in the model mentioning the corresponding element/node numbers.

c. Methods to verify or validate the model by use of mesh sensitivity review and equilibrium check for finite element analysis and such

d. Basic inputs (dimensions, design data, material data, and loads etc.) and description of model geometry [including element type (2D, 3D), shape, and order (2nd order or above)] for finite element analysis.

    i. Simplification of geometry or refinement

    ii. Dimensions of the modelled portions for different components should be alterable at subsequent stages.

    iii. Extensive material library should be provided for all required physical properties (i.e. modulus of elasticity, Poisson's ratio, thermal expansion coefficient, thermal conductivity, thermal diffusivity), strength parameters (i.e. yield and tensile strength), and strain limits

    iv. Properties for isotropic and anisotropic materials

ESTMATED COST:

i. The estimated price for the Software – Rs.11.5 lakh (inclusive of GST)

General Terms & Conditions:

1. Bidders should quote their rates as per the format (Annexure-A) in their letterhead with official stamp and signature.
2. Supply, Installation, commissioning of Software & adequate Training to the IMU KC personnel to be provided by the firm.
3. The software should be compatible for full functionality with Dell (Windows 7 Professional; service Pack 1; Processor- Intel Xenon E52630; RAM- 16 GB; HDD- 2TB; Monitor- 24".
4. 1 year complete technical support, updates and AMC should be provided by the firm without raising any charge.
5. Minimum 3 days of Training on full functionality (5 hrs. per day) has to be undertaken by the firm within the price offered. No extra charges would be paid.
6. Perpetual license for the Software has to be provided to IMU-KC.
7. The rates quoted should be inclusive of all taxes (as per Annexure-A).

8. The rates quoted should be valid for two months from the last date of submission of quotation.
9. The required software should be installed preferably within 05 days of placing order.
10. Submission of multiple bids by a single firm will lead to rejection of the bids and IMU-KC may black list such firms from future participation.
11. Last date of submission of quotation is 17.06.2020.
12. Quotation should be submitted through Email to the Deputy Registrar, IMU-KC clearly subscribing "Quotation for Structural and Thermal Software" at dradmin.kolkata@imu.ac.in within 17.06.2020.
13. 90% of the bill amount will be made through RTGS/NEFT upon successful delivery and installation of the Software and rest 10% of the bill amount will be kept as performance security which will be payable on completion of one year. TDS will be deducted as per rule.
14. The bidder should have Valid PAN and GST Number.
15. The bidder should have valid trade license.
16. If the material supplied is found to be of lower specification than those stipulated in the requirement, IMU-KC shall have the right to reject the software. The bidder shall be responsible for taking back the rejected software at his own cost from IMU-KC.

-Sd-
Deputy Registrar

Annexure-A

FORMAT FOR SUBMISSION OF QUOTATION

Tender Reference no_____

1.Name of the Bidder_____

2.Offer to execute the supply as per the tender: Supply, Installation, Commissioning of Licensed Software "Structural & Thermal Software" to Indian Maritime University , P-19, Taratala Road, Kolkata -700088

Sl No	Details of the items	Unit Price (Rs)	GST (%)	Total Price (Rs) inclusive of all taxes and other charges
#	1	2	3	4=(2+3)
	Structural & Thermal Software with required specifications			

**The following to be noted while submitting financial details for supply of Software:-

1. The unit price of Licensed Software should be inclusive of all Costs involved for the delivery which includes supply, installation commissioning, and adequate three days training to IMU KC official in the IMU Campus including comprehensive warranty for 01 year.

I/WE as bidder certify that

a. The Tender & Offer price shall remain valid for acceptance for 60 days from the opening of tender.
b. Agree to offer services for onsite comprehensive warranty on Licensed software supplied through this tender

FURTHER Confirm that I/We agree with the Terms & Conditions specified above & if selected, the execution of the work would be done in compliance of the same.

Name_____
Designation_____

Official Seal