

**GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
DIRECTORATE OF PURCHASE & STORES**

Separate item wise sealed tenders are invited from the reputed manufacturers/dealers registered with DPS/DGS&D/NSIC or any other Central Government Department, BY THE REGIONAL DIRECTOR, MADRAS REGIONAL PURCHASE UNIT, DIRECTORATE OF PURCHASE AND STORES, DEPARTMENT OF ATOMIC ENERGY, VI FLOOR, SHASTRI BHAVAN, 4 HADDOWS ROAD, CHENNAI- 600 006, for the supply at Central Stores, HWP, Tuticorin/Indira Gandhi Centre for Atomic Research, Kalpakkam-603102, as detailed below.

TENDER NO	COST OF TENDER (INCLUSIVE OF TAX)	LAST DATE FOR SALE OF TENDER SET	LAST DATE FOR RECEIPT OF TENDER (1300 HRS)	DATE OF OPENING OF TENDER (1100 HRS)	EMD (INR)	SPECIFICATION AND QUANTITY
DPS/ MRPU/ IGCAR/ COMP/ 4098/ PT-713	312	21/11/08	11/12/08	12/12/08	64000	Dynamics Simulation Software for Analysis of Mechanical System-1 NO. (Detailed specification and quantity are given in the tender document which can be purchased from Deputy Controller of Accounts, Madras Regional Accounts Unit, Department of Atomic Energy, VI Floor, Shastri Bhavan, 4 Haddows Road, Chennai 600 006 by paying the cost of the tender)

The Documents priced as above can be obtained in person from the above address between 10.00 a.m. And 1.00 p.m. on all working days on submission of a written request in the firm's letter head along with an account payee DEMAND DRAFT or Banker's cheque drawn in favor of Deputy Controller of Accounts, Madras Regional Accounts Unit (no MO, cash or postal order acceptable), payable at Chennai. Wherever the tender documents are required to be sent by Post at Vendor's risk, a written request for the same along with an Account Payee Demand Draft towards the tender fee, shall be sent to the Deputy Controller of Accounts, Madras Regional Accounts Unit at the above address indicating the details of the tender No., Name and address of

the firm on whose favor the tender documents are to be issued. It must be ensured that such request should be sent in advance to reach this Directorate at least 10 days prior to the last date for sale of tender.

The envelope should be super scribed with the wordings "Request for issue of tender document against Tender No._____".

The tenderer shall submit along with the tender, Earnest Money Deposit (EMD) as mentioned above in the form of Demand Draft or Banker's Cheque from any Nationalized / Scheduled Banks drawn in favor of Deputy Controller of Accounts, Madras Regional Accounts Unit, Chennai. Any offer not accompanied with the EMD shall be rejected summarily as non-responsive. The EMD of the unsuccessful bidders shall be returned within 30 days of the end of the bid validity period. The same shall be forfeited if the tenderers withdraw their offer after the tender opening during the bid validity period. The Government shall not be liable for payment of any interest on EMD or any depreciation thereof.

However, those who have valid registration with DGS&D, NSIC or DPS as on the date of submission of bids are exempted from payment of EMD.

Brief information about our public tender is also available at <http://www.igcar.gov.in/tenders> and <http://tenders.gov.in/departments.asp?id=256>. For terms and conditions please visit <http://www.dpsdae.gov.in>

REGIONAL DIRECTOR, MADRAS REGIONAL PURCHASE UNIT HAS THE RIGHT TO REJECT ANY OFFER IN PART OR IN FULL WITHOUT ASSIGNING ANY REASON.

REGIONAL DIRECTOR

=====

TECHNICAL SPECIFICATIONS

1. Description of the ITEM : Dynamics Simulation Software for Analysis of Mechanical Systems
2. Detailed SPECIFICATIONS and Quantity : Technical specification: as per annexure – I

Quantity: 1No
Technical Specifications for

Dynamics Simulation Software for Analysis of Mechanical Systems

Technical Specifications for Dynamics Simulation Software for Analysis of Mechanical Systems

1.0 Description: This Technical specification is for procuring a dedicated Multi Flexible body Mechanism Analysis Software integrating multi physics capabilities (a software capable of offering rigid, modal and nodal non linear flexibility within the same solver) with design optimization on a single platform. This software tool will be used to gauge the feasibility of critical designs thereby giving a first case estimate regarding the dynamics of the mechanism. The main objective of inducting the use of such a software package is to apply to cases which would require accurate modeling of the system and subsystem to replicate actual physical operations but where physical testing is difficult in terms of cost, effort and time. The software supplied in this tender document should be user-friendly. Inherently, the accuracy of the solutions as generated by the solver for the dynamic analysis of flexible bodies should not be highly intensive in computational terms. It should have the capability of precisely modeling the reaction forces as well as the motion of multiple bodies when the applied forces on them keep changing dynamically. The GUI should also have a tabular window, listing the various mechanical elements that the model utilizes. The general user interface of the software should also have the ability of involving various toolkits which should be properly grouped with respect to the type of features. The same interface should also give a tabbed feature with options to depict the solution in graphical form. The feature should be flexible enough so that the user can have the choice of the variables that would be plotted.

1.0 Essential Components of the Item: The dynamics simulation software should have the following broad modules like:

1. Solid Model Rendering Module:

The dynamics software should have a Parasolid based modeler to accurately accept and send complete data to CAD softwares, enabling easy replication of the system under analysis in terms of solid models. This is the basic module which provides the start up window and 3D modeling environment. It should have view management and editing capabilities such as screen rotation, screen translation, selecting an entity, and copying so that the user can manage the 3D design space. There should be an associated database window to provide easy access to the model data and error reporting through input-output window should be fast and easy. It should have design optimization capability based on user-driven inputs and constraints. The module should offer macro builder, to develop automated procedures for model building, analysis, and plotting.

2. Dynamics Equation Solver Module:

The solver should be based on implementation of modern techniques like recursive algorithm using the relative coordinate system, to minimize computational solving time. It should support multiple solvers including implicit solvers. It should generate output in a manner convenient for interpretation and documentation.

3. CAD Model Import Module:

It should have the capability to directly import Parasolid files and also provide STEP translator to import and export files in this format, without losing data. This import and

export module should be self explanatory for the user to perform the operations through various stages.

4. FEA Input File Module:

The software module should create an input file for analysis in an external FEA package for stress analysis. It should be able to import these results from the external FEA package.

5. Integrated FEA Solver Module:

The software module should analyze a system containing both rigid and flexible bodies made from FE meshed data using the same integrator (solver). The analysis of non-linear flexible body can contain dynamic motion, dynamic stress and strain in time domain. It should be able to do contact analysis for stress, strain and contact force for rigid to rigid contact, rigid to flexible contact and flexible-to-flexible contact. It should be capable of both Modal and Nodal FE analysis.

6. Gear Toolkit Module:

The software module should provide easy modeling and analysis of complicated gear train system in a graphical user interface. It should analyze vibration characteristics and DTE (Dynamic Transmission Error), which occur from real contact phenomena between gear teeth, considering user-defined backlash and tolerance. Its post-processor should provide information about the contact normal force and friction force on contact point at each time step. The toolkit should provide all standard types of gears (spur, helical, bevel, worm etc) as well as 2D and 3D contact analysis capabilities (including flexible contact). The toolkit should have the added flexibility of letting the user define complicated geometric tooth shapes. The post processor should provide information about the contact normal force and friction force on contact point at each time step.

7. Chain Toolkit Module:

The software module should provide convenient and specialized tools to build 3D chain drive systems. It should have the features to address issues of vibration, requirements of lightweight and high speeds for such elements and systems. It should provide an advanced analysis environment to help improve the durability and quality of the chain system. The module should contain standard libraries of Roller, Multiplex Roller and Silent chains. The geometric characteristics of the sprocket as well as the chain assembly, should be modeled by the user definition and ISO standards.

3.0 Installation:

The software should not require any end user license agreement to be signed by the user nor should it require an end use statement. The dynamics simulation software shall have the compatibility to be installed on OS like Windows, Linux and UNIX based Workstations. The above software along with the add-ons should be pre installed on a server with the following specifications:

PROCESSOR, OPERATING SYSTEM AND MEMORY

PROCESSOR TYPE	INTEL XEON X5450 QUAD CORE PROCESSOR 3 GHZ
NUMBER OF PROCESSORS	2 PROCESSORS
INTERNAL CACHE	12 MB (2 x 6 MB) LEVEL 2 CACHE
SYSTEM BUS	1333 MHz FRONT SIDE BUS
STANDARD MEMORY	32 GB (8 x 4 GB) STANDARD MEMORY
MEMORY TYPE	PC2-5300 FULLY BUFFERED DIMMs (DDR2-667); 4:1 INTERLEAVING; MEMORY MIRRORING; ONLINE SPARE
MEMORY SLOTS	8 DIMM SLOTS
HARD DISK CONTROLLER	HP SMART ARRAY P400i/256MB CONTROLLER (RAID 0/1/1+0/5)
INTERNAL DRIVE BAYS	UP TO 6 SAS/SATA HOT PLUG DRIVE BAYS,
HDD	6 x 146 GB SATA, 15K RPM DUAL PORT SAS HARD DRIVES
OPTICAL DRIVES	DVD/CD-RW COMBO DRIVE
EXPANSION SLOTS	TWO PCI-EXPRESS EXPANSION SLOTS: (1) FULL-LENGTH, FULL-HEIGHT SLOT; (1) LOW-PROFILE SLOT; FRONT OR REAR ACCESSIBLE VIDEO PORT
POWER SUPPLY TYPE	700 W, OPTIONAL (1+ 1 REDUNDANT) POWER SUPPLY
OPERATING SYSTEMS	MICROSOFT® WINDOWS® SERVER 2008; WITH 10 CLIENT ACCESS LICENCE
PRINTER	HP COLOR LASERJET 1600 WITH ONE (1) SPARE CARTRIDGE
GRAPHICS CARD	HIGH END 256 MB GRAPHICS CARD NVIDIA FX 1500 OR EQUIVANLENT
VISUAL DISPLAY UNIT	21" LCD
OTHER PERIPHERALS	HP KEYBOARD AND MOUSE

4.0 Technical Support: This software and server should be supplied at IGCAR, Kalpakkam. The supplier should give technical support to any user's complaint within 48 hours from the time of receipt of complaint and for a period of one year from the date of acceptance. In case of any failure of the software, the supplier has to re-install the software within three working days from the date of receipt of complaint. The supplier should give one year support against any kind of malfunction of the software and its inherent modules.

5.0 Higher Version Support : If any higher version of the software or, any of the purchased components, is released within one year from the date of issue of installation certificate, the supplier should upgrade the existing software/modules free of cost.

6.0 Manuals and Software : One copy of original user manual - hard copy as well as soft copy- should be supplied along with the software.

7.0 Training : The supplier should give training for five officials for one week period and necessary training manuals and tutorials should be supplied to those officials. Analytical queries raised by the IGCAR officials, during training, should be addressed by the supplier or the training partners within twenty-four hours.

8.0 Licence : The software and its various components/modules should have a perpetual licence of from the date of installation.

9.0 Warranty : The server and the peripherals should be warranted for one year from the date of installation.

10.0 Validity: Quotation shall be valid for a period of four months from the date of opening of tender. Quotation shall be given for the total cost of supply and installation of complete system. A break-up of the cost shall also be given for the constituent modules and toolboxes.

=====