Indian Institute of Technology (IIT) Delhi
Department of Civil Engineering
Hauz Khas, New Delhi - 110 016, India.

Date: Friday 17th January, 2013

Sealed quotations are invited in Indian Rupees (INR) or USD from authorized representatives for 50 LAN Network licenses of **Hytran Water Hammer Software Program (Academic Edition) latest version** having the following technical specifications and prescribed terms and conditions as given hereunder. Interested parties are required to submit their sealed quotations for the same.

The Quotation should be addressed to **Dr. D R Kaushal** submitted/sent by post/e-mail at Department of Civil Engineering, Indian Institute of Technology (IIT) Delhi, Hauz Khas, New Delhi - 110 016, India **on or before by 1:00 p.m. on Monday, February 5, 2013.** Technical description for the networked based **Hytran software with soft license** is as under:

Sr. No.	Hytran Technical Descriptions	
1	**Transient Engine** Cavitation and Column Separation Air Release	Method of Characteristics Yes Yes
	Steady State Analysis Option	Automatic for Simple Pipelines Facilities for Looped distribution networks
	Import Steady State Analysis	• Watham • Pipes++ • EPANET2
	Import Network Data	From Excel files
	Database for Fluids, Pumps, Pipes, Valves	Has a user defined database for valves and pipes
	RESULTS Graphical Plots Customize Plots Real Time Transient propagation Reports Output files Compare results on same plot Time History of transients at a point Pressure envelop along a path Flow direction in pipes Transient Force Computation	 Yes Yes Yes + video replays Yes No Yes Yes Yes transient pressures calculated at node
	Editing Pipe network Graphical input (elevation and Plan Auto element labeling Zoom In/Out Panning Different Fluids Friction Darcy Weisbach /Hazen Williams Roughness Steady Varying Unsteady Pipe Merging Draw to Scale /Schematic Text Labeling	Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes
	Boundary Conditions **Air Valve** • Single acting • Double acting • Triple acting • Slow closing	 • Anti vacuum • Air release • 2 stage anti slam • 3 stage anti slam • Vacuum break for siphons
	Atmospheric Discharge	Atmospheric Discharge
	Air Chamber • Listed as gas vessel • Bladder	• Vertical • Horizontal • Bladder

		• Massal • Charlatte
	Check Valve	• Modelled using valve dynamic characteristics
	Dead End	**Dead End**
	One Way Discharge Tank	One Way Discharge Tank with check valve
	Draw Off	• Constant • Linear variation • Parabolic $H = KQ_2$ • Reinjection Well Modelling
	Pressure Relief Valve	Spring Operated Open/closing • Rapid open/controlled closing
	Pressure Regulating Valve • Pressure Reducing • Pressure sustaining • Flow Control	Pressure Reducing • Pressure sustaining • Flow Control • Pressure sustaining/reducing • Pressure relief valve • Surge anticipator • Surge override facility All the above have can simulate hydraulic or electronic tuning to prevent resonance
	• Pump shut Down • Constant speed (no curve) • Constant curve (with Curve) • Variable speed pump • Auto Pump Curve generation • User supplied pump Curve	• Fail or pump trip • Multiple pump trip • Start Up (VSD and Control valve) • Shutdown VSD and Control valve) • Constant speed • Multiple shut down VSD • Auto pump curve generation • User supplied pump Curve to above **Pump options** • Air Chamber (See above types) • No Valve – allow flow reversal • Bypass Check Valve • Check valve • Control Valve • Pressure relief valve • Surge anticipator • Not available for all above operations
	Reservoir	**Reservoir (Upstream and Downstream)** • Gates • Constant level • Level variation • Wave Action • Ocean Outfall Modelling • Downstream Gate with Surge Override Relief Option
	Rupture Disk	• Modelled by the Pressure Relief valve
	Sprinkler	**Sprinkler**
	Surge Tank • Simple • Orifice • Differential • Overflow facility • Variable tank area	• Simple • Orifice • Differential • Overflow facility • Variable tank area • Inflow into tank
	Standpipe	• Overflow • Variable area • Inflow into stand pipe
	Tank	• Altitude Control • Float Control • Surge override relief option
	Turbine	• Load acceptance • Load rejection

		• Runaway • Pressure Relief Valve option
	Valve (In-line)	• Different valve characteristic modelled by discharge coefficients stored in user defined database • Valve opening • Valve Closing • Surge Override Relief Option
	Discharge Valve (to atmosphere)	**Discharge Valve (to atmosphere)** • Different valve characteristic modelled by discharge coefficient stored in user defined database • Surge Override Relief Option
	Loss element egg orifice	• Modelled by inline valve
	Valve as turbine	• Dynamic Orifice to model turbine speed during load rejection
	Time Delay	Pump and control valve operations can be delayed

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Terms and Conditions:

1. If the bidder is an authorized dealer/distributor of any manufacturer, the authorized Indian dealership certificate from the principles should be attached for authenticity of dealership/agency and dealer should be authorized service provider. Quotations without authorized service provider certificate will be rejected.
2. An on-site comprehensive warranty for one year on software to be delivered shall be applicable from the date of installation. Any new release or update of above said software must be supplied free of cost.
3. Taxes and duties, terms and conditions, delivery period and warranty details should be clearly mentioned in the quotation.
4. Vendor should get a certificate for this particular quote directly from their product principal's clearly mentioning the purpose.
5. Special discount/rebate wherever admissible keeping in view that the supply is being made for educational purpose in respect of public institution of national importance may please be mentioned clearly.
6. IIT Delhi is exempted from paying Excise Duty and necessary Excise Duty Exemption Certificate will be provided.
7. The above item needs to be supplied with original packing directly from the manufacturing unit to IIT Delhi and the original packing can only be opened at our office for installation purpose, failing which consignment may not be accepted.
8. The supplied items like CDs, DVDs etc. should have proper authenticity. In case software is electronically downloadable from website, the supplier/distributor has to provide the user name and password for downloading the software and updates.
9. The payment will be made on the norms and conditions of IIT Delhi after delivery and successful installation of above said item.
10. Vendor should attach the relevant product brochure/leaflet for the items quoted.
11. Validity of the quotation should be at least 90 days from the closing date of this tender.
12. Specifications format should be similar to the given specification sheet and a compliance sheet may be provided along with the technical bid.
13. Vendor shall do the installation/deployment of the license(s) on server/standalone machine at IIT Delhi premises without any extra cost to IIT Delhi.
14. Supplier/distributor shall arrange product training at institute's premises as per the mutual agreed dates without any extra cost to IIT Delhi.
15. In case the item is proprietary in nature, a proprietary certificate from parent company must be provided along with the quotation.
16. **The institute authority/purchase committee has the right to accept or reject any quotation or all quotations without assigning any reasons whatsoever.**