

**DEPARTMENT OF ENGINEERING DESIGN**  
**INDIAN INSTITUTE OF TECHNOLOGY IIT MADRAS**  
**Limited Tender for supply of "Hydraulic Power Pack with LS HT Motor"**

Tender Ref No: ED/CSS/2017-2018/10/001

Date: 23.10.2017 & Due Date: 03.11.2017, & Time 4.00 pm (Indian Standard Time)

Dear Sir/ Madam,

1. Quotations are invited in duplicated for the various item shown below over leaf/enclosed list.
2. The Quotations duly sealed and superscribed on the envelope with the reference No. and due date, should be addressed to the undersigned so as to reach him on or before the due date stipulated above.
3. The quotations should be valid for (60) sixty days from the due date and period of delivery required should be clearly indicated.
4. If the item is under DGS&D Rate contract No. and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price .If so please send copy of the RC. (Please note that we are not Direct Demanding Officers).
5. Relevant Literature pertaining to the items quoted with full specifications. (and drawings if any) should be sent along with quotations, wherever applicable. Samples if called should be submitted free of charges and collected back at the supplier's expenses.
6. **Local firms:** Quotations should be for free delivery to this Institute. If quotations are for Ex – Godown delivery charges be indicated separately.
7. **Firms outside Chennai:** Quotations should be for F.O.R Chennai / F.O.B. Chennai / CIF Chennai (Including Insurance and Freight Charges). If Ex-Works, Packing, forwarding and freight charges must be indicated.
8. The rate of GST and the percentage of such taxes legally leviable and intended to be claimed should be distinctly shown along with price quoted. If this is not indicated no such claim will be admitted at any stage.
9. IIT Madras is exempt from IGST and import and is eligible for concessional rate of customs duty. Necessary certificate will be issued on demand.
10. Goods should be **supplied by carriage paid and insured.**
11. Goods shall not be supplied **without an official supply order.**
12. **Payment:** Every short effort will be made to make payment within 30 days from the date of bill/acceptance of goods whichever is later.
13. The Guarantee period of the item may be indicated clearly.
14. **Acceptance and Rejection:-** IITM has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.
15. **The limited tender was posted in our institute web site also. ([tender@iitm.ac.in](mailto:tender@iitm.ac.in)).**
16. Any quotations received after the deadline prescribed above will not be accepted. The quotation (duly signed hard-copy) should be sent to the following address.

**The Head**

**Department of Engineering Design**

**IIT Madras**

**Chennai-36**

Ph.no: 044 22574730 (Off)

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Chennai - 600 013

## **TECHNICAL SPECIFICATIONS OF HYDRAULIC POWER PACK WITH ACTUATORS**

### **PURPOSE:**

This Hydraulic Power Pack (here after mentioned as HPP) is to supply hydraulic energy to operate the mixing paddle of Hot Asphalt Mixing machine via Low Speed High Torque hydraulic motor (here after mentioned as LSHT motor) with torque range of 450- 550 Nm, with pressure range of 190 to 210 bar in the speed range of 45-55 RPM.

### **SCOPE:**

Scope of order covers design and manufacturing of HPP to the specifications given by Indian Institute of Technology Madras (here after mentioned as IITM). Supply and commission at IITM by the supplier with requested warranty period.

### **CONSTRUCTION:**

The hydraulic reservoir cum mounting frame must be in regular size of approximately 550\*350\*450 mm. The hydraulic pump will be of radial type or vane type driven by the suitable 3 phase electrical motor. The hydraulic motor must be the type of LSHT. The power pack must consist of two independent lines to control the two actuators independently.

### **SPECIFICATIONS OF HYDRAULIC POWER PACK:**

The power pack with mounting facility on the ground associated with 3 phase AC motor and hydraulic motor as specified by IITM along with control panel must satisfy the following:

1. The HPP must be capable of operating two actuators individually, i.e., LSHT motor and hydraulic cylinder. Each actuator line must have its own direction control valve (double Solenoid operated, spring centered, all ports closed in neutral position), non-return valve, pressure relief valve preset at max operating pressure, and pressure gauges. Both circuits must be fitted with throttling devices individually.
2. The maximum operating pressure of HPP must be higher than 210 bar.

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3. The power consumption of HPP preferably 5-6 kW.
4. Hydraulic oil used for the system: ENCLO 68.
5. Free discharge of hydraulic pump outlet: 15-17 Liters / Minute.
6. The hydraulic reservoir must have at least 75-80 liters of storage capacity with some free space.
- \*7. Drive Motor should be Crompton / ABB / Siemens make for the Pump operation on 3 Phase AC, 415 +/- 10% Volts, 50 +/- 3% Hz. The capacity of motor must be 7.5 HP.
8. Duty cycle: 4-6 hours daily (approximately).
9. There must be a provision in HPP to take out the paddle from the mixing drum mechanically by a hand pump in case of power failure.
10. The HPP must have proper breather with filter, strainer at pump intake, hydraulic filters (primary and secondary filters must be provided separately), drain plug, and oil level indicator.
11. Electric control panel must consist of motor starter, emergency shutoff switch, main isolators, fuses, MCB, single phasing preventer, and thermal overload relays.

### **Hydraulic motor**

The hydraulic motor must be the type of Low Speed High Torque motor which capable of generating the torque range of 450 Nm-550 Nm at the speed range of 45-55 rpm in the pressure range of preferably 190 bar-210 bar.

The test certificate of the LSHT motor must be attached along with the power pack during delivery if selected.

LSHT motor must be made of any one of the following brands like Eaton, Bosch, and Linde etc.

The complete working range chart for pressure, torque generated, flow rate, and rpm must be quoted with offer for specified LSHT motor without fail.

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### **HYDRAULIC CYLINDER:**

Stroke Length: The hydraulic cylinder must have the stroke length of 500 mm.  
Size of the bore: The bore size of the cylinder may be less than 50 mm.  
Mountings: The cylinder must have the flange type mounting at both ends.  
Inside finishing: Cylinder inside of cylinder must be coated with nickel chromium.  
Throttling: The cylinder must have throttling facility at both the ends.  
Load capacity: The actual load carrying capacity must more than 500 kg.  
Piston seals: The piston must have at least three seals.

### **HYDRAULIC HOSES:**

Spring Clad High Pressure rubber Hoses with fire resistant sleeve having working pressure of 350 bar. Proper connectors should be provided on both ends of hoses connect HPP and hydraulic motor.

### **PRE DISPATCH INSPECTION:**

The HPP, LSHT motor, and hydraulic cylinder will be tested for its satisfactory functions on the supplier's factory before dispatch, by the representative of IITM.

### **COMMISSIONING:**

The entire machine must be commissioned at IITM on the Hot Asphalt Machine by the qualified service engineer from the supplier end. The installation certificate duly signed by the IITM representatives should be attached for the billing process.

### **GUARANTEE:**

One year of guarantee period for complete equipment must be provided on successful commissioning and final acceptance by IITM.

### **OPERATION & MAINTENANCE MANUALS:**

In case of order, 3 copies of O & M manuals to be supplied along with the equipment. The manuals should have hydraulic circuit diagrams in addition to Operational Maintenance instructions and item details.

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### WORKING ENVIRONMENT:

Equipment should be suitable to operate in following working environment. Power supply: 415 V +/- 10%, 50 Hz +/- 3%, 3 phase without Neutral. Ambient condition: Temp: 0-45 deg. C, Relative humidity: up to 95 % Max.

### OTHER REQUIREMENTS:

Supplier must be an Original Equipment Manufacturer (OEM), in case of vendors; the dealership certificate of the OEM must be attached with your offer without fail.

The supplier must give all the specifications like dimensions, types of pump, motor, cylinder with manufacturer name and capacity of them clearly in the quotation.

The OEM/ vendor who does not supply the leading brands in India must attach their past customer purchase order like railways, defense sectors, research institutes and universities, etc.

Delivery period of the equipment should be mentioned in the quotation from the date of receipt of purchase order.

Information's about all taxes, packaging, delivery charges, and commissioning charges if any, must be clearly indicated in the quotation.

Manufacturer's name, type, and capacities of all sub assemblies like hydraulic pump, hydraulic motors, electric motor, starter, direction control valves, pressure gauges, and hydraulic hoses etc. should be mentioned in the quotation.

The supplier who supplies any of the components that are inappropriate/ inadequate/ wrong according to specifications mentioned in quotation offered by them, will be penalized as per the rules of IITM.

The quotation should provide a point-by-point response to the above technical requirements. Any quotation that includes generic responses or incomplete responses would be rejected.

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