

**No.-02/10(02)/2016/NISE-ST (R&D) NATIONAL
INSTITUTE OF SOLAR ENERGY** An autonomous
Institute of Ministry of New & Renewable Energy) **GURGAON**

**NOTICE INVITING TENDER FOR INSTALLATION, TESTING AND
COMMISSIONING OF COLD ROOM FOR FRUITS, VEGETABLE & DAIRY
PRODUCTS STORAGE**

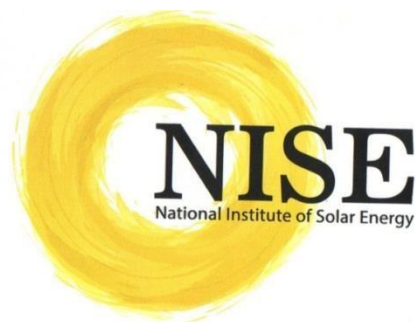
Sealed Tenders are invited by office of the Director General, National Institute of Solar Energy from original developers or their authorized Indian distributors for the supply of Installation, Testing and Commissioning of Cold Room for Fruits, Vegetable & Dairy Products Storage. The bidder should be a reputed firm having sufficient experience in supplying similar system. In case of a proprietary ownership of the cold storage chamber, the bidder must submit a copy of the authorized certificate from the original developers of the system stating the authority of the bidder for supply of the system. Please visit National Institute of Solar Energy website: www.nise.res.in or www.mnre.gov.in for complete Tender Document and detailed Specifications.

Sealed tenders may be submitted in two parts i.e. Part-I containing Technical Bid along with a Demand Draft for EMD and Part-II containing only commercial invoice in a separate, sealed envelope, super scribed as "Commercial Bid". Both the technical and commercial envelopes should be kept in a large size sealed envelope super-scribed as tender for "Installation, Testing and Commissioning of Cold Room for Fruits, Vegetable & Dairy Products Storage" and addressed to: The Director General, National Institute of Solar Energy, Faridabad-Gurgaon Road, Gwal Pahari, Gurgaon, Haryana, India. Closing time and date for receipt of tenders at NISE is 01.00 Noon on 27th June, 2016. Technical bids will be opened on 29th June, 2016 at 03:00 PM.

BID DOCUMENT

For

**Supply, Installation, Testing and Commissioning of Cold Room for Fruits, Vegetable and
Dairy Products Storage at NISE**



NIT NO: 02/10(02)/2016/NISE-ST (R&D)

Last Date of submission of bids: 27th June, 2016

At

NATIONAL INSTITUTE OF SOLAR ENERGY(NISE)

Gwal Pahari, Gurgaon-Faridabad Road,

Gurgaon-122003, Haryana,

INDIA

Telefax No. : +91-124-2579207

No.-02/10(02)/2016/NISE-ST (R&D)
National Institute of Solar Energy
(An Autonomous Institute of Ministry of New and Renewable Energy)
Gwalpahari, Gurgaon-Faridabad Road,
Gurgaon, 122003(HR).
Phone: 091-124-2579213
Fax: 091-124-2579207

Tender Document

Sub: SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF COLD ROOM FOR FRUITS, VEGETABLE & DAIRY PRODUCTS STORAGE at National Institute of Solar Energy, Gwalpahari, Gurgaon, Haryana, India.

On behalf of the Director General (DG), **National Institute of Solar Energy (NISE)**, sealed tenders are invited for Supply, Installation, Testing and Commissioning of Cold Room for Fruits, Vegetable and Dairy Products Storage at the National Institute of Solar Energy, Gwalpahari, Gurgaon, Haryana, India. The bidder should be a reputed firm with sufficient experience. Preference may also be given to those bidders who can offer trouble free post procurement maintenance and those having their authorized service center.

1	Tender No.	No.-02/10(02)/2016/NISE-ST (R&D)
2	Scope of Work	Supply, Installation, Testing and Commissioning of Cold Room for Fruits, Vegetable and Dairy Products Storage at the National Institute of Solar Energy, Gwalpahari, Gurgaon, Haryana, India
2	Details of System	Cold Storage Chamber with specified specification mentioned in the Annexure.
3	Earnest Money Deposit (EMD) (Refundable without interest)	Rs.5,000/-
4	Place of issue & submission of bid document and address for communication #The Envelop should be super scribed as Tender for " Cold Storage ".	NATIONAL INSTITUTE OF SOLAR ENERGY Gurgaon-Faridabad Road, GwalPahari, Gurgaon, Haryana-122003, India
5	Closing time & date for submission of bids	01:00 PM on 27 June, 2016
6	Opening of Technical Bids	03:00 PM on 29 th June, 2016
7	Opening of Financial bids of technically qualified bidders	03:00 PM on 30 th June, 2016

8	Time of supply	Maximum five weeks, after issue of P.O.
9	Validity of offer	The offer will remain valid for 4 months from the date of tender publication date
10	Validity of earnest money	The earnest money shall be submitted by the bidder in the form of CDR/FDR/BG from any bank operations in India pledged to the Director General, NISE. This shall remain valid for 12 months from the date of submission of bids.

2. SCOPE OF CONTRACT:

The contract should cover the supply, installation, commissioning and maintenance of the subject item at the National Institute of Solar Energy, Gwalpahari, Gurgaon (Pin 122003), Haryana, India.

3. SCOPE OF WORK

A total 1600 CFT Cold Room for storage of Fruits, Vegetables, Dairy products etc. is planned to be put up. The facility will have state of the art Cold Room Machinery.

The Scope of work for Cold Room would cover the following:

- a) Refrigeration system for Cold Room as per specifications to be installed and commissioned.
- b) Pre-fabricated Insulated Panels & Door for Cold Room as per specifications to be installed and commissioned.
- c) Temperature Controller as per specifications to be installed and commissioned.
- d) Electrical control panel for motors, refrigeration etc.
- e) Providing totally enclosed, surface mounted T/L fitting suitable for Cold Room application(Jet proof), & power plugs
- f) Laying and connecting power cable, control cables etc.

The tendered rate shall be deemed to include for all material, equipment, accessories, transportation, insurance and all connected works required for successful erection, testing and commissioning of above equipment / system including necessary foundations for equipments.

4. SPECIFICATIONS&QUANTITY

See annexure A and annexure B

5. EARNEST MONEY DEPOSIT (EMD)

A sum of Rs.5,000/- should be submitted as Earnest Money Deposit (EMD) **along with the technical bid** in the form of nationalized bank's demand draft drawn in favor of "National Institute of Solar Energy payable at Gurgaon". The EMD of the accepted tender will be retained as Security Deposit and the EMD of other unsuccessful bidders would be refunded without any interest.

6. DELIVERY PERIOD

Cold Storage complete in all respects as per specifications above, should be delivered at the site/consignee within One month from the date of issue of confirmed supply order.

7. INSPECTION

The supplier should satisfy themselves that the equipment supplied, fully conform to the specifications with authorized license by carrying out complete pre-inspection of each component before dispatch. Final inspection will be carried out in the presence of firm's representative after the installation of the equipment at National Institute of Solar Energy, Gwal Pahari, Gurgaon-Faridabad Road, Gurgaon (Pin-122003), Haryana, India.

8. CONSIGNEE

Director General, National Institute of Solar Energy (NISE), GwalPahari, Gurgaon-Faridabad Road, Gurgaon (Pin-122003), Haryana, India.

9. PAYMENT TERMS

- 90% of the amount is paid after supply of equipment.
- Remaining 10% will be paid after the commissioning at site.

10. PENALTY

The supplier shall supply the stores in accordance with the particulars as expressly specified at the time/times and at the place/places only. The time for and the date of the stores stipulated shall be deemed to be the essence of the supply/work order. If the supplies are not completed within the period prescribed, the supply order will be liable to be cancelled at the risk and cost of the contract besides forfeiting the Earnest Money Deposit. Should the supplier fail to deliver the systems within the period prescribed for such delivery/completion or at any time repudiates the contract before the expiry of such period, the competent authority or the purchaser may without prejudice to his right to recover the damages for breach of the contract/order. If for any reasons the contractor is unable to adhere to the contract delivery dates, he may seek extension in delivery/completion dates well in time by sending a request in writing in this regard to the under signed officer issuing the contract/supply order. The purchaser reserves the right to allow the extension of delivery period subject to such conditions as he may think fit. However, the decision of the purchaser shall be final and binding.

11. DOCUMENTATION:

The supplier will provide drawings, manuals, installation, operation and maintenance, trouble-shooting, circuit diagram etc. The supplier will also supply detailed circuit diagram and installation configuration of the equipment including Do's and Don'ts in **English**.

12. DISPUTES:

In case of any dispute the decision of the Director General, National Institute of Solar Energy (NISE), (an Autonomous Institute under the Ministry of New and Renewable Energy), Gwal Pahari, Gurgaon-Faridabad Road, Gurgaon (Pin-122003), will be final and binding on both the parties. Further dispute, if any will be settled in the Court of Law at New Delhi jurisdiction only.

13. COMPETENCE:

The supplier should have sufficient experience in manufacturing/ Supply of Cold Storage Room. Catalogues and company profiles should be enclosed along with the Technical bid.

14. VALIDITY:

Tenders should be valid for 30 days from the date of opening.

15. SUBMISSION OF TENDERS

Sealed tenders are to be submitted in two parts i.e. **Part-I containing Technical competence/literature along with Demand Draft for EMD**, and **Part-II containing only commercial invoice in a separate sealed envelope, super-scribed as commercial bid**. Both the technical and commercial bids should be kept in a large size sealed envelope super-scribed as tender for “, **INSTALLATION, TESTING AND COMMISSIONING OF COLD ROOM FOR FRUITS, VEGETABLE & DAIRY PRODUCTS STORAGE**” due for on **27th June, 2016** and addressed to:

Director (**Solar Thermal**)
National Institute of Solar Energy (NISE),
Gwal Pahari, Gurgaon-Faridabad Road,
Distt. Gurgaon (Pin-122003), Haryana.

“INSTALLATION, TESTING AND COMMISSIONING OF COLD ROOM FOR FRUITS, VEGETABLE & DAIRY PRODUCTS STORAGE”

S.K Singh
Scientist 'G'

Annexure – A

A. TECHNICAL SPECIFICATIONS & DESIGN SPECIFICATIONS

- 1) Technical standards should be as per Technical Standards and Protocol for the Cold Room for Fruits, Vegetables and Dairy product storage.
- 2) Material should be as per Relevant BIS and Other Standards.
- 3) Cold Room should be as per International (EU) Health and Safety Rules.

B. DESIGN CONSIDERATIONS

1. COLD ROOM OF 1600 CFT CAPACITY (1 No)

Capacity	:	1600 CFT
No. of Chambers	:	One (1)
Chamber Size	:	16.0 ft. x 10.0 ft. x 10.0 ft. (H)
Product	:	Fruits, Vegetables, Dairy products
Design Inside Temperature	:	+2 to +8.0 °C
Relative Humidity	:	85 - 95%
Ambient Temperature	:	43 °C (Maximum) 1.7 °C (Minimum)
Product Entering Temp	:	30 °C
Pull down Time	:	24 hours
Insulation	:	60mm thick PUF Panel for ceiling and walls 60 mm thick PUF Panel for floor
Door	:	Hinged Door
Gas Tightening of Room	:	Application of silicon sealant on joints of panels, corners, door etc.
Door Size	:	900mm (W) x 1800mm (H)

2. Refrigeration System

The refrigeration system offered should meet the desired refrigeration load of 6.0 KW with following features:

- a) Digital modulated variable capacity Air Cooled Condensing Unit with Reputed Make scroll compressor (Refrigerant to be R-407c), having 2.3 T.R (7.5 KW) Cooling Capacity, Air Cooled condenser with copper tubes and aluminum fins complete with fans and motors considering the ambient temperature of 43 °C and evaporating temperature of -3 °C, Base frame for mounting the compressor and condenser assembly, H.P/L.P cutouts and pressure gauges with and piping. – One no.
- b) Air Cooled Condensing Unit with Reputed Make scroll compressor (Refrigerant to be R-407c), having 1.45 TR (5.0 KW) Cooling Capacity, Air Cooled condenser with copper tubes and aluminum fins complete with fans and motors considering the ambient temperature of 43 °C and evaporating temperature of -3 °C, Base frame for mounting the compressor and condenser assembly, H.P/L.P cutouts and pressure gauges with and piping. – One no.
- c) Fan Coil unit (s) shall be ceiling mounted complete with Coil, fan, motor, drain pan and defrost water tray. Required Cooling Capacity is 6.0 Kw at 5k TD. The casing and the pan shall be made from Aluminum and duly painted powder coated. The unit shall have sturdy frame with brackets for suspending from ceiling. The cooling coil shall be of seamless copper tubes with aluminum fins and pressure tested pneumatically. The fan on the unit shall be 2/3 Nos. mounted directly on motor shaft. The fan motor shall be KIRLOSKAR/SIEMENS or equivalent approved makes, suitable for low temperature operation, 50 C/s AC supply. The air flow of the offered unit should be as per Technical Protocols. In each room a minimum of 1 unit to be provided. Fans should be able to generate enough air flow and maintain uniform temperature in the Room.
- d) Copper piping shall be of refrigeration quality grade and the valves/controls shall be Danfoss/ henry/Honeywell or equivalent make and shall include all accessories. Suction Line should be insulated with 19 mm thick Nitrile Rubber, Liquid Line should be insulated with 13 mm thick Nitrile Rubber.
- e) Complete set of controls and instruments including digital temperature indicator cum controller, liquid/suction line solenoid valves, digital thermometer (-5⁰ to 50 °C) and RH Indicator (0 to 100 % range). Thermostatic Expansion valve of reputed make should be able to maintain desired temperature. Good quality sensors to be used for accurate measurement and control of Temperature and RH.
- f) First charge refrigeration gas and oil etc., Miscellaneous items such as vibration isolators for condensing units, minor structural openings in walls etc. for piping.

3. Leak Tight Chambers:

The chambers must be leak tight. This should be displayed to Engineer-in-charge.

4. INSULATION:

The Insulation for Walls, Ceiling & Floor shall be 60mm PUF Panels with Silicon sealant application for leak proof joints.

4.1 Floor Insulation

Floor insulation must be carried out using 60mm thick PUF Panels of density 40 kg/m³. 19mm marine plywood should be used in Floor panel IN-BUILT on top of PUF. 3mm thick Aluminum Checkered Plate should be fixed with plywood as top layer

4.2 Insulated Sandwich Panels – PUF

The properties of the PUF panel should confirm to best International Standards:-

PUF insulation core thickness	60mm
Density	40 +/- 2 Kg/M ³
Closed cell content	90 -
Thermal Conductivity	0.023 W/m-K
Compressive Strength	2.1 kg/ m ² (at 10% deformation)
Water Vapour Permeability	0.8 -.12 gms./hr. m ²
Fire Resistance	Self-extinguishing
Environmental acceptance	CFC Free
Sheet	0.5 mm TCT steel GI Colour coated Galvanized sheets (inner & outer)

Annexure B

BILL OF QUANTITY

Name of Work: Tender for Cold Room at

ITEM NO.	DESCRIPTION OF ITEM	QUANTITY	Unit
1	Supply, Installation, Testing, Commissioning of 2.3 TR capacity refrigeration unit comprising of air cooled condensing unit as per specifications complete with all accessories, connections etc. for Cold Room	1 No	
2	Supply, Installation, Testing, Commissioning of 1.45 TR capacity refrigeration unit comprising of air cooled condensing unit as per specifications complete with all accessories, connections etc. for Cold Room	1 No	
3	Supply and fixing of PUF Insulation panel of 60mm thickness on walls and ceiling as per specification	53 SQM	
4	Supply and fixing of 60mm thick PUF Panels for Floor.	15 SQM	
5	Supply, Installation, Testing & commissioning of Hinged Door as per specifications complete with all accessories for Cold Room application	1 No.	
7	Supply, Installation, Testing & Commissioning of Temp.,RH, as per specification, complete with all accessories, connection etc.	1 No.	
8	Supply, Installation, Testing & Commissioning of Fan Coil Unit 6.0 KW capacity as Per specification complete with All accessories, connection etc.	1 No.	
9	Supply, Installation, Testing & Commissioning of Refrigeration Piping Work of required layout as per specification. Complete with all accessories, Connection etc.	1 Lot	
10	Supply, Installation, Testing & Commissioning of Drain Water Piping Work of required capacity as per specification complete with all accessories, connection etc.	1 Lot	
11	Supply, Installation, Testing & Commissioning of Valve Station of required capacity (this include Thermostatic Expansion Valve) as Per specification complete with all accessories, connection etc.	1 Lot	

12	Supply, Installation, Testing & Commissioning of PVC Strip curtain of required thickness for Cold Room application as per specification of door.	1 Lot
17	Supply, Installation, Testing & Commissioning of cabling & wiring for Equipment's of required capacity as per specification complete with all accessories, connection etc.	1 Lot
18	Supply, Installation, Testing & Commissioning of Internal Lighting of Rooms of required capacity as per Specification complete with all accessories, connection etc.	2 Nos.

C. APPROVED MAKE OF COMPONENTS

i)	MPDC/PCC/MCP	Panel Manufacturers having CPRI test certificate of Similar panel
ii)	Switch Gear/ Control Gear/ Overload Relay	Siemens / L & T / Schneider / equip
iii)	MCB/MCB DB	Standard / L&T(Hager) / Siemens / GE / Schneider / Havells / Legrand /
iv)	Motor	Siemens/ ABB/ Jyoti/ Bharat Bijlee / Crompton / NGEF / Kirloskar / Alsthom
v)	Light fittings	Philips / GE / Crompton / Bajaj / Wipro/ Phoenix (Halonix)
vi)	Power Cables	CCI / Havell's / Gloster / Industrial/ Asian / NICCO / Universal / RPG / Torrent/ Polycarb. (Must conform to IS 7098 Part-I or IS 6474 or IS 6380)
vii)	Wiring Cables	Havells / Finolex / Plaza / Polycarb/ KEI. (Must conform to IS 694)
viii)	Cable Glands	Comet / Electromac/Siemens / Braco
ix)	Cable Lugs	Dowell/ Johnson
x)	Metal Socket outlets	Best & Crompton / CGL / Havells / Anchor
xi)	Contactors/Fuses/isolators	Siemens / GE Power / BCH / L& T/ ABB / TC
xii)	Indicating meters	MECO/ AE
xiii)	CTs	AE / Kappa/ Siemens/ L&T/Equip.
xiv)	Indic lamps/Push buttons	Siemens/ Schneider/ L& T
xv)	Terminal blocks	Elemex / Connectwell / WAGO
xvi)	MCCB	GE/Schneider/L& T/Siemens/ ABB
xvii)	Relays	GE/ Schneider/ ABB/ L&T
xviii)	Meters	MECO/ IMP/Equip
xix)	Start/Stop push button with contact elements	Siemens/ Schneider/Equip.
xx)	HP/LP/OP Switch	Indfoss/ Danfoss/ Equip Honeywell/ Penn/ Equip
xxi)	PUF Panels	Jindal Metetechno/Lloyds/Equivalent
xxii)	Door	Metaflex/MTH/DAN/Equivalent
xxiii)	Fan Coil Unit	Alfa Laval/Star Cooler/Luve/Equivalent

- | | |
|--------------------|---|
| xxiv) Fans for FCU | WING or Equivalent |
| xxvi) Air Cooled | Blue Star/Emerson/Bitzer/Carrier or Equivalent
Condensing Unit |

Any other items not included above shall be supplied by contractor after obtaining the approval for make, from our Engineer / Consultant.