

**Bill of Quantity**

**Name of work:(a)Design , Engineering , Supply, Installation, Testing & Commissioning of Solar Water Heating System with backup system 2000 LPD X 9 No. Units ( 18000 LPD)**

**(b)Annual Maintenance Contract (AMC) for 5 years of Solar water Heating System at Basholi boys Hostel Block C & D along with connecting Dining Hall (G+4) at SMVD University Campus, Kakryal, Katra**

S.no	Item Description	Quantity	Units	Rates
1	2	3.00	4	5
<b>PART-A</b>				
1	Supply , erection , testing and commissioning of Thermosyphon type Solar Water Heating Systems of 2000 liters capacity at 60 Deg C each including system design supply installation , lifting fabrication, transportation, insulation, testing ,commissioning of the system inclusive of all taxes and duties to the satisfaction of SMVDU. The entire system shall be as per detailed technical specification give in the Bid document and which includes as follows.	9.00	Set	Rates to be quoted by the contractor for complete unit/job
A	The Solar flat collector shall be fabricated as per specification , any innovative deviation from these specifications. It must be as per latest BIS 12933: 2003 and amended time to time. Collector absorber made of copper sheet with special high performance coating and copper header riser tubes for flowing the water . Collector body must be aluminum extended sections with powder coating and toughened , tempered , textured high performance glass of suitable size fitted with sealing properly to avoid water insertion inside the collector . Latest collector testing report must be required before supply of the material.	180.00	Nos	
B	Hot water insulated stainless 304 Grade tank, shape Horizontal cylindrical type with jacketed type heat exchanger, 2000 ltr capacity horizontal storage tank. The thickness of sheet 16 SWG with internal passivation. All the suitable connection required for connecting the collectors and cold water inlet and outlet points to the tank. The insulation of Regid & Compact Polyurethane Foam 75 mm Thick & 40 Kg/m3 high density with high mechanical strength lower thermal conductivity, low moisture absorption, having no thermal bridges. Outer cladding with 24 SWG powder coated G.I. Oven baked sheet with attractive finish, it must be screw less joints to avoid the water percolation inside the insulation and to maintain the temperature properly. Tank support structure in M.S Galvanised , Zinc plated with approved quality of all necessary heavy duty sockets , drain arrangement , temperature indicator, Electrical back up of necessary KW and required mechanical temperature control device etc complete	9.00	Nos	
C	Stainless steel 304 make up tank of 10 ltr for charging the heat transfer fluid glycol as a anti freez solution and required for working of the indirect heating purpose.	9.00	Nos	

D	M.S. Angles of suitable sizes with galvanised for long life required for the collector and tank installation as per site requirement and details mentioned in the specifications.	9.00	Set
E	Supplying and fixing of G.I insulated 'B' class ISI mark system piping i.e. pipe from collector to hot water tank to collector array, piping within the rows of collectors and piping from last collector of final row upto hot water tank including all required GI fitting such as tees, bends, unions, elbows, plugs, reducers etc. with necessary MS supports Galvanised/ Zinc plated with approved quality, and support at suitable regular intervals for all verticals and horizontal pipes and necessary insulation of polyurethane foam of suitable size with UV stabilized outer cladding with fair finish and screw less joints to avoid heat loss.	9.00	Set
F	Supplying and fixing necessary of ISI or equivalent two gate valves of required size as per system and requirement and standard engineering practices within the system one in inlet and one in outlet of system piping of collectors and tank.	9.00	Set
G	Supply, erection, testing and commissioning of Electrical Backup System with 3 kw each electrical backup and thermostat of suitable capacity in the system. No of electrical heaters are required as per the standard and according to the capacity.	9.00	Set

**PART-B**

1 Annual maintenance contract for five years for 18000 LPD @                      per year =

Total Part A =

Total Part B =

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Gross Total =