

**Annexure - A**

**Specification for Solar Water Heater System of 200 Litres per Day (LPD)**

Sl.No.	Description for BHEL Requirement	Specified/ To be confirmed by	Offered by Bidders	Deviations / Non-Conformities
1.0	The FPC based Solar Water Heater System of 200 Litres per Day (LPD) will be from BIS approved or MNRE approved manufacturers/suppliers. The Systems will have the following minimum requirements for installation under MNRE subsidy.	Confirmation Required		
1.1	<b>General</b>	i). All the collectors will be south facing inclined at suitable angle to give best performance in winter. ii) There will not be any shadow falling on the collectors from nearby structures or of other collectors in front or back row iii) Hot water pipe lines of any kind in colder regions will be fully insulated from the point of drawl of water from tank to delivery points. In other regions also care will be taken to avoid heat losses from pipelines. iv) The workmanship & aesthetics of the system will be good and it should be visible to anybody v) There won't be any leakage observed in the system from tanks/ collectors/ pipelines vi) No electric back up is required.		
1.2	<b>Technical Requirements</b>	Flat Plate Collectors : ISI mark (2 sq. m. absorber area for 100 liter tank capacity system in colder region and 125 liter for other regions)		
1.2.1	Storage Tanks, Piping, Support structure etc	To be all indigenous & not imported		
1.2.2	Inner tank material	SS 304 or 316 grade min/ MS or any other material with anticorrosive coating for hard water with chlorine contents.		
1.2.3	Inner tank thickness	For SS minimum thickness will be 0.5 mm when using argon arc or metal inert gas for welding & 0.8 mm when using other type of welding. For MS it will be 1.5 mm. No leakage under any kind of negative or positive pressure of water will be ensured.		
1.2.4	Inner tank welding	TIG / Seam/ pressurized weld (Open arc weld not permitted)		
1.2.5	Storage tank capacity	Not less than system capacity.		
1.2.6	Thermal insulation of Storage Tanks	Minimum 50 mm thick CFC free PUF having density of 28-32 kg/ cu.m for domestic systems and 100mm thick Rockwool of 48 kg per cu. m for other systems. F		
1.2.7	Thermal insulation of Hot Water Pipes	Minimum 50 mm thick rockwool or 25 mm thick PUF on GI pipes. For colder regions, it will be 1 ½ times atleast. In case of composite pipes, it will depend on region to region. For higher density insulations, the thickness may reduce proportionately.		
1.2.8	Outer cladding & Frames	Al/ FRP or GI powder coated. MS may also be used with special anti-corrosive protective coatings. Thickness of sheets will be strong enough to avoid any deformation of the cladding.		
1.2.9	Valves, cold water tank, vent pipe, heat exchanger, make up tank & instruments	Of ISI mark.		
1.2.10	Support structure for Collectors, piping, tanks etc	Of non corrosive material or have corrosion resistant protective coating. They will be strong enough to sustain their pressure during the lifetime of system.		
1.30	An undertaking will be given by the manufacturer/supplier confirming to above requirements while submitting proposals to MNRE/SNAs for claiming subsidy. The manufacturer will also provide the detailed specifications of each and every part of his system to the beneficiary alongwith O&M Manual. Salient features of the system will also be highlighted on a plate fixed on front surface of the tank alongwith name of manufacturer / dealer & his contact No.	Confirmation Required		
1.40	Prices quoted should be such that i.e. after reducing the MNRE subsidy as per eligibility.	Confirmation Required		
2.0	<b>Scope of Supply</b>	<b>Capacity</b>		
2.1	FPC based Solar Water Heater System	200 Litres per Day (LPD)		