

Rate Contract
Government of India
Directorate General of Supplies & Disposals
Jeevan Tara Building, 5 Sansad Marg
New Delhi-110001
Tel Number 23360610/23360537

Rate Contract no. SWHS/IT-2/RC-D3060000/0310/82/02509/0664
Dated 20-JUL-09

To,

SU SOLARTECH SYSTEMS (P) LTD.
SCO 184, Sector 7-C,
Chandigarh

Sub: Rate Contract for supply of Solar Water Heating System
Validity: From 20-JUL-09 To 31-MAR-10 .

Ref:(1) This Office Tender Enquiry No. SWHS/IT-2/RC-D3060000/0310/82
Opened on 27-FEB-09.
(2) Your Quotation No. SSSPL/08-09/21460 And Dated
24-FEB-09.

Dear Sir,

You are hereby informed that your above referred tender read with subsequent letters mentioned above for the Stores specified in the Schedules annexed has been accepted. This rate contract will be governed by the terms and conditions brought in the Form no. DGS&D 1001 available from dgs&d sales counter on payment of Rs. 50/- .The Rate Contract and the schedules annexed here to shall be the sole repository of this Rate Contract/Transaction.

SCHEDULES ANNEXED

- 1.Schedule "A" Description of stores,prices,duties/taxes.
- 2.Schedule "B" special conditions of contract / Other information.
- 3.Schedule "C" Information to DDOs about parallel rate contracts.
- 4.Annexure - Technical Specification

Yours Faithfully,

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Assistant Director(S)/Section Officer/Dy.Director
For and on behalf of the purchaser named in the Form DGS&D 1001.

SCHEDULE - A

1. Rate Contract No.: -SWHS/IT-2/RC-D3060000/0310/82/02509/0664
Dated 20-JUL-09 For the Supply of Solar Water Heating System

2. Advance Rate Contract No.: - Nil
Dated

3.(a) Name and Full Address of the Firm :-

SU SOLARTECH SYSTEMS (P) LTD.
SCO 184, Sector 7-C,
Chandigarh
CHANDIGARH - 160019
Tel. No. - 0172-2792699
Fax - 0172-2792576
Email - solartech@glide.net.in

(b) Name and Full Address of Manufacturer :-

SU SOLARTECH SYSTEMS (P) LTD.
SCO 184, Sector 7-C, Chandigarh- 160019

(c) Brand:

4. Validity of Rate Contract: 20-JUL-09 To 31-MAR-10

5. Description of Item, Specification, Unit, Rate

Item Model No.	Store Description		Unit	Rate (in Rs.)
1 SWH-1/T1-HX	Solar Water Heating System with heat exchanger Type 1 for cold region.	Rated capacity in litres per day (LPD): 100, Min. aperture area of collector (sq. mtrs): 2, Electrical heater back up (KW): 2, Capacity of make up tank (ltrs.): 5	NOS.	26306 Rs. TWENTY-SIX THOUSAND THREE HUNDRED SIX ONLY
2 SWH-2/T1-HX	Solar Water Heating System with heat exchanger Type 1 for cold region.	Rated capacity in litres per day (LPD): 200, Min. aperture area of collector (sq. mtrs): 4, Electrical heater back up (KW): 3, Capacity of make up tank (ltrs.): 5	NOS.	44033 Rs. FORTY-FOUR THOUSAND THIRTY-THREE ONLY
3 SWH-3/T1-HX	Solar Water Heating System with heat exchanger Type 1 for cold region.	Rated capacity in litres per day (LPD): 300, Min. aperture area of collector (sq. mtrs): 6, Electrical heater back up (KW): 4, Capacity of make up tank (ltrs.): 5	NOS.	61127 Rs. SIXTY-ONE THOUSAND ONE

					HUNDRED TWENTY- SEVEN ONLY
4	SWH- 5/T1-HX	Solar Water Heating System with heat exchanger Type 1 for cold region.	Rated capacity in litres per day (LPD): 500,Min. aperture area of collector (sq. mtrs): 10,Electrical heater back up (KW): 6,Capacity of make up tank (ltrs.): 5	NOS.	91420 Rs. NINETY- ONE THOUSAN D FOUR HUNDRED TWENTY ONLY
5	SWH- 10/T1-HX	Solar Water Heating System with heat exchanger Type 1 for cold region.	Rated capacity in litres per day (LPD): 1000,Min. aperture area of collector (sq. mtrs): 20,Electrical heater back up (KW): 9,Capacity of make up tank (ltrs.): 10	NOS.	197374 Rs. ONE LAKHS NINETY- SEVEN THOUSAN D THREE HUNDRED SEVENTY- FOUR ONLY
7	Deleted	Solar Water Heating System with heat exchanger Type 1 for cold region.	Rated capacity in litres per day (LPD): 3000,Min. aperture area of collector (sq. mtrs): 60,Electrical heater back up (KW): 18,Capacity of make up tank (ltrs.): 10	NOS.	Rs. ONLY
8	Deleted	Solar Water Heating System with heat exchanger Type 1 for cold region.	Rated capacity in litres per day (LPD): 800,Min. aperture area of collector (sq. mtrs): 16,Electrical heater back up (KW): 9,Capacity of make up tank (ltrs.): 10	NOS.	Rs. ONLY
11	SWH-1/T- 2HX	Solar Water Heating System with heat exchanger Type 2 for warm region.	Rated capacity in litres per day (LPD): 100,Min. aperture area of collector (sq.mtrs.): 1.8,Electrical heater back up (KW): 2,Capacity of make up tank (ltrs.): 5	NOS.	26306 Rs. TWENTY- SIX THOUSAN D THREE HUNDRED SIX ONLY
12	SWH-2/T- 2HX	Solar Water Heating System with heat exchanger Type 2 for warm region.	Rated capacity in litres per day (LPD): 200,Min. aperture area of collector (sq.mtrs.): 3.6,Electrical heater back up (KW): 3,Capacity of make up tank (ltrs.): 5	NOS.	44033 Rs. FORTY- FOUR THOUSAN D THIRTY- THREE ONLY
13	SWH-3/T- 2HX	Solar Water Heating System with heat exchanger Type 2 for warm region.	Rated capacity in litres per day (LPD): 300,Min. aperture area of collector (sq.mtrs.): 5.4,Electrical heater back up (KW): 4,Capacity of make up tank (ltrs.): 5	NOS.	60416 Rs. SIXTY THOUSAN D FOUR HUNDRED

14	SWH-5/T-2HX	Solar Water Heating System with heat exchanger Type 2 for warm region.	Rated capacity in litres per day (LPD): 500,Min. aperture area of collector (sq.mtrs.): 9.0,Electrical heater back up (KW): 6,Capacity of make up tank (ltrs): 5	NOS.	SIXTEEN ONLY 91420 Rs. NINETY-ONE THOUSAN D FOUR HUNDRED TWENTY ONLY
15	SWH-10/T-2HX	Solar Water Heating System with heat exchanger Type 2 for warm region.	Rated capacity in litres per day (LPD): 1000,Min. aperture area of collector (sq.mtrs.): 18,Electrical heater back up (KW): 9,Capacity of make up tank (ltrs): 10	NOS.	179137 Rs. ONE LAKHS SEVENTY-NINE THOUSAN D ONE HUNDRED THIRTY-SEVEN ONLY
30	SWH-1/T1	Solar Water Heating System for cold region without heat exchanger Type 1.	Rated capacity in litres per day (LPD): 100,Min. aperture area of collector (sq. mtrs): 2,Electrical heater back up (KW): 2	NOS.	25240 Rs. TWENTY-FIVE THOUSAN D TWO HUNDRED FORTY ONLY
31	SWH-2/T1	Solar Water Heating System for cold region without heat exchanger Type 1.	Rated capacity in litres per day (LPD): 200,Min. aperture area of collector (sq. mtrs): 4,Electrical heater back up (KW): 3	NOS.	41741 Rs. FORTY-ONE THOUSAN D SEVEN HUNDRED FORTY-ONE ONLY
32	SWH-3/T1	Solar Water Heating System for cold region without heat exchanger Type 1.	Rated capacity in litres per day (LPD): 300,Min. aperture area of collector (sq. mtrs): 6,Electrical heater back up (KW): 4	NOS.	59400 Rs. FIFTY-NINE THOUSAN D FOUR HUNDRED ONLY
33	SWH-5/T1	Solar Water Heating System for cold region without heat exchanger Type 1.	Rated capacity in litres per day (LPD): 500,Min. aperture area of collector (sq. mtrs): 10,Electrical heater back up (KW): 6	NOS.	89737 Rs. EIGHTY-NINE THOUSAN D SEVEN

				HUNDRED THIRTY-SEVEN ONLY
37	Deleted	Solar Water Heating System for cold region without heat exchanger Type 1.	Rated capacity in litres per day (LPD): 2000,Min. aperture area of collector (sq. mtrs): 40,Electrical heater back up (KW): 12	NOS. Rs. ONLY
40	SWH-1/T2	Solar Water Heating System for warm region without heat exchanger Type 2.	Rated capacity in litres per day (LPD): 100,Min. aperture area of collector (sq. mtrs): 1.8,Electrical heater back up (KW): 2	NOS. 25249 Rs. TWENTY-FIVE THOUSAND TWO HUNDRED FORTY-NINE ONLY
41	SWH-2/T2	Solar Water Heating System for warm region without heat exchanger Type 2.	Rated capacity in litres per day (LPD): 200,Min. aperture area of collector (sq. mtrs): 3.6,Electrical heater back up (KW): 3	NOS. 41741 Rs. FORTY-ONE THOUSAND SEVEN HUNDRED FORTY-ONE ONLY
42	SWH-3/T2	Solar Water Heating System for warm region without heat exchanger Type 2.	Rated capacity in litres per day (LPD): 300,Min. aperture area of collector (sq. mtrs): 5.4,Electrical heater back up (KW): 4	NOS. 58712 Rs. FIFTY-EIGHT THOUSAND SEVEN HUNDRED TWELVE ONLY
43	SWH-5/T2	Solar Water Heating System for warm region without heat exchanger Type 2.	Rated capacity in litres per day (LPD): 500,Min. aperture area of collector (sq. mtrs): 9,Electrical heater back up (KW): 6	NOS. 89737 Rs. EIGHTY-NINE THOUSAND SEVEN HUNDRED THIRTY-SEVEN ONLY
47	Deleted	Solar Water Heating System for warm region without heat exchanger Type 2.	Rated capacity in litres per day (LPD): 2000,Min. aperture area of collector (sq. mtrs): 36,Electrical heater back up (KW): 12	NOS. Rs. ONLY

6-Terms of Delivery:

Free delivery at consignee's premises including installation & commissioning.

7-Excise Duty:

Not Applicable

8-Sales Tax:	CST / VAT inclusive @4%
9-Delivery Period:	Within 60-90 days from the date of receipt of technically and financially clear order.
10-Annual Turnover/Monetary Limit:	Without Limit
11-Payment Terms:	90% on proof of inspection and provisional receipt of the stores by consignee and balance 10% on acceptance of the store after installation & commissioning and on submission of BG for equal amount of the balance payment valid for 2 months beyond the guarantee/ warranty period.
12-Slab Discount Clause:	Nil
13-Prices:	FIXED
14-Quantity Offered:	Monetary Limit : Without Limit
15-Minimum Quantity in Single Supply Order:	Without Limit
16-Minimum order Value in Single Supply Order:	Without Limit
17-Status of the RC Holding Firm:	SSI
18-Paying Authority:	The Chief Controller of Accounts, Deptt. of Supply 16A, AKBAR ROAD New Delhi -110011
19-Inspection Authority:	For Civil and Defence ADG(QA),Jeevan Tara Building,Parliament Street New Delhi
20-Quality Assurance Officer:	For Civil and Defence Office of Director (Quality Assurance), DGS&D, E-III, Phase-VII, Industrial Area, SAS Nagar Mohali PUNJAB -160055
21-Place where the Stores are to be Tendered for Inspection:	At firm's factory
22-R/C is DDOs Operated:	Yes

With effect from First October two thousand eight (01-10-2008),all supply order(s) against this Rate Contract must be placed by Direct Demanding Officer(s) on-line through D.G.S&D web site (www.dgsnd.gov.in) (indentor's page) only. Supply order(s) in any other form placed on or after 01-10-2008 shall not be valid and shall not be acted upon by the contractor or any other concerned agencies.

DDO shall download the supply order and send an ink signed copy to the concerned paying authority specified in the rate contract through Registered / speed post immediately after on-line placement of Supply Order(s).

23-Packing & Specification :	see annexure
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Asstt. Director (S) / Section Officer / Dy. Director
For and behalf of the purchaser named in the Form DGS&D 1001.

All the R/C particulars including prices in respect of individual R/Cs are available on DGS&D website which can be accessed by all. The DGS&D website is <http://dgsnd.gov.in>

SCHEDULE - B

RC Specification: 1. GUARANTEE / WARRANTY

All the Solar Water Heating Systems shall be warranted for a minimum period of 2 years from the date of installation and commissioning against any manufacturing and design defects. Consumables such as sacrificial anode, electrical heter, rubber parts etc. shall be warranted for a minimum period of one year from the date of installation and commissioning.

2. Note to Indentor

1. Consignee shall provide the following provision free of cost to contractor for installation and commissioning of the system.

- a) Levelled horizontal & shadow free roof area for installation of the system.
- b) Cold water tank & supply pipe line to the solar water heating system.
- c) Free covered locked storage space for keeping the solar collectors & other system components during installation.
- d) Free electricity & water supply at the site during installation & commissioning.
- e) Electric supply connection near the system.
- f) Cold water tank shall be provided at a height of 3 meters from the level of roof.

ANNEXURE

FOR SOLAR WATER HEATING SYSTEM WITH FLAT COLLECTOR PLATE:

1. For Schedule 1 and 4: Type 1 for Cold Regions is for areas where ambient temperature reaches 5 degree C or below.
2. For Schedule 2 and 5: Type 2 for Warm Regions is for areas where ambient temperature are moderate and do not normally go below 5 degree C.
3. Solar water heating system comprising of solar flat plate collector, collectors stand assembly, stainless steel insulated hot water storage tank with heat exchanger and various other components.

Solar flat plate collector component shall have:

- a) solar flat plate collector cover plate made of toughened glass
- b) Sheet for absorber made of copper
- c) Absorber made of copper sheet and copper tube.

4. Solar Flat Plate Collector Specifications :

Solar flat plate collector shall conforming to IS: 12933 (part 1) with amdt.no.1 & 2 and IS:12933(Part 2)/2003 and various components shall be as under:

- a) Cover plate: Cover plate shall be toughened glass and thickness of 4.0 mm (min.) conforming to section-1 of IS: 12933(pt-2)/2003 . The solar transmittance of the cover plate shall be minimum 82 percent at near normal incidence.
- b) Collector Box: Collector box shall be made of Aluminium sections only. Type, grade, size, workmanship and finish of the material used shall be as per section-2 of IS:12933 (pt-2)/2003. The minimum thickness of Aluminium shall be as under :

i) Channel section for sides	1.6 mm
ii) Sheet for bottom	0.7 mm
iii) Support for glass retaining	1.2 mm
iv) Sheet for entire body	1.0 mm
- c) Absorber: Absorber shall consist of riser, header and sheet for absorber. The Diameter of header shall be 25.4 +/-0.5mm and thickness 0.71mm.. The Diameter of riser shall be 12.7 +/-0.5mm and thickness 0.56mm and made of copper only. The distance between the risers from center to center shall be 120mm. Type grade, size, workmanship and finish of the material used shall be as per section-3 of IS:12933 (pt-2)/2003. Riser and header assembly designed for working pressure up to 24.5 K Pa (2.5kg/cm square) shall be tested for leakage at a minimum hydraulic pressure of 490 k Pa (5 Kg/cm square).
- d) Sheet for absorber: Sheet for absorber shall be made of copper only. Type, grade, size, workmanship and finis of the material used shall be as per sectiob-3 of IS:12933 (pt-2)/2003. A sample piece of the absorber for having minimum area of 400 square cm. shall be heated in an oven at temperature of 175 degree C for 2 hours. After heating, the sample shall be taken out from the oven and cooled at room temperature. The cooled sample shall be inspected visually for damages, if any. There shall not be any appearance of blistering/rupture/peeling off of the coated/painted surface and of weakening of the bonding between absorber sheet and risers/headers.

e) Collector box insulation: Insulation shall be provided at back and sides. Thermal Resistance (R) of insulation material shall be minimum 0.96 m square degree C/W for back insulation and minimum 0.48 m square degree C/W for side insulation. This shall be derived after determining thermal conductivity (K) value at 100 degree C mean temperature in accordance with IS:3346. Collector box insulation shall conform to sec.4 of IS: 12933(pt-2)/2003

f) Gaskets and Grommets: Gaskets and Grommets shall conform to sec.5 of IS: 12933 (pt-2)/2003.

5. Insulated hot water storage tank : The thickness of the water storage tank shall be uniform.

a) Material: Insulated hot water storage tank shall be non-pressure type and made of stainless steel grade (X04Cr19Ni9 or X07Cr18Ni9 of IS: 1570(part 5) /1985)(Reaffirmed 2004), TIG/MIG welded.

b) Insulation:: Solar water heating system (SWHS) up to and including 500 LPD shall be insulated with 40mm thermal grade PUF insulation of 32 Kg/ meter cube or higher density. PUF insulation could be pre extruded type fitted with FRP exterior cladding or alternatively injection moulded in a twin walled steel tank and PPE end cap. Other systems shall be insulated with 100mm thick Rock wool of 48Kg/m3 density with 22swg Aluminum cladding. Systems up to 500 LPD may also alternatively be installed with 100 mm thick Rock wool of same specifications with aluminium or G.I. powder coated cladding.

c) Tank stand assembly shall be made of MS angle of size (min) 38x38x4 mm duly pretreated and stove enameled with black Colour paint. Alternatively tubular structure with Powder coating could also be provided.

6. Heat exchanger shall be cage type and made of copper/stainless steel tubes of grade X04Cr19Ni9 or X07Cr18Ni9 of IS: 1570(part 5)/1985(Reaffirmed 2004) .Heat exchangers shall have a minimum of 0.24 sq. meters heat transfer area per 100 LPD capacity.

7. System inter connecting piping : ISI marked G.I. pipes, medium class of IS: 1239 duly insulated with 50mm thick rock wool of 48 Kg/m3 density and 26swg Al cladding. EPDM hose pipes can also be used for systems up to and including 500LPD.

8. Collector stand assembly shall be made of MS angle of size 38x38x4 mm duly pretreated and stove enameled with black Colour paint. Alternatively tubular structure with Powder coating could also be provided.

9. The capacity of make up tank shall be 5 liters up to 500 LPD and 10 liters for 1000 LPD and above.

10. Electrical heaters: Electrical heater shall be ISI marked. Electrical heater backup shall be two nos. each of rating 3 KW for 500 LPD, 3 nos. each of rating 3 KW for 1000 LPD, 4 nos. each of rating 3 KW for 2000 LPD and 2 nos. of 3 KW rating in each of the three phase for 3000 LPD.

11. Temperature Gauge: Dial type, duly calibrated and suitable for temperature range from 0 degree C to 120 degree C and shall be provided for capacity above 500 LPD.

12. Suppliers shall furnish 2 valves, one for inlet and one for outlet .

13. Other component essential for completeness of the system as per tenderers specification.

14. Installation, testing and commissioning of the complete system at consignee's end shall be completed within two months from the date of confirmation received from consignee that the ground and foundation work has been completed.
15. Supplier shall get general arrangement drawings approved from the indenter or consignee before supply of the system above 500 LPD. General arrangement drawing shall clearly show all the parts of the system (such as solar flat plate collectors, collectors stand assembly, stainless steel insulated hot water storage tank complete with stainless steel heat exchanger, sacrificial anode, electrical back up, internal and external piping, tank stand assembly, various valves, pressure gauges, temperature gauges, water meter etc) and their fixing arrangements.
16. Suppliers shall supply two sets of instruction manual to the consignee without any extra cost. Instruction manual shall containing the following details:
 - a) Schematic diagram of the solar collector and a domestic hot water system.
 - b) Instructions for installation (including mounting details) and use and safety precautions.
 - c) Instructions for repair and maintenance including causes for common failures, such as, dust ingress on glass cover, peeling of paint, scaling, damaged sealant, gasket and grommets and their remedies and
 - d) List of service outlets.
17. The firms shall furnish complete and satisfactory type test reports for each size / type of solar flat plate collector as per contract specification from any govt. laboratory to the concerned Director (QA). Type test reports shall be complete with authenticated drawing giving complete details of the various component used in the solar flat plate collector. Type test reports shall include all the tests listed in IS: 12933 (part 1) with amdt.no.1(excluding test requirements as per cl. 7.2.7 and 7.2.8 of IS) and IS:12933(Part 2)/2003 and also the tests included on various components of solar flat plate collector as per IS:12933 (pt 2) / 2003 .
18. The supplier shall get themselves registered for all the item as per this tender enquiry specification.

GENERAL TECHNICAL REQUIREMENTS FOR EVACUATED TUBE COLLECTOR SOLAR WATER HEATING SYSTEMS;

For Schedule 3: Solar Water Heating System with Evacuated Tube Collector type conforming to MNRE specification.

1. Electrical heaters: Electrical heater shall be ISI marked. Electrical heater backup shall be two nos. each of rating 3 KW for 500 LPD, 3 nos. each of rating 3 KW for 1000 LPD, 4 nos. each of rating 3 KW for 2000 LPD and 2 nos. of 3 KW rating in each of the three phase for 3000 LPD.
2. Installation, testing and commissioning of the complete system at consignee's end shall be completed within two months from the date of confirmation

received from consignee that the ground and foundation work has been completed.

3. Supplier shall get general arrangement drawings approved from the indenter or consignee before supply of the system above 500 LPD. General arrangement drawing shall clearly show all the parts of the system (such as electrical back up, internal and external piping, tank stand assembly, various valves, pressure gauges, temperature gauges, water meter etc) and their fixing arrangements.
4. Suppliers shall supply two sets of instruction manual to the consignee without any extra cost. Instruction manual shall containing the following details:
 - a) Schematic diagram of the solar collector and a domestic hot water system.
 - b) Instructions for installation (including mounting details) and use and safety precautions.
 - c) Instructions for repair and maintenance including causes for common failures, such as, dust ingress on glass tubes, peeling of paint, scaling, damaged sealant, gasket and grommets and their remedies and
 - d) List of service outlets.
5. The following test to be conducted on solar water heating Evcuated tube collector type system.
 - a. High voltage test at 1500 V for 1 Minute.
 - b. Insulation Resistence Test. IR shall not be less than 2M_ohms at 500 DC.
 - c. Verification of the features and functional performance of the system.
 - d. Static pressure leakage Test.

Supplier shall submit approval from MNRE/Type test certificates as per MNRE specification for Evcuated Tube Collector type Solar Water Heating System at the time of registration and inspection.

Solar Water Heating System with heat exchanger Type 1 for cold region.

Specification :

Water Heating System with heat exchanger Type 1 for cold regions with Solar flat plate collector conforming to IS: 12933 (part 1)/2003 with amdt.no.1 and 2 & IS:12933(Part-2)/2003 as per General Technical Requirements.
Solar Water Heating System with heat exchanger Type 2 for warm region.

Specification :

Solar Water Heating System with heat exchanger Type 2 for warm regions with Solar flat plate collector conforming to IS: 12933 (part 1)/2003 with amdt.no.1 and 2 & IS:12933(Part-2)/2003 as per General Technical Requirements.

Solar Water Heating System for cold region without heat exchanger Type 1.

Specification :

Water Heating System for cold regions without heat exchanger Type 1 with Solar flat plate collector conforming to IS: 12933 (part 1) with amdt.no.1 and 2 & IS:12933(Part-2)/2003 as per General Technical Requirements.
Solar Water Heating System for warm region without heat exchanger Type 2.

Specification :

Solar Water Heating System for warm regions without heat exchanger Type 2 with Solar flat plate collector conforming to IS: 12933 (part 1) with

[Click for Questionnaire's Answer](#)

LIST OF ALL AMENDMENTS

For RC No. SWHS/IT-2/RC-D3060000/0310/82/02509/0664

Sr No.	Amendment No.	Amendment Date	Effective From	Amendment In
1	SWHS/IT-2/RC-D3060000/0310/82/02509/0664/25662	13-AUG-09	13-AUG-09	Amendment in Rate