



# SOLAR WATER HEATERS

Product Overview  
Domestic Sector

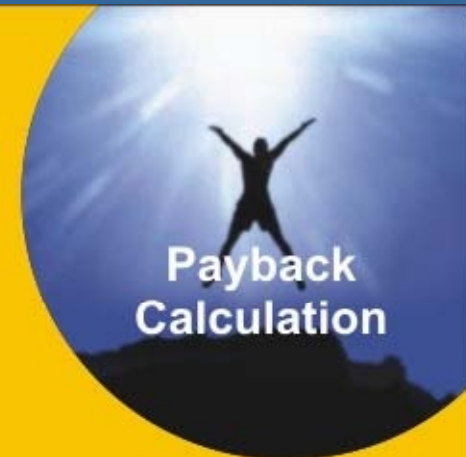


**WHY SOLAR?**



- Pay back period of upto 3 years. Savings of upto Rs. 1 Lac over the product life span.
- No requirement of electricity or gas and involves zero running cost - safe and simple to use.
- Suitable for all applications - Domestic, Industrial and Commercial.
- It is a non-polluting source of energy.

**Racold**  
SOLARE



Hot water requirement	100 ltrs
Energy consumed per day for heating 100 litres of water	4.7 kwh
Cost of electricity consumed per day to heat 100 litres of water	Rs 22 (1 unit = Rs 4.5)
Cost of electricity consumed per month	22x30 = Rs 660
Savings per year for 100 LPD solar system	Rs 6,600 (10 months in a year)
Payback period for 100 LPD solar system	19,500/6,600 = 3 years
Savings per year for 200 LPD solar system	13,200
Savings per year for 300 LPD solar system	19,800
Savings per year for 375 LPD solar system	26,400
Savings per year for 500 LPD solar system	33,000

**Racold**  
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## Solar Energy Vs. Other Sources Of Energy

	Electric	Gas	Solar	Wood	Kerosene	Coal
<b>Energy source</b>	Electricity	LPG	Solar radiation	Wood	Kerosene	Coal
<b>Method</b>	Resistance heating	Burning	Thermosyphon	Burning	Burning	Burning
<b>Cost per 100 Litres</b>	22	6.2	0	20	5	15
<b>Running cost/ month</b>	660*	186.20**	0	600 (If the entire wood required for the month is purchased)	150	450
<b>Life</b>	10	10	20	-	-	-
<b>Maintenance</b>	<b>Medium-</b> Failure of thermostat. Failure of heating element	<b>Medium-</b> Failure of the electronic lighter device & other valves	NA	Carbon deposition on utensils & walls, requires regular maintenance	<b>High-</b> Requires regular cleaning of nozzle & other parts	Carbon deposition on utensils and walls, requires regular maintenance
<b>Finance Cost</b>	12%	12%	2%	NA	NA	NA
<b>Govt. Benefits</b>	NA	NA	Discount on electricity bills.*** Subsidised finance at 2% reducing balance. Advantage of depreciation.	NA	NA	NA
<b>Total saving over the life period of equipment</b>	-	-	1,32,000	-	-	-
<b>Pay back period</b>	-	-	3 years	-	-	-

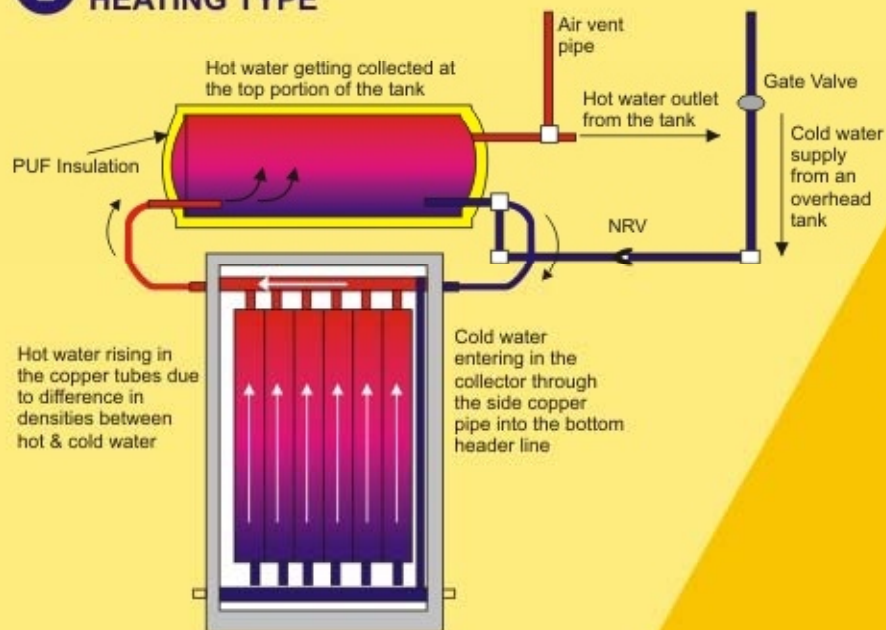
\* Consumption of 4.7 units @ Rs. 4.50/- per unit. \*\* Consumption of 9 kg of gas @ Rs. 20.69 per kg of LPG.

\*\*\* Applicable in select states.

  
SOLARE

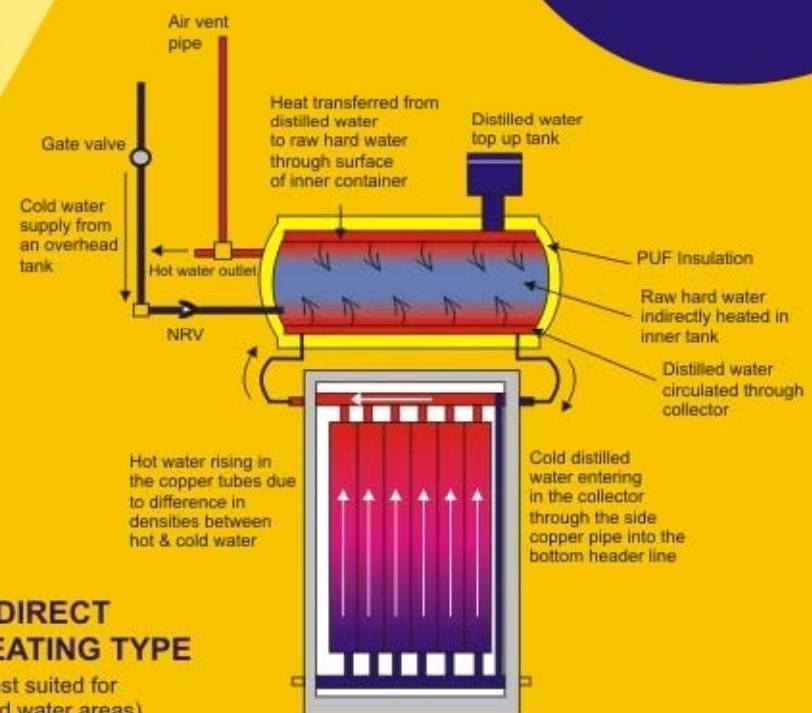
# Solar Water Heater Types

## 1 DIRECT HEATING TYPE



## 2 INDIRECT HEATING TYPE

(Best suited for hard water areas)



**Racold**  
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## Advantage Racold

### Solar Tank

- **ABS Outer Body with PU Coating:**
  - *Rust Proof*
  - *Offers better Heat Retention*
  - *UV Resistant and durable*



## Advantage Racold

### Solar Tank

- *Injected PUF with Optimum Thickness and Critical Density:*
  - Better thermal insulation.
  - *Higher Heat Retention.*
  - *More strength and durability*



## Advantage Racold

### Solar Tank

- *Inner Container SS-304L Duronox Container:*
  - *Automatic Plasma-TIG welding for flawless and corrosion resistant joints*
  - **Specially treated** for enhanced protection in bad water areas
  - *5 year guarantee*



INNER  
CONTAINER

## Advantage Racold

### Solar Tank

- *Built in Electrical Backup:*
  - *Racold Heating element with 99.9% pure copper*
  - *Italian Thermostat cum cutout for reliable operation*



ITALIAN  
THERMOSTAT  
& CUTOUT

## Advantage Racold

### *Solar Flat Plate Collector*

- *Aluminium Frame – Italian Design:*
  - Screwless construction - specially designed for complete protection against water leakage.
  - Strong Aluminum frame of 7.5 kg weight for enhanced strength and reliability.
  - *Absorber – Selective black chrome with nickel undercoat.*
  - *5 year guarantee.*



## *Advantage Racold*

- Specially engineered mounting strength for greater strength for entire system.
- Stringent Quality tests
  - Every collector is tested at hydraulic pressure of 7 bar – 100psi
  - All collectors are 100% tested for water penetration / leakage
- Aluminum back sheet – stucco finish 0.7mm thick
- Toughened glass 4mm thick
- Absorber – Selective black chrome with nickel undercoat.
- Larger collector area – 2091 x 1069 x 100mm
- Long life and consistent performance

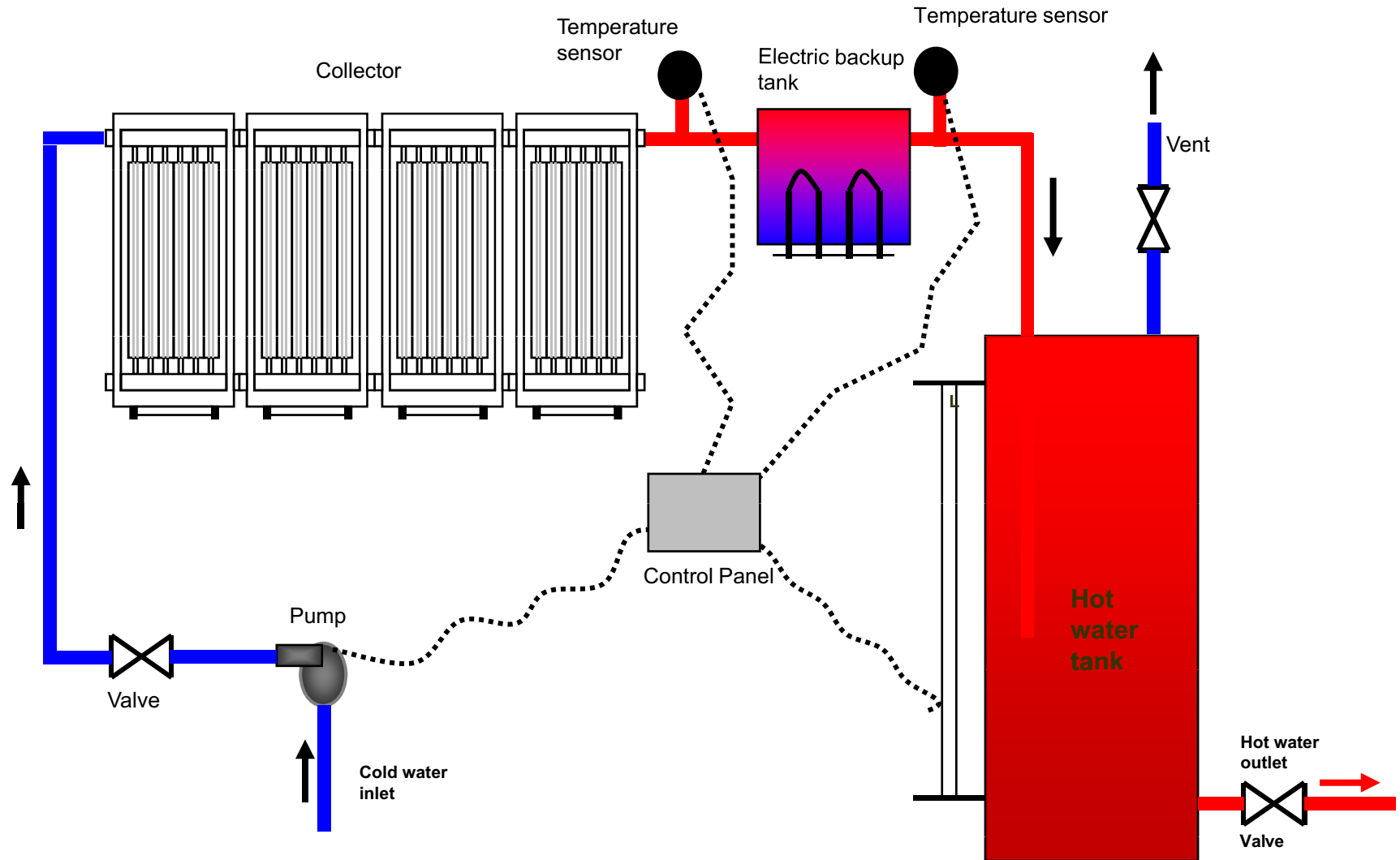
# **Solar in Commercial Segment**

# Applications - Hotels & Hospitals

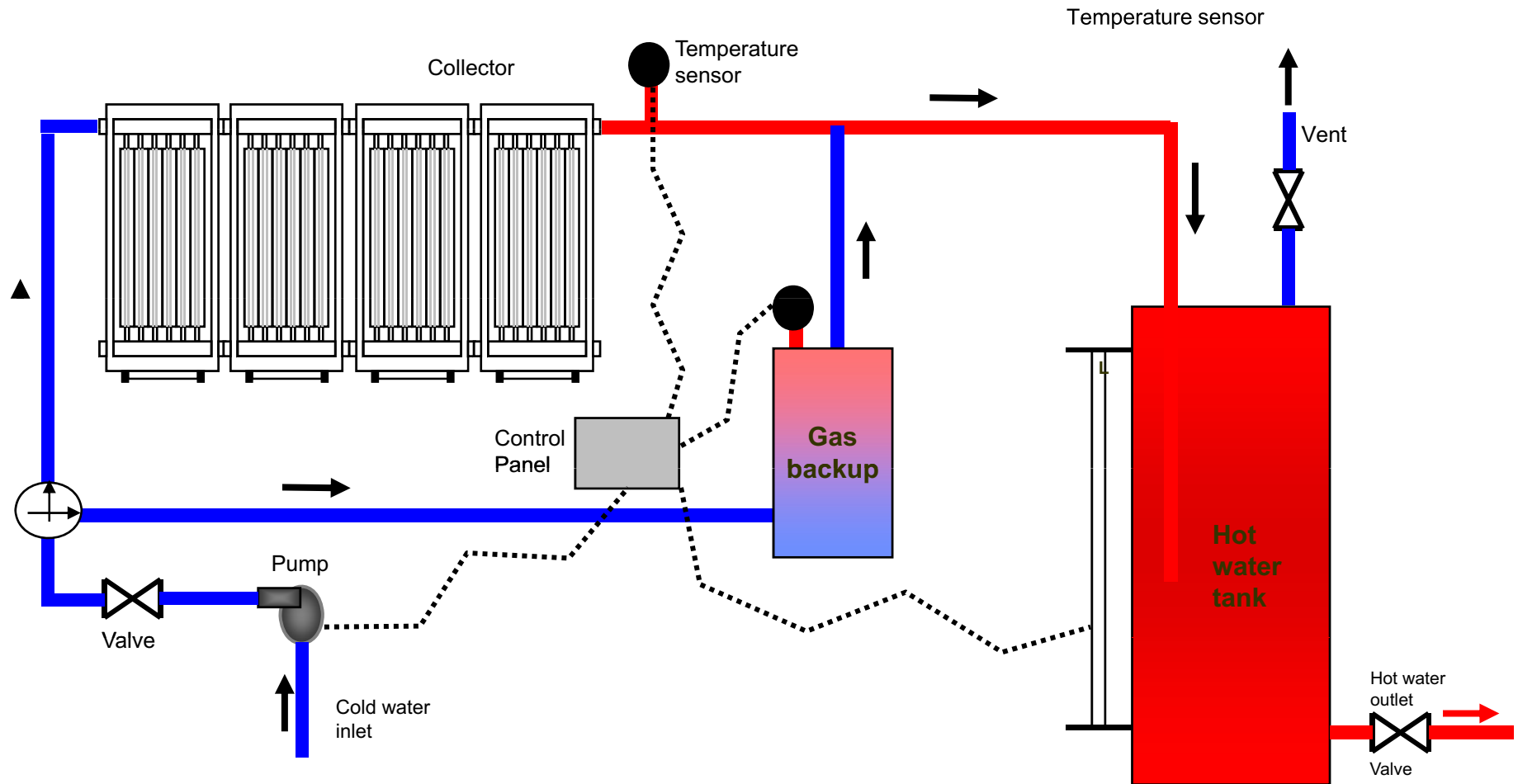
## Challenges:

- 24 hours hot water requirement
- Availability of hot water at constant temperature
- Backup system only for desired quantity of hot water
- Availability of extra quantity of hot water during peak load in all seasons
- Backup heating system electric / Gas

## Solution - Forced flow solar system with on line electrical backup

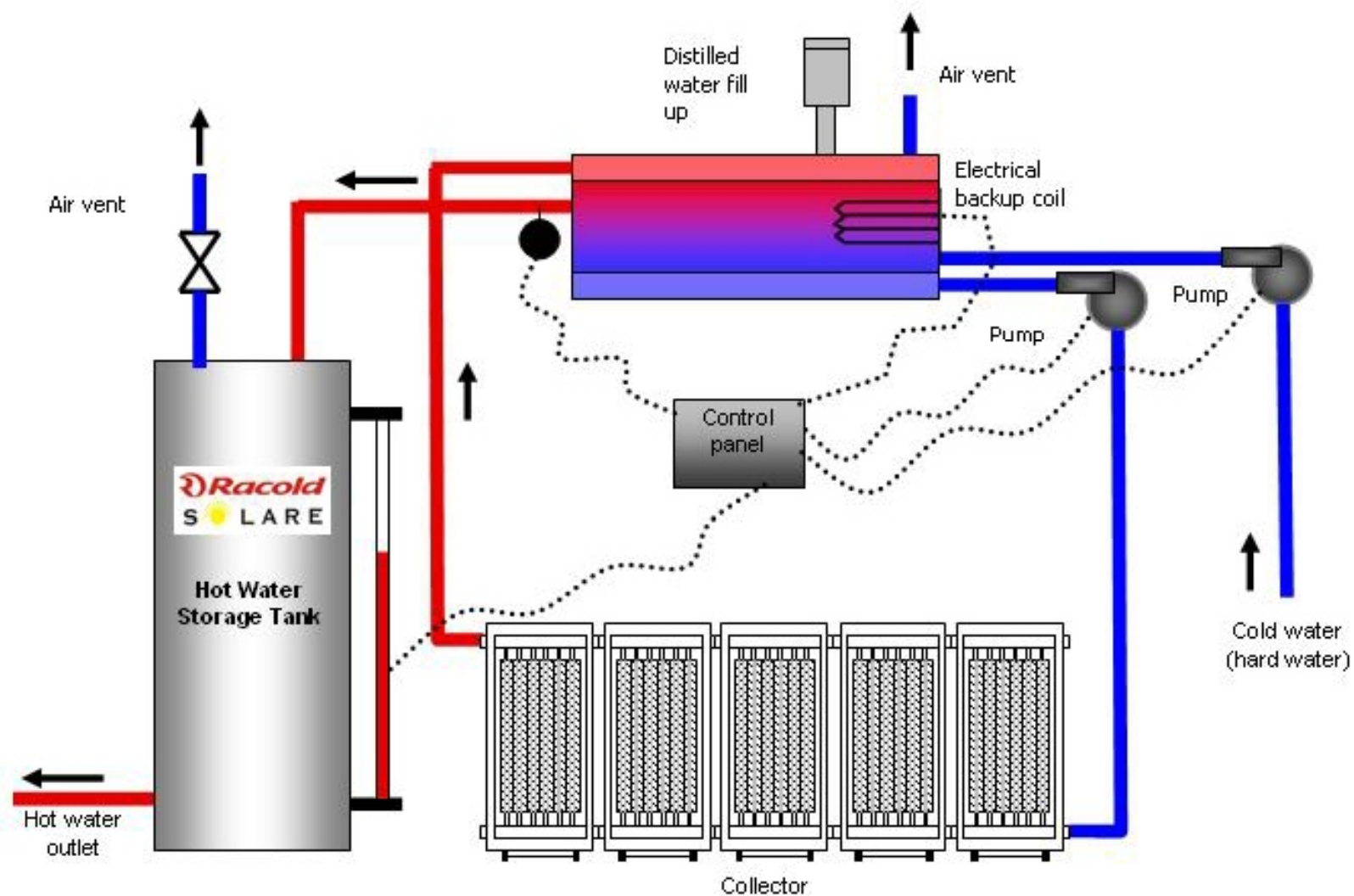


## Solution - Forced flow solar system with on line Gas backup

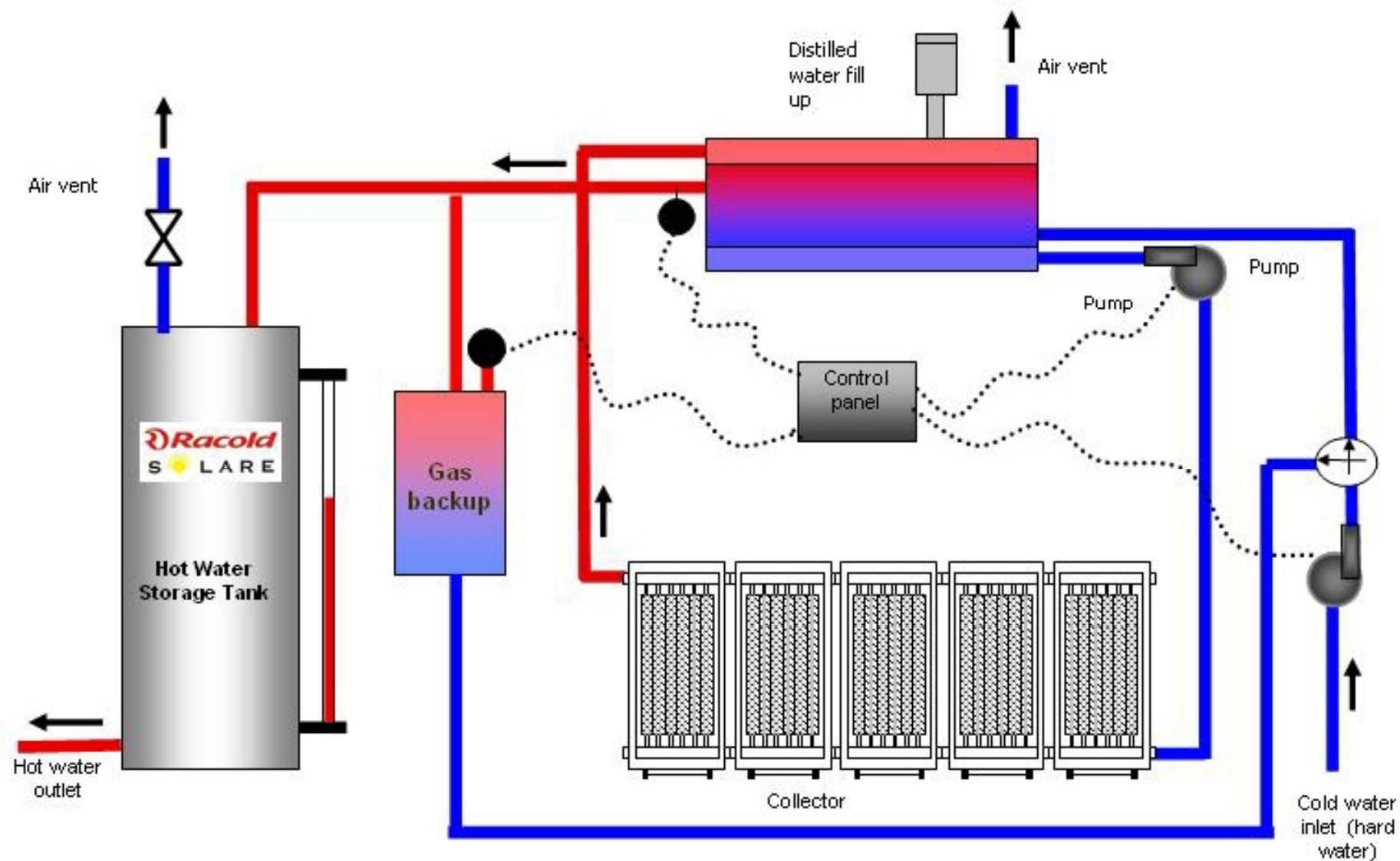




## Forced circulation indirect with electric backup



## Forced circulation indirect with gas backup



# List of major solar installations

Sr. No.	Name of the Institution	Place	Institution	Capacity (LPD)
1	Loreal India Ltd	Pune	Industry	32000
2	TC college	Pune	Hostel	10000
3	Aditya Birla hospital	Pune	Hospital	10000
4	Venkatesh Const	Pune	Apartment	10000
5	Yeshwant club	Indore	Club	6050
6	Bahsyam school	Guntur	Hostel	6000
7	Dev giri College	Aurangabad	Hostel	6000
8	Maitreyas Hotel	Jalgaon	Hotel	4000
9	Birla hostel	Mumbai	Hostel	3500
10	Centre for cellular & molecular biology	Hyderabad	Institute	3000
11	Isani & Virani group of hotels	Mapusa, Goa	Hotel	3000
12	Credents Hospital	Tiruvananthapuram	Hospital	3000
13	Vishesh Diagnostic	Indore	Hospital	3000
14	Hotel Sindh Tower	Chittoor, AP	Hotel	2500
15	Sri Sahajanand Sansatha	New Bombay	Lodge	2100
16	Nusi Resorts	Lonavala	Hotel	2000
17	Golf view resort	Bhopal	Hotel	2000
18	Jos Giri hospital	Tellichery, Kerala	Hospital	1600
19	Hotel Garva	Pune	Hotel	1500
20	Hotel Kamal	Nashik	Hotel	1500
21	Hotel Padmalaksmi	Nashik	Hotel	1500
22	Navoday Constructions	Guntur, AP	Apartment	1500
23	Laxmi Ganapati Towers	Guntur, AP	Apartment	1500
24	Alibaba's Enclave	Kalangute, Goa	Hotel	1500
25	Calicut gate hotel	Calicut	Hotel	1500
26	Hotel Ramkrishna International	Nanded	Hotel	1500
27	Ashirwad Garden Mangal Karyayala	Nanded	Wedding Hall	1500

# 32000 LPD solar system - Installed in L'Oreal India

- Client:

- L'Oreal India Ltd. – Pune Plant – One of their 45 plants worldwide for manufacturing cosmetics/personal care products.

- Application:

- Hot water used for cleaning stainless steel vessels used in manufacturing process. They were using LDO fired boiler to heat water.

- Challenges:

- The hot water to be used should not have been in touch with copper.
- Integration of solar hot water system with their existing boiler.

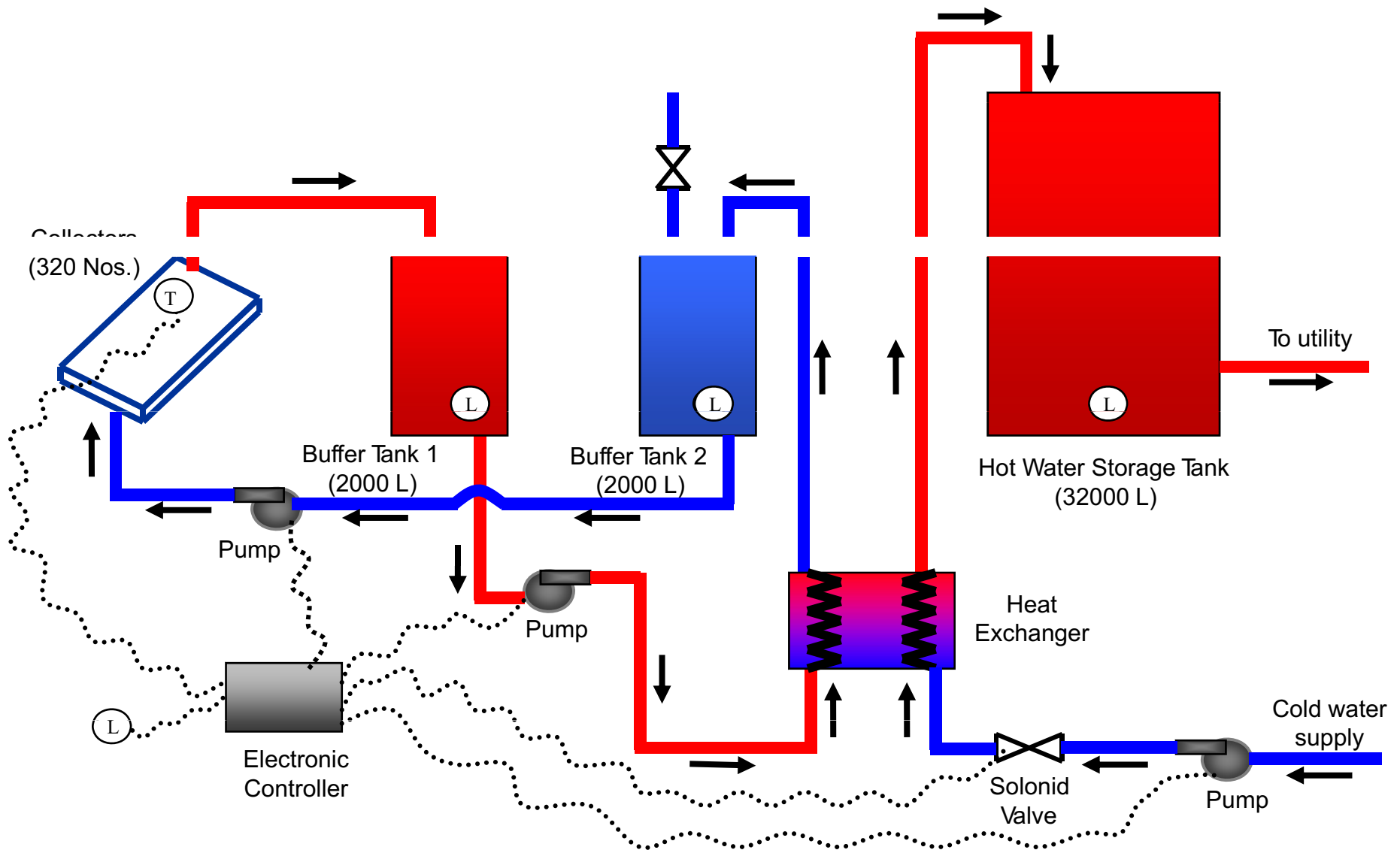
# Solution

- An indirect solar water heating system to heat the water to be used in the process through stainless steel Plate Heat Exchangers.
- 320 nos. of Solar Flat Plate Collectors (640 sq. m.) were used along with four buffer tanks (1000 / 2000L) and one 32,000L main tank to store the hot water. This had to be done also as it was not feasible to install all the above collectors in one single location.
- Complete solar system operation is automated by three electronic control panels which along with Thermo couples, LLC (Liquid Level Controllers - 5 nos.) and Pumps (10 nos.) control the flow of water through the system.
- All piping (800 m) used is of stainless steel.

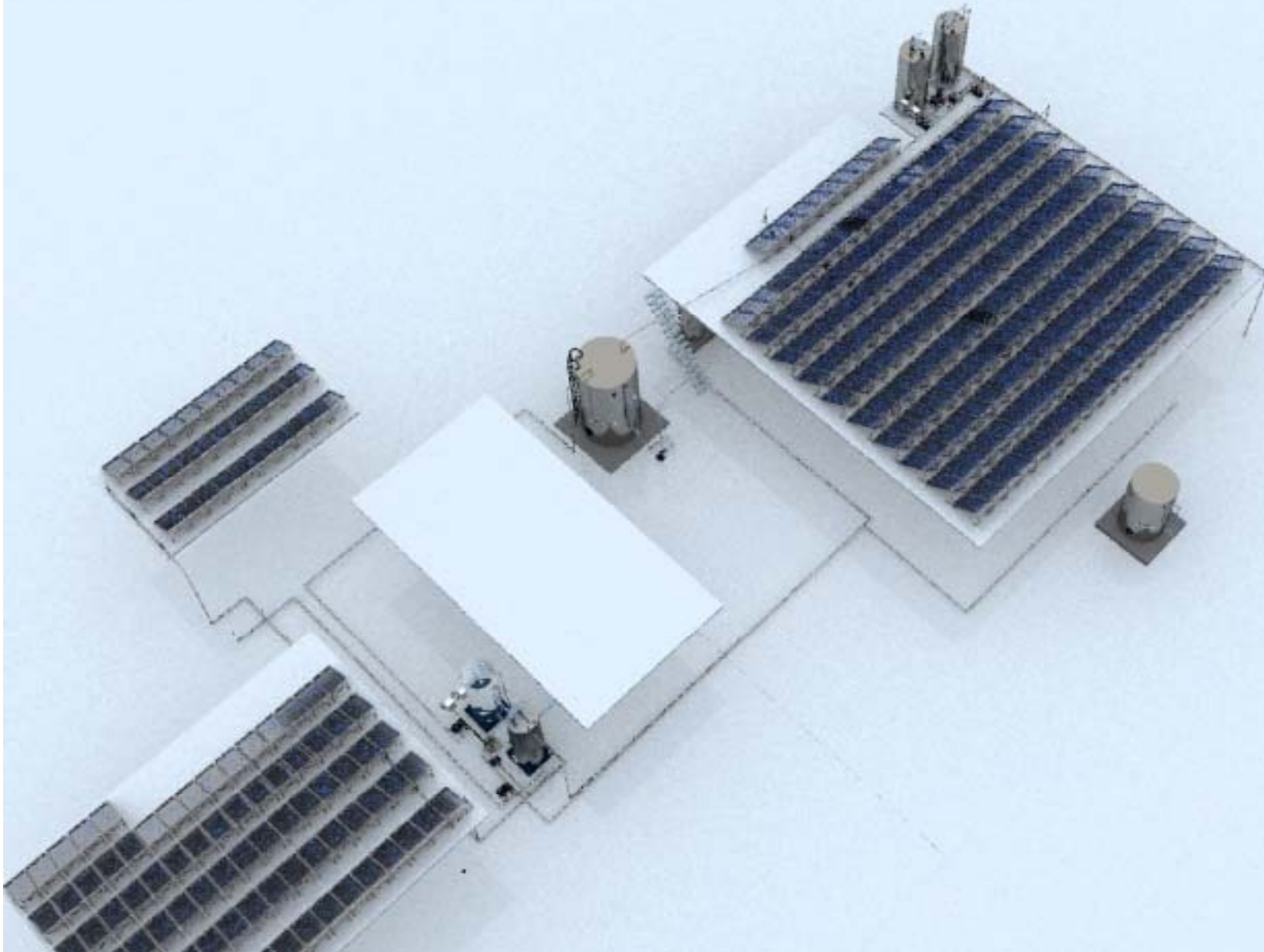
# Achievement

- The project was awarded and executed on a turnkey basis by MTS India (i.e. inclusive of design, supply, erection & commissioning).
- One of the largest indirect solar water heating system in India fully integrated and customised as per customer requirement.
- This enabled the client to save 170L of LDO per day, giving the investment (€ 130 Th) a payback period of four years.

# 32000 LPD solar system - Installed in L'Oreal India



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## 5000 LPD solar system - Aditya Birla Hospital



## 10000 LPD solar system - Apartment building



250 nos. solar systems installed in – Residential scheme



## 10000 LPD systems – TC College hostel



**Project: Racold solar water heater system with ASHIRWAD Flow guard C-PVC Plumb Piping , SITE: T.C.Collage ,Baramati  
by: Span control system**

## 1500 LPD solar system - Hotel Calicut gate



## 3000 LPD systems – Israni Virani hotel



## 1500 LPD systems – ooty command club



## 1000 LPD systems – hotel peravel



## 1000 LPD systems – Kanbay canteen





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