

COMMERCIAL SOLAR

A range of market-leading technologies ideal for large-scale solar thermal systems or integration into existing systems.

CASE STUDY

KATHERINE DISTRICT HOSPITAL KATHERINE, NT

Challenge

Katherine District Hospital is a critical piece of public healthcare infrastructure catering to patients from some of the most remote communities in the Northern Territory, servicing an area of 336,674 km². The hospital needed a major hot water system upgrade, converting from an old heat exchange system to an electric-boosted solar pre-heat system.

Hot Water Solution

Rheem provided a renewable energy solution comprised of 24 x Solar Collectors and 3 x RT1000 Stainless Steel Commercial Storage tanks to store the high percentage of solar contribution. The new system services 11 bedrooms, 2 delivery-birth suites, 2 theatres and 3 utility rooms. The tanks were craned to the rooftop, and the pipe work was manifolded to allow ease of tank replacement at end-of-life.



LOLINE DIRECT SOLAR

SUITED TO MOST COMMERCIAL AND INDUSTRIAL APPLICATIONS



SOLAR



FAST
INSTALLATION



OVERHEATING
PROTECTION



HIGH FLOW
FITTINGS



BMS
CAPABLE

The most efficient direct solar system to use and install.

HIGHLY EFFICIENT

Unlike evacuation tube technology, Loline has no progressive efficiency loss, providing prolonged energy savings, making it a more efficient direct solar option at typical hot water temperatures.

SAVE TIME ON SITE

Utilising the collector's internal header along with a unique expansion tube, Loline allows up to 24 collectors in a row to be quickly and easily connected.

MULTIPLE INSTALLATION OPTIONS

A range of tank capacities and any number of solar collectors can be arranged in a variety of combinations with tanks mounted at the same level or below the collectors to suit site requirements.

AUTOMATIC OVERHEATING PROTECTION

During low-use periods, small amounts of hot water are automatically transferred to storage tanks to prevent collectors overheating and an optional 3-way valve can divert this excess energy to the building recirculation circuit, further reducing operating costs.

PARTIAL FROST PROTECTION

Warranted against freeze damage in areas below 400m altitude, and an optional electric or gas water heater can be incorporated in the design to assist freeze protection.



MULTIPLE BOOST OPTIONS

Boost options include heat pump, gas, or electric, and large tanks can be boosted at the top of the solar tank minimising footprint.

MORE KEY FEATURES

- Eligible for STCs (tank dependent)
- Select from 325 litre and 410 litre vitreous enamel storage tanks or RT1000 to 5000 stainless steel storage tanks



*Conditions Apply: For full terms and conditions please contact Rheem or visit www.rheem.com.au/rheem/help/Warranties

SOLAR RADIATION DATA

					Collector to Tank Ratio – NPT200					
Location	Latitude	Solar Radiation (MJ/m ² /day)	Best Solar Month	Zone	610 340		610 430		per/1000 litres (RT1000-5000)	
					Min	Max	Min	Max	Min	Max
Darwin	12°	24.7	August	1	2.0	3.0	2.5	4.0	6	9.5
Cairns/ Townsville	17°	24.0	September	1	2.3	3.5	2.8	4.0	6	9.5
	19°									
Brisbane	27°	23.2	January	3	2.0	3.0	2.5	4.0	7	11
Perth	32°	28.9	January	3	2.0	3.0	2.3	3.5	6	9
Sydney	34°	23.5	December	3	2.2	3.5	2.7	4.0	7	10.5
Adelaide	35°	28.2	January	3	2.0	3.0	2.4	3.5	6	9
Canberra	35°	27.0	January	3	2.0	3.0	2.5	4.0	6	9.5
Melbourne	38°	24.4	January	4	2.0	3.1	2.5	4.0	6.3	10
Hobart	42°	23.6	January	4	2.4	3.5	3.0	4.5	7.5	11

TECHNICAL DATA

COMMERCIAL SOLAR PIPE SIZE / PUMP SELECTION / SPEED SETTING – RHEEM LOLINE														
Total Number Collectors	Combined Tank & Array Piping Length (m) ¹	Total Length (flow and return) Between Storage Tanks and Collector Array (m) ²												
		10	20	30	40	50	60	70	80	90	100	150	200	
15	30	DN20/20-60/1	DN20/20-60/2						DN20/20-60/3		DN20/32-80/2	DN20/32-80/3		
		DN25/20-60/1											DN25/20-60/2	
30	53+	DN25/20-45						–	–	–	–	–		
		DN25/20-60/2	DN25/20-60/3						DN25/32-80/2		DN32/20-60/2			
	53++	DN25/20-45						–	–	–	–	–		
DN25/20-60/2		DN25/20-60/3						DN25/32-80/2		DN32/20-60/2				
45	63+	–	DN25/32-80/3				–	–	–	–	–	–		
	90++	–	DN32/20-45					DN32/20-60/3				DN32/20-60/3		
60	79+	–	DN32/32-80/3						–		–			
	120++	–	DN40/20-45					–		–		–		
			DN40/20-60/3					–		–				
75	92+	–	–	DN40/32-80/3										
				DN50/20-45										
	111++	–	–	DN40/32-80/3										
				DN50/20-45										
90	105+	–	–	DN40/32-80/3						–		–		
				DN50/20-60/3						DN50/32-80/2		DN50/32-80/2		
	159++	–	–	DN40/32-80/3		–	–	–	–	–	–	–		
105	118+	–	–	–	DN50/20-60/3						DN50/32-80/2		DN50/32-80/3	
	160++	–	–	–	DN50/32-80/3									
120	131+	–	–	–	DN50/32-80/3									
	215++	–	–	–	DN50/32-80/3									

¹ Total length of pipe inter-connecting tanks and collector arrays.

² Lineal length.

Notes: Pump selections are Grundfos. 20-60 = UPS20-60N, 20-45 = UP20-45N, 32-80 = UPS32-80N

UPS20-60N set to speed 3 can be substituted for a UP20-45N, but not the reverse

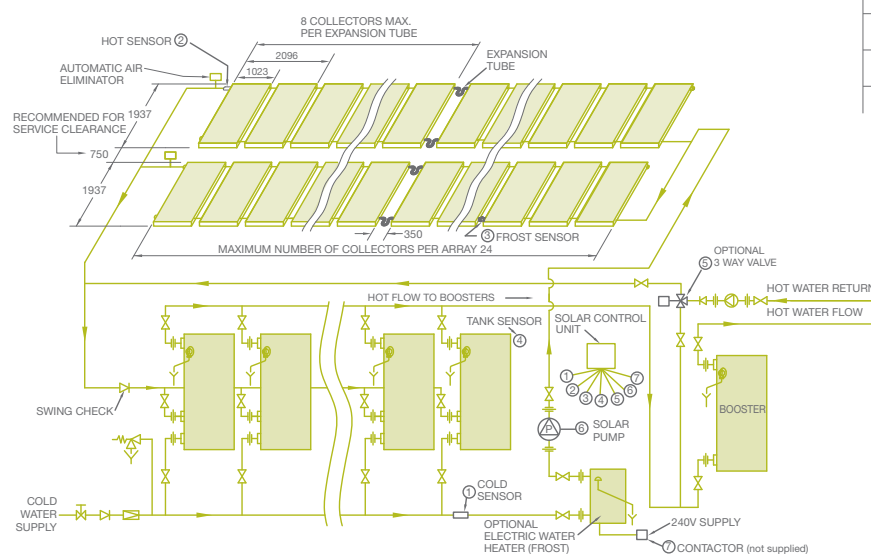
If actual number of panels falls between an array size, use the next biggest array

If actual pipe length between tanks and collectors falls between the lengths shown, use the next longest length

+Parallel Array

++ Side by Side Array

Typical Installation Commercial Solar Loline Double Array



NPT200 COLLECTOR TECHNICAL DATA

Overall Dimensions H x W x D	mm	1941 x 1023 x 80
Aperture Area	m ²	1.86
Weight (empty /full)	kg	36/37
Fluid Capacity	Litres	1.5
Number of Risers		7
Absorber Material		Black Polyester Aluminium
Insulation		Polyester
Glazing		3.2mm Tempered Low Iron
Tray Material		Zincalume®

PREMIER HILINE INDIRECT SOLAR

**SUITED TO SMALL
ROOFTOP APPLICATIONS
LIKE SPORTS FIELDS**



SOLAR



LIGHTWEIGHT
STAINLESS STEEL



ALL WEATHER
& WATER



CAPACITY



MULTI-BOOST
OPTIONS

The lightweight, simple commercial solar system.

LIGHTWEIGHT EFFICIENCY

The 300 litre stainless steel storage tank sits on the roof, reducing footprint on the ground and the thermosiphon design efficiently transfers energy from the collectors into the tank without the need for circulators and primary flow and return lines.

BUILT-IN FREEZE PROTECTION

Uses propylene glycol as the heat transfer fluid to deliver freeze protection to as low as -28°C.

IDEAL FOR SCALING WATER REGIONS

Because it's an indirect system, water never goes through the collector, making it ideal for scaling water areas.

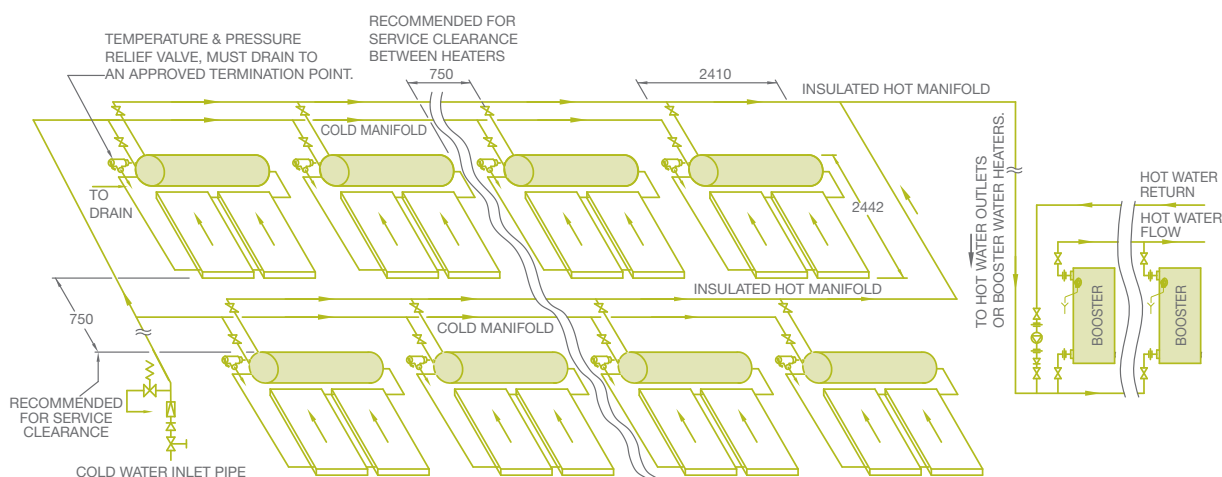


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SP2000 COLLECTOR TECHNICAL DATA

Overall Dimensions H x W x D	mm	1996 x 1043 x 82
Aperture Area	m ²	1.88
Weight (empty /full)	kg	45/49
Fluid Capacity	Litres	3.8
Number of Risers		35
Absorber Material		Steel
Insulation		38mm Polyester
Absorber Surface		Black Polyester Powdercoat
Frame Material		Extruded Aluminium
Glass		3.2mm Tempered Low Iron

Typical Installation



TECHNICAL DATA

MULTIPLE BOOST OPTIONS

When in tank energy is low or there's high hot water demand, the system can be boosted to ensure constant hot water supply. Electric heating unit bundles can be fitted via one of two flanges in RT tanks and a variety of fittings allow multiple configurations to be connected such as heat pump or gas water heater.

ELECTRIC BOOSTING

- Comes with an adjustable thermostat and visual temperature display
- Can be interlocked with BMS to maximise the solar contribution factor (SCF)

HEAT PUMP BOOSTING

If a Rheem commercial heat pump is chosen for boosting, the heat pump's high Coefficient of Performance will mean you'll achieve high renewable energy contribution. Additionally, Rheem horizontal discharge heat pump models can be stacked two high to reduce plant footprint.

REDUCE RUNNING COSTS AND ENERGY USE EVEN FURTHER WITH OPTIONAL 3-WAY VALVE

(Available with both Loline Solar and Heat Pumps)

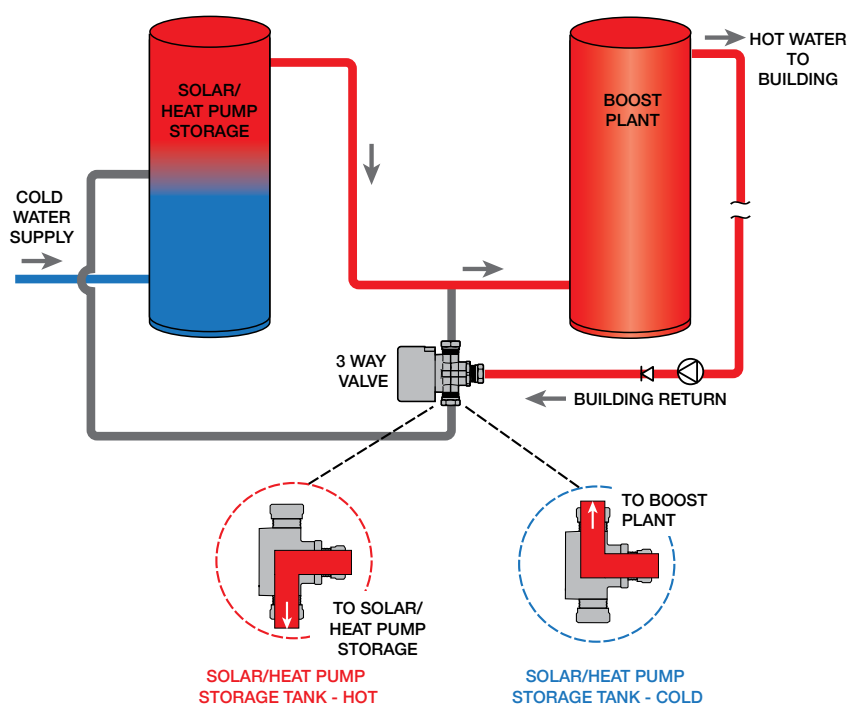
The available energy in the storage tank can be monitored to maximise solar/heat pump energy use and reduce running costs.

When there's enough energy in the storage tank, the WaterMark Certified 3-way valve diverts building return water to the solar/heat pump storage. This passes through the in-line boost plant without further heating, using renewable energy to maintain ring main temperature.

Conversely, when there's not enough energy detected in the storage tank, the building return water is diverted through the in-line boost plant to maintain ring main temperature.



Rheem HS Series solar with electric boosting in the top of solar tanks. Katherine Hospital NT.





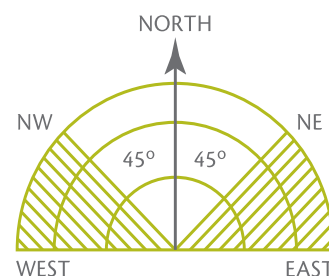
INSTALL TIPS

FIVE KEY TIPS FOR DELIVERING MAXIMUM PERFORMANCE FROM YOUR COMMERCIAL SOLAR SYSTEM.

1. Collectors should ideally face due north (in the southern hemisphere); facing as far as north-east and north-west will cause approximately 5% drop in operating efficiency.
2. Collectors should be inclined at approximately the latitude angle, however 15° either way is acceptable, but not less than 10° from the horizontal.
3. For flat roof installations, Rheem can supply variable pitch frames suitable for either one or two collectors with pre-set pitch angles of 20 to 30 degrees in 2.5 increments.
4. Metallic flow and return lines only **MUST** be used between the solar storage tanks and the collectors.
5. The pipe must be well insulated and sheathed if externally mounted. AS/NZS 3500.4 has guidelines specific to the zone and see the relevant Pipe Size and Pump Selection Table for the correct specification of pipe size.

COLLECTOR POSITIONING

Recommended Aspect N.E. to N.W.



SOLAR FRAMES

VARIABLE PITCH STAND

Made from extruded aluminium section to offer excellent corrosion protection, Variable Pitch Stands can be mounted on flat or near flat roofs. The inclination angle can be set between 20 to 30 degrees in 2.5 increments.

WITH PITCH FRAME

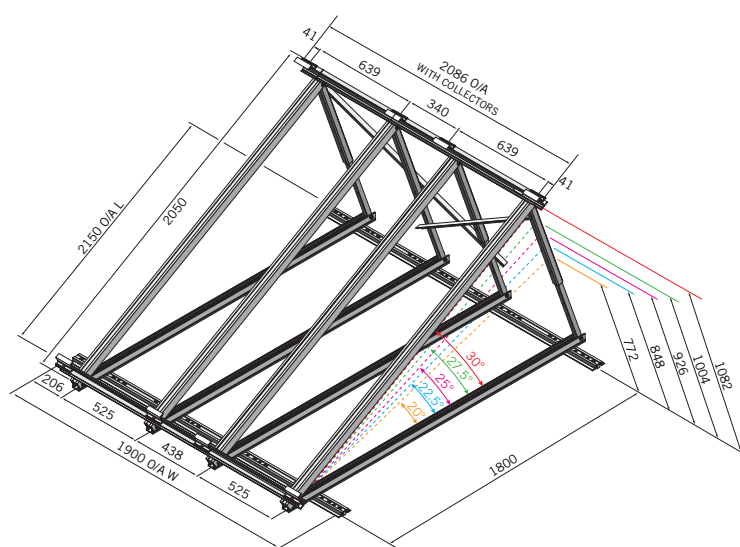
For pitched roof installation, With Pitch Kits are available and are certified for use in wind regions C and D terrain category 2 up to a height of 10 metres.

NOTE

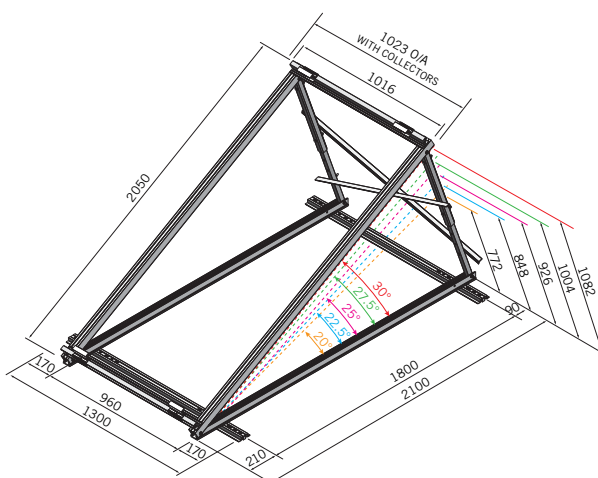
Rheem collector frames are designed in accordance with the relevant sections of AS/NZS 1170.0:2002, AS/NZS 1170.1:2002, AS/NZS 1170.2:2011, AS/NZS 4600:2005, AS/NZS 1664.1:1997, AS 1720.1:2010.

It is the responsibility of the designer to determine the actual wind load acting on the solar frame and collector assembly for the installation site and satisfy themselves as to the suitability of the frame and collector assembly.

Fixing of frames to building members must be designed by a structural engineer.



Variable Pitch Frame - 2 collectors 204026



Variable Pitch Frame - 1 collector 204025