

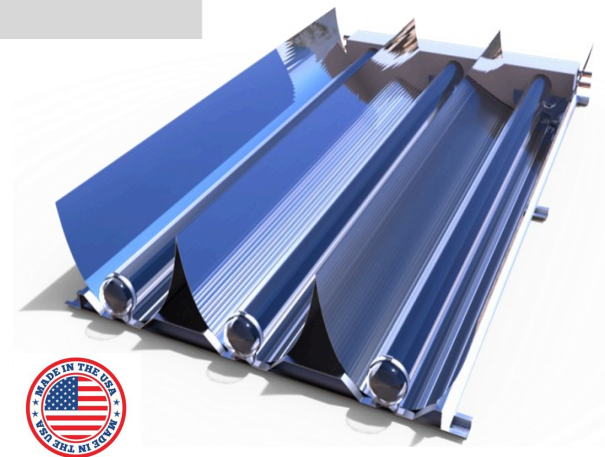
KING Concentrating Collector

The KING Collector is able to collect both direct and Diffuse Radiation

Making it stand out in the industry today

Artic Solar's revolutionary high temperature solar heating collector solves the heating needs of the enormous, yet underserved, commercial and industrial heating market. This potentially multi-billion dollar market for high temperature Industrial Process Heat (IPH) includes such diverse applications as:

- | | |
|-----------------------------------|-------------------|
| Absorption chilling | Metals preheating |
| Food processing | Drying |
| Pasteurization, and sterilization | Dehumidification |
| Thermo-chemical treatment | Glass melting |
| Waste treatment | Mining |
| Incineration | |



KING Collector

Our system can replace or reduce the burden on the 163,000 commercial/industrial boilers in the US, 50% of which have exceeded their useful lives.

The KING Concentrating Collector

Artic Solar's unique design of the east/west reflector is tuned to the collector to ensure maximum absorption of solar energy, maintaining peak energy generation even at an exceedingly wide angle of acceptance. This means the absorber collects 40% more radiation without costly tracking systems.

The XCPC's simple and smart design, including such features as integrated fluid channels and an integrated mounting system, reduces component materials and costs. Altogether, our system provides the lowest levelized cost of energy (LCOE) in the solar energy industry today.

Our KING collector outpaces all other high temperature (>120oC/248oF) solar thermal technologies, i.e., trough and linear Fresnel.

The KING:

- Achieves temperatures in excess of 200oC at more than 50% efficiency (the percentage of incident solar radiation converted to useful heat energy) which current market incumbents cannot approach without tracking.
- Maintains efficiency even at high operating temperatures. Flat plate and other evacuated tube collectors exhibit good efficiency at lower temperatures but heat losses mean that their effectiveness falls off rapidly beginning at 80-100oC/176-212oF.
- Is a low-profile, roof or ground mountable system, combining aesthetics and practicability. The other technologies are high profile (up to 20ft) and thus require large land areas to be effective.
- Is non-tracking, i.e., has no moving parts. All other roof-top systems that can achieve these temperatures use tracking mechanisms that require expensive and ongoing maintenance.

The KING is ready for the commercial market and is made with pride in Jacksonville, FL, USA by a Veteran Owned Small Business.

Specifications

KING Collector

Gross Area:	2.7 m ² – 29.05 ft ²
Aperture Area:	2.41 m ² – 25.92 ft ²
Length:	2208 mm – 86.91 Inches
Width:	1220.63 mm – 48 1/16 th Inches
Height:	295 mm – 11.6 inches
Weight:	Dry 37.29kg – 82.2 lbs.
	Wet 38.06kg – 83.9 lbs. (50% propylene glycol)
Fluid volume	0.757 liters – 0.2 gallons
Reflector Geometric Concentration Ratio:	1.45X
Outside Diameter of Absorber Riser Tube:	8 mm outer diameter,
Thickness of Absorber Riser Tube:	0.60 mm
Absorber Fin Thickness:	0.4 mm thick aluminum fin
Absorber area:	(285 mm X 1880 mm) X 1.45 (Concentration Ratio)/= 0.77m ² absorber area per tube, X 3 tubes = 2.33 m ² /collector
Flow Pattern:	Single U-bend flow tube per Absorber tube assembly
Number of Absorber Tube runs:	3 for each collector
Center to Center of riser tube runs:	406.4 mm – 16.0 inches
Number of risers:	3 per collector
Outside Diameter of absorber riser:	8mm
Absorber to fin connection:	Continuous ultrasonic welding
Solar absorption, α_{sol} :	0.92 \pm 0.02
Thermal emission, $\epsilon_{100\text{ }^{\circ}\text{C}}$:	0.05 \pm 0.02
Recommended Flow Rate	0.87 gpm – 3.29 liter/minute (1.0 gpm maximum)

