CASE STUDY | ALTERNATIVE ENERGY

# Sanitary Cooling for Alternative Energy: A Custom Shell & Tube Solution

Exergy engineered a precision sanitary heat exchanger for an alternative energy application requiring exact temperature control, hygienic construction, and long-term reliability with a specialized "water-like" process fluid.

## The Challenge

Balance compact design, sanitary construction, and consistent thermal performance across variable operating conditions — while preventing fouling or contamination and fitting within existing installation parameters.

- Specialized process fluid compatibility
- Strict surface finish standards
- Reliable flow distribution required

## The Solution

Exergy designed a custom sanitary shell & tube heat exchanger — **Model #00686-01, 60 Series** — using 30% propylene glycol cooling medium at 10°C and 10 GPM.

- Heat transfer area: **4.19 ft²**
- Sanitary flange for easy integration
- NPT fittings on the shell side
- Electropolished tubing: **15 µin (0.4 µm) Ra max**
- Full **316L stainless steel** construction

## The Results

The solution delivered precise temperature control within spec, minimized energy consumption, and eliminated contamination risk through hygienic electropolished surfaces.

- Consistent process temperature control
- Zero fouling risk — electropolished finish
- Minimal maintenance requirements
- Durable performance in demanding conditions

**4.19**

### ft² Transfer Area

Compact yet highly efficient heat transfer surface optimized for the application footprint.

**10°C**

### Coolant Inlet Temp

30% propylene glycol entering at precise temperature for stable thermal exchange.

**10**

### GPM Flow Rate

Controlled cooling medium flow rate ensuring consistent performance across variable loads.

**15µin**

### Ra Max Surface Finish

Electropolished tubing finish meeting the strictest sanitary and hygienic standards.

**Exergy Capability Highlight:** This case demonstrates Exergy's proven ability to engineer precise, sanitary cooling systems that meet specialized performance standards in emerging and alternative energy technologies — ISO 9001:2015 Certified Quality Management System.