



engineered to perform

Cooling Solutions for Geothermal Power Generation

SPX[®]
HEAT TRANSFER

HARNESS THE power



Geothermal energy is all-natural...and all around us. Powered by the internal heat of the Earth itself, it is one of the most renewable, sustainable, and efficient energy sources available. But without an optimized component system to harness it, the staggering potential of our planet's perpetual engine can go unrealized.

The potential benefits of an optimized system include:

- » Greater power generation capacity
- » Decreased auxiliary power usage
- » Decreased lifetime costs of the system
- » Optimized footprints for space constrained sites

And without optimization not only does your system suffer – stressing components, reducing longevity and increasing wear – but your bottom line can suffer, as well.

To better harness the power of your geothermal project, SPX Heat Transfer Inc. taps into decades of experience and innovation, providing customized optimization solutions from brands you know and trust.

It's why SPX Heat Transfer is recognized across the globe as a leader in cold-end optimization, and should be your first call when you need to improve your system's performance.



EXPERTISE

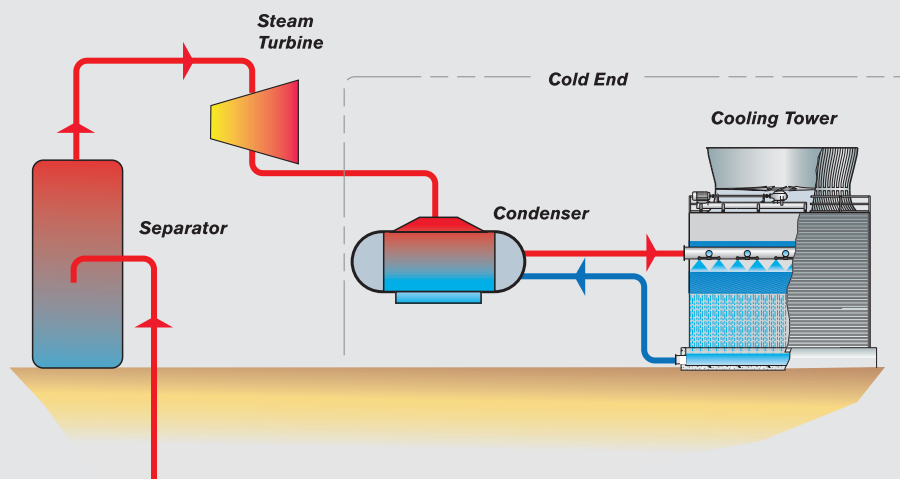


warm up to **COLD-END OPTIMIZATION**

There's no doubt the cold end of a component system is highly complicated and vastly interdependent. Even a minimal change in condenser specifications affects the performance and/or the specifications of the cooling tower — and vice-versa. It's a delicate balance, and the greater the flexibility in a system's specifications, the more that system can benefit from optimization.

Fortunately, SPX has expertise and experience in the full range of cold-end components. In fact, no one can match SPX in the development of optimized solutions that translate into profit for customers.

SPX Heat Transfer products don't simply make a difference — they provide smaller, more efficient systems.





ADCC™
OFFERS:

- » **The most thermal efficient condenser for geothermal applications**
- » **Minimal auxiliary power usage for maximum geothermal power output**
- » **Efficient size with reduced foundation and piping costs**

EXECUTION

performance YOU NEED

GEOHERMAL APPLICATIONS **maximize** POWER GENERATION

For most geothermal applications, maximizing power generation at a minimal cost is the primary concern. Ecolaire® Advanced Direct Contact Condensers (ADCC) feature proven licensed technology that improves thermal performance and helps to lower costs over other direct condensers while maximizing power output.

How it works:

Tray and spray-type direct-contact condensers attempt to gain efficiency by breaking up the mass of cooling water into smaller particles to increase the surface area. The ADCC improves the surface area requirements — compared to tray and spray designs — by creating a film and enhances the heat transfer by keeping the film turbulent. The turbulent film allows for much greater thermal efficiency.

The higher thermal efficiency of the ADCC enables many benefits for the geothermal system, including:

- » Lower condenser pressure and/or less cooling water flow that helps to reduce the size of major components
- » Reduced parasitic power consumption for the gas removal system, maximizing the net power generation
- » Smaller volume height, leading to smaller building heights, potentially aiding with tight space requirements
- » Elimination or reduction of foundations and piping costs



SURFACE SOLUTIONS

For some geothermal applications, optimizing the cooling system may require surface condensers. Either because of the need to limit exposure of H_2S to the atmosphere, or the desire for district heating or other waste heat processes, cooling systems with surface condensers separate the cooling loop from the geothermal steam.

Drawing on years of experience in geothermal technology, SPX Heat Transfer with licensed technology from SPX Cooling Technologies, Inc. has brought Ecolaire surface condensers and Marley cooling towers into an optimized system.

How we optimize:

For a given condensing temperature, variation in water flow, TTD, and cooling tower approach are captured at defined intervals to optimize the cooling system according to the customer's need. Whether the goal is maximize production, minimize life time costs, or minimize up front costs, SPX Heat Transfer can provide the right solution for the customer's need.



EXPERIENCE

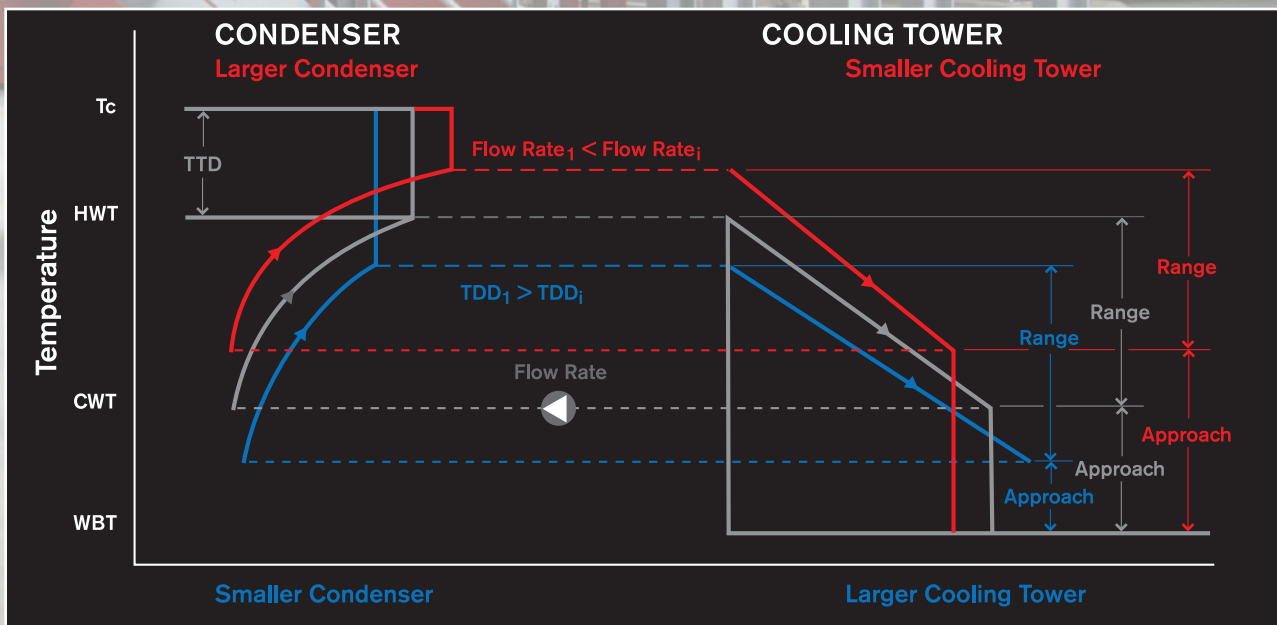
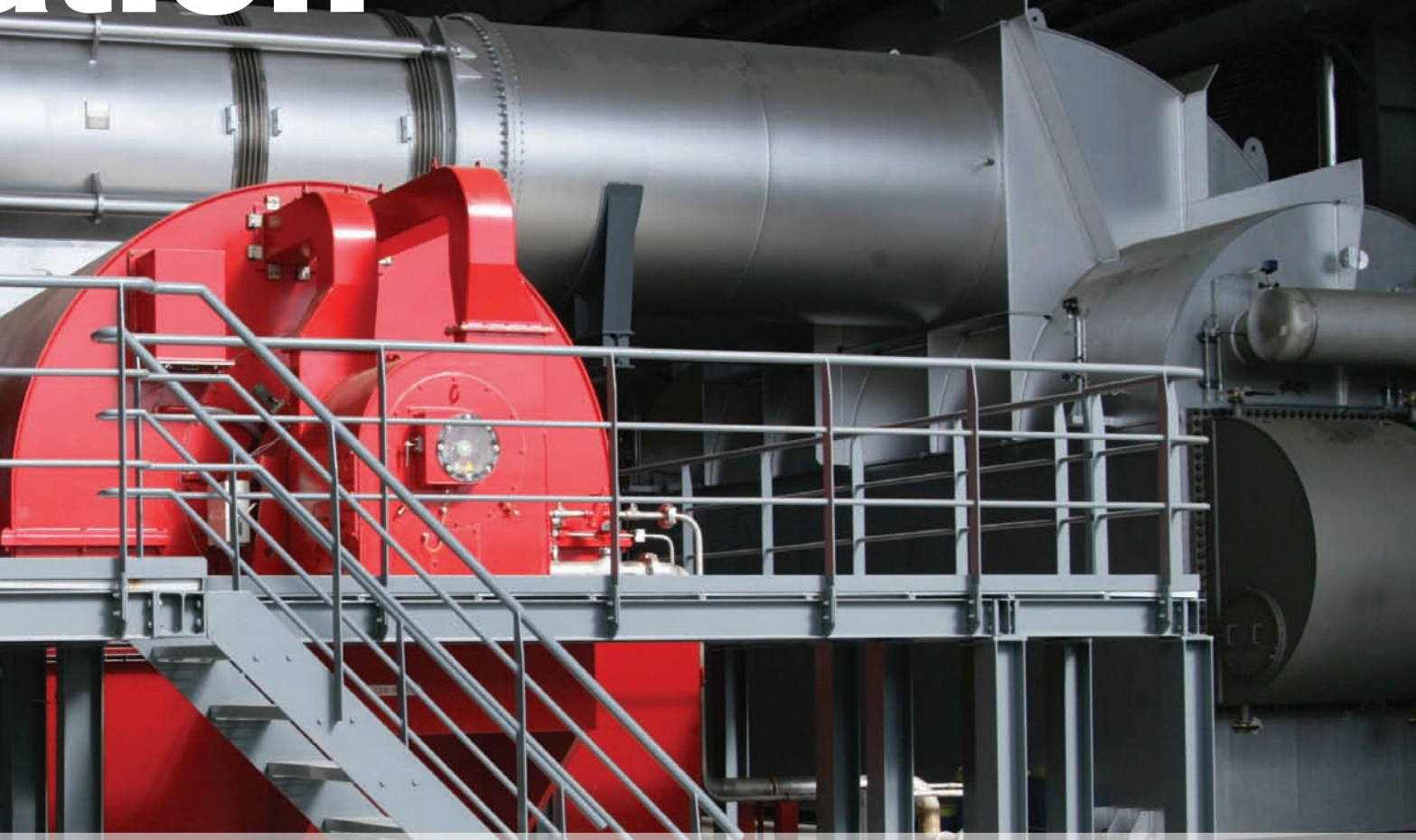
POWERED BY
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SURFACE SOLUTIONS OFFER:

- » Minimal H_2S exposure to the atmosphere
- » Options for district heating and other waste heat processes
- » Fully integrated systems for maximum optimization

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engineered TO PERFORM

- » Custom, integrated cold-end optimization
- » Surface and ADCC solutions
- » Smaller, more efficient, more affordable systems
- » First-time and lifetime benefits
- » Recognized, trusted brands
- » Over 3500 MW of installed global geothermal capacity

REFERENCE PROJECTS



SPX[®]
HEAT TRANSFER

95 HIGHLAND AVENUE, SUITE 210
BETHLEHEM, PENNSYLVANIA 18017
UNITED STATES
918 234 6000
info@spxht.com

spxheattransfer.com