

**hydro**   
**THERMAL**®

The Perfect Temperature. Every Time.



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**Our mission** to harness the power of steam and expand our customers' operating potential has allowed Hydro-Thermal to pursue unmatched customer-focused innovation. From deploying the most advanced series of steam heating systems to forming our teams of exceptional engineers, specialists, technicians, and representatives ready to assist our customers to help you achieve a better steam solution—we're more than a manufacturer.

# FOR INDUSTRIAL AND SANITARY FLUID PROCESSING APPLICATIONS, CUSTOMERS TURN TO HYDRO- THERMAL CORPORATION AS THE GLOBAL LEADER IN ON-DEMAND STEAM INJECTION TECHNOLOGY FOR HEATING AND COOKING SOLUTIONS.

We design, engineer, and deliver ultra-precise and dependable heating solutions that optimize temperature control, increase energy efficiency, and minimize maintenance requirements. From the original Hydroheater® developed in 1934 to our latest designed and engineered solutions today, we harness the power of steam.

With more than 20,000 installations in 90+ countries - all backed by our 100% performance guarantee - we help you achieve **The Perfect Temperature. Every Time.**

**Why Steam?** Our steam injection heating and cooking systems **deliver more:**



## Control

Achieve and maintain ultra precise and consistent temperatures



## Up-Time

Simple design streamlines maintenance and minimizes downtime



## Value

100% energy efficient heat delivers 20%+ energy cost savings vs. other heating methods



## Footprint

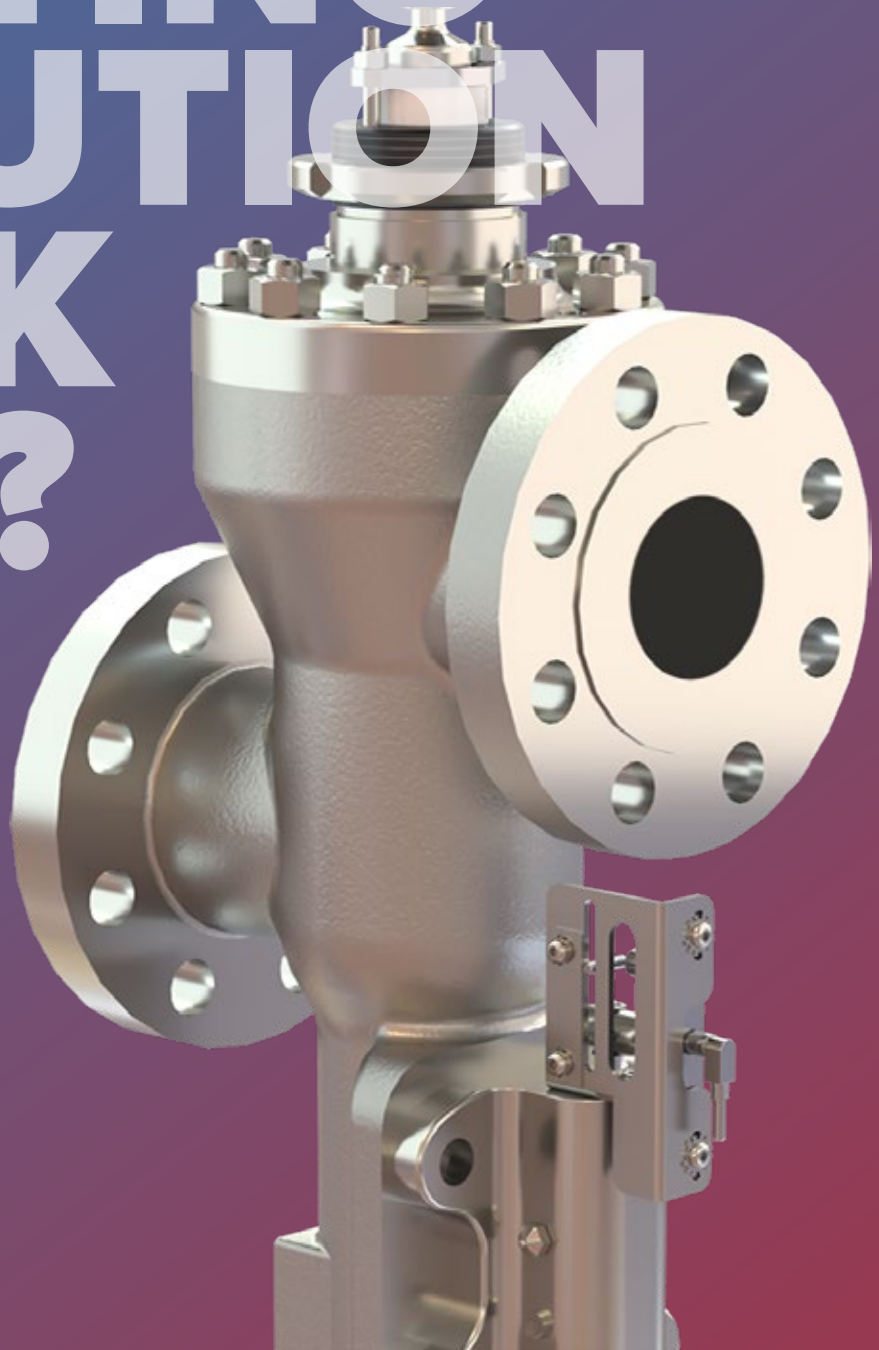
Innovative design uses minimal floor space, expanding your production capabilities



## Confidence

The industry's best 100% performance guarantee gives you total peace of mind

**WHAT  
DOES YOUR  
IDEAL  
HEATING  
SOLUTION  
LOOK  
LIKE?**



For over 85 years, Hydro-Thermal has been at the forefront of heating innovation delivering solutions with the most **PRECISION, RELIABILITY,** and **EFFICIENCY** to meet our customers' needs.



**Rapidly Attain & Maintain  
Critical Temperatures**

*You'll always reach and maintain your designated set-point temperature.*



**Reduce Maintenance  
Slowdowns and Safety Risks**

*Leave cleaning, maintenance, and safety concerns behind.*



**Heat Challenging Fluids  
without Plugging**

*Never worry about clogging your tough viscosities, abrasives, slurries, solids, or stringy products.*



**Conserve Energy  
and Footprint**

*An investment as good for the environment as it is for your business.*



**Last for Decades with a  
Low Cost of Ownership**

*The lowest total cost of ownership for a fluid process heating solution.*



**Support Team to Help  
Every Step of the Way**

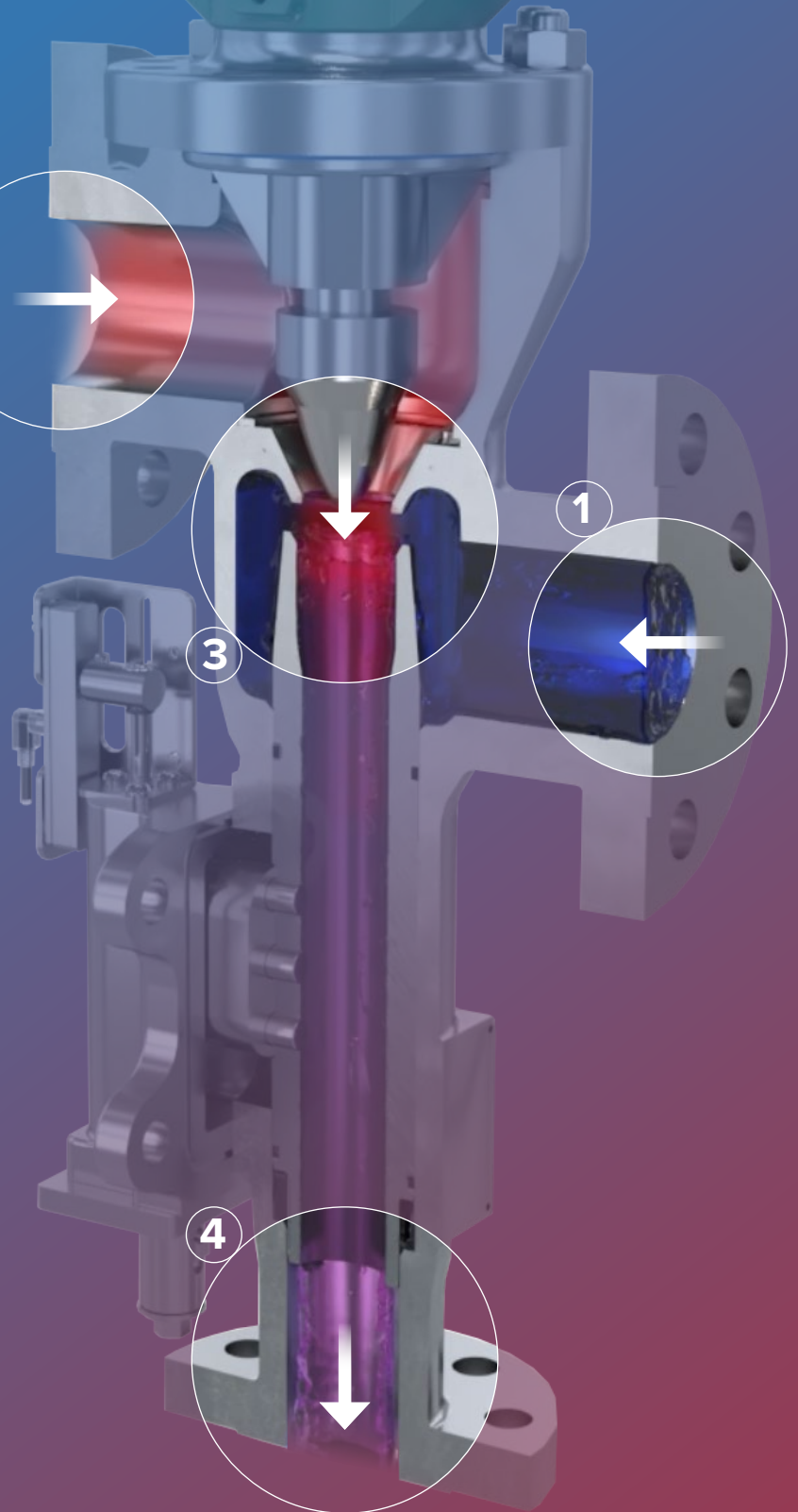
*Guaranteed optimal performance and expedited help if you need it.*

# HARNESSING THE POWER OF STEAM

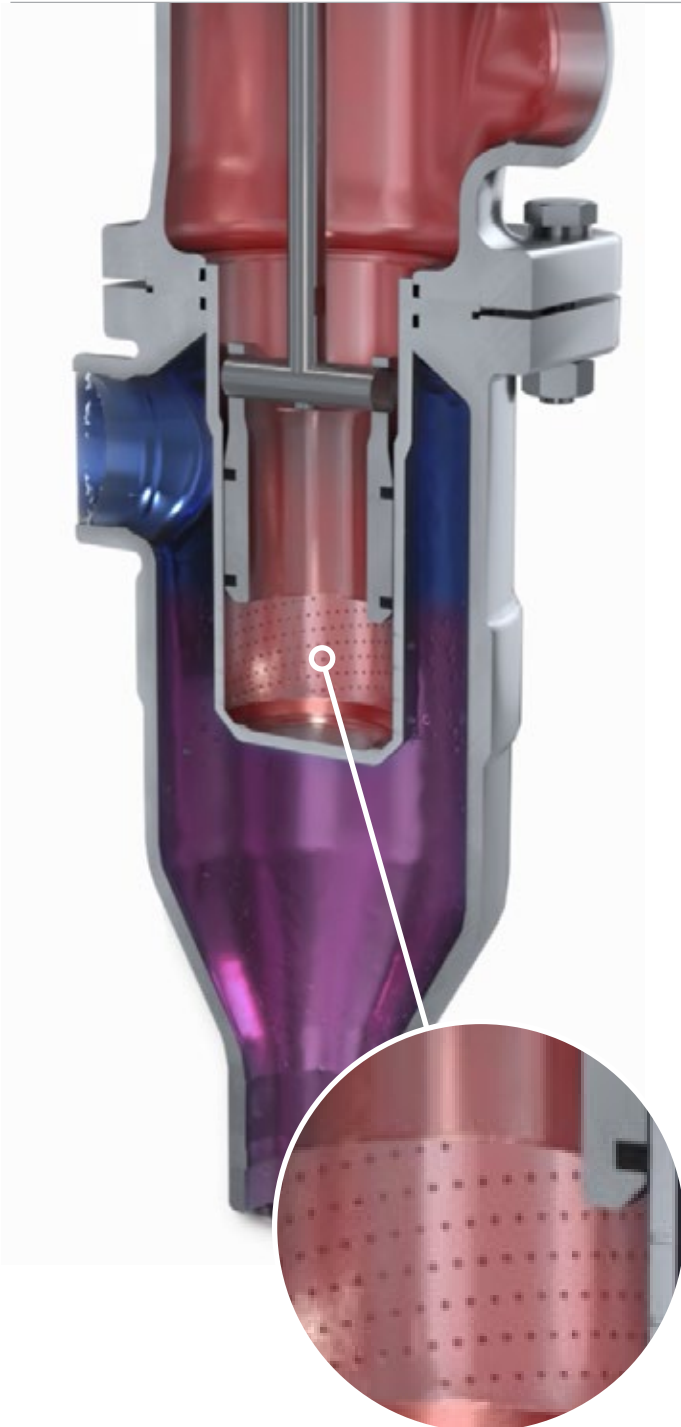
Rooted in decades of innovation, Hydro-Thermal's steam heating solutions deliver industry-leading precision, reliability, and efficiency.

## HOW IT WORKS

- 1** Water, liquid, or slurry enters the heater.
- 2** Steam enters the heater.
- 3** The steam disperses through a nozzle or diffuser (depending on the solution) at sonic velocity, instantaneously combining and condensing with the water, liquid, or slurry, resulting in a uniform, precise, and efficient product.
- 4** The water, liquid or slurry exits the heater at the **perfect temperature, every time.**



# WHAT'S INSIDE



How do you get the best outcome possible from our heating solutions? The precision, reliability, and efficiency of Hydro-Thermal heating solutions rely on patented internal modulation and choked flow technology to create the most precise process conditions.

## Internal Modulation

Our unique design ensures predictable and repeatable results, every time. By precisely controlling both the flow and steam in every process, the pivotal moment when the steam and liquid first come into contact and mix is optimized, creating the perfect final product.

## Choked flow

Choked flow occurs when accelerating a vapor to its maximum velocity by creating a pressure differential through either a diffuser or a nozzle. By precisely controlling the flow and amount of steam, we can control the pivotal moment when and where the steam and liquid first come in contact and mix.

## Stem Plug

Our patented stem plug technology optimizes the discharge of steam through constant movement, exposing the right amount of diffuser holes to reach your set-point temperature.

**THE PERFECT TEMPERATURE.  
EVERY TIME.**

**IMPACT**

# **OPTIMIZING ANAEROBIC DIGESTION CREATES A SUSTAINABLE FUTURE.**

Wastewater treatment plants (WWTP) and solid landfills produce an important resource used to power cities - renewable natural gas. By optimizing the generation of collectible methane and digestion processes, clean water can be returned to the local water supply, creating sustainable communities.

One large municipality's WWTP has been using Solaris®, a Hydro-Thermal Direct Steam Injection heating unit since 2007, optimizing the temperature within six anaerobic digesters. As they expand to a seventh digester after 15 years of operation, all digesters will be upgraded using Hydro-Thermal's NOH Non-Obstructing Heater™. This heating solution not only brings more precise temperature control but has a robust construction that offers a level of reliability that can take them through the next couple of decades. Plus, its open-flow design eliminates blockage from inevitable contaminants. Plus, its robust construction and minimal maintenance makes the NOH Non-Obstructing Heater™ an ideal fit in a plant built to run 24/7 production for decades.

**NOH**  
**NON-OBSTRUCTING  
HEATER™**







# INDUSTRIAL

## HEATING SOLUTIONS

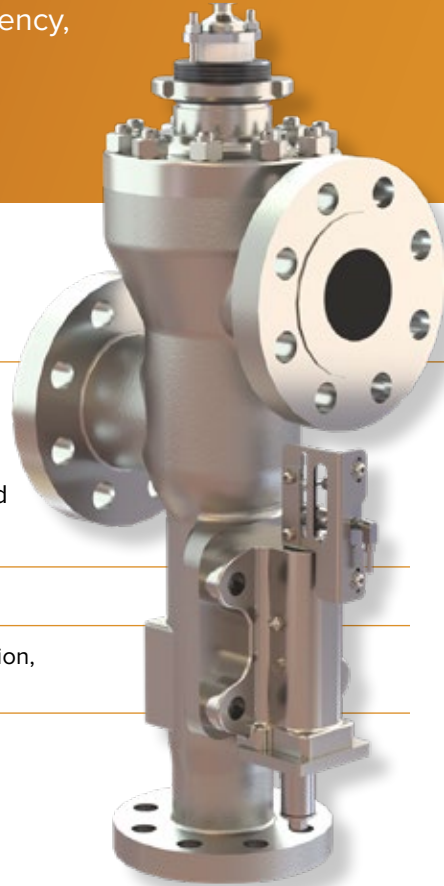
From our first paper mill to thousands of global installations later, customers repeatedly turn to Hydro-Thermal's industrial heating solutions to maximize their process efficiency, production, and energy savings.

### HYDROHEATER®

Also known as the Jetcooker™, our Hydroheater® has the longest proven history of being used for heating and processing a complex range of liquids and materials. With nearly a century of engineering and innovation behind the Hydroheater® design, this workhorse speaks for itself.

**VOLUME CAPABILITY** 1 up to 6,700 gpm [0.2 up to 1,522 m<sup>3</sup>/hr]

**APPLICATIONS** Pulp & paper, biofuels, ethanol & starch conversion, large volume water, anaerobic digestion



#### IMPACT

A paper company uses the Hydroheater® to heat black liquor to the optimum temperature for maintaining proper nozzle pattern and droplet size for maximum burn efficiency – while eliminating severe vibration and hammering caused by alternative heating methods. This results in better recovery boiler performance while eliminating unscheduled maintenance or equipment damage.



### SOLARIS®

Optimized for viscous slurries, the Solaris® heater features a straight-through design and low shear flow. The Solaris® is perfect for heavy slurries with medium consistency pulp stock or higher solid contents when you need to maintain chunk size. The flow diffuser injects steam across the entire cross-section to ensure thorough mixing and a uniform temperature profile even at a high volume and flow rate.

**VOLUME CAPABILITY** 5 up to 25,000 gpm [1 up to 5,678 m<sup>3</sup>/hr]

**APPLICATIONS** Medium consistency pulp stock, bleaching, anaerobic digestion, other fibrous slurries

#### IMPACT

A pulp mill saved over \$116,000 a year by replacing an outdated sparging system with a Solaris® heater. Their old system required over 19,000 lbs (8,618 kg) of steam/hour while the Solaris® heater saved 20% in steam usage, while achieving the same output.



**Pre-Engineered  
NOH Non-Obstructing  
Heater™ Skid**



## **NOH NON-OBSTRUCTING HEATER™**

The NOH Non-Obstructing Heater™ has the most robust design to handle abrasive materials, such as sand and grit, to fibrous materials and large particulates. Its unrestricted flow path prevents clogging, fouling, or any accumulation of unwanted materials, and minimizes pressure drop with its unrestricted flow.

**VOLUME CAPABILITY** 30 up to 6,900 GPM [6.8 up to 1,567 m<sup>3</sup>/hr]

**APPLICATIONS** Pulp bleaching, cellulosic ethanol, meat slurry, diced vegetables & blanching, mining & metals, municipal & industrial wastewater, animal manure, inline water heating with a large temperature rise

### **IMPACT**

In a wastewater treatment plant, the heating capabilities and range of the NOH Non-Obstructing Heater™ enables it to transition easily between startup, shutdown, to maintenance modes. Anaerobic digesters require the ability to process high solids and raise temperature rapidly with extreme precision. The NOH Non-Obstructing Heater™ achieves all the above, yet in a compact footprint compared to heat exchangers and without the need to be floor mounted.

## **ATTEC® / ADVANCED FLUID HEATING SKIDS**

Turnkey solutions designed for you! We design, engineer, manufacture, and install your custom DSI solution, based on your exact specifications. Hydro-Thermal makes it easy by providing all the necessary components to meet your specific needs, including piping and control systems.

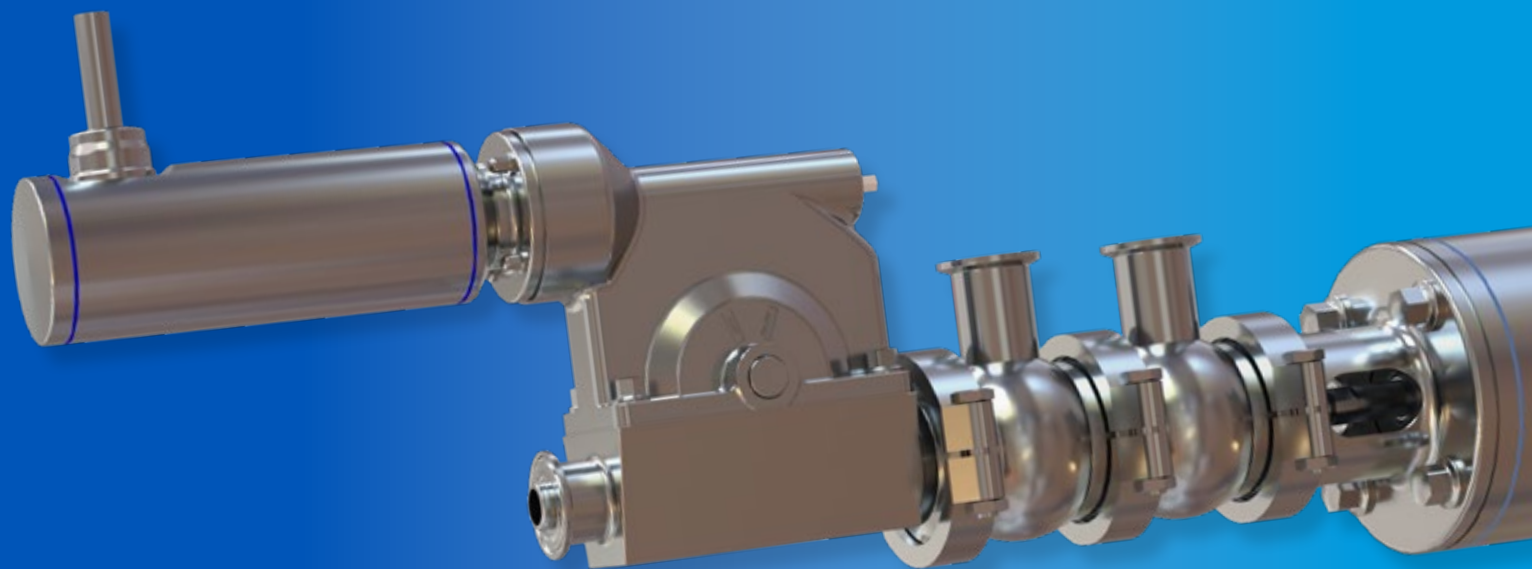


**SYSTEMS**

# SANITARY

## HEATING SOLUTIONS

From cosmetics to cooking, we understand the intricacies and obstacles you face to keep your products sterile and temperatures uniform across the heating process. When you require rapid and precise temperature control with no degradation in quality, you can trust our experience and industry-leading sanitary solutions that arrive with 3A certification and more to meet your exact, clean heating requirements.



## HYDRON™ SANITARY HYDROHEATER

The Hydron™ Sanitary Hydroheater is the most versatile sanitary heating solution that provides precise shear control and process flexibility for food-grade applications.. Perfect for food & beverage, pharmaceutical, or all industries requiring 3A certified sterile heating with precise temperature control.

The Hydron™ Sanitary Hydroheater allows you to choose your shear control method (manual or automatic). Can be used in low shear processes such as soups and sauces to high shear needs such as starch conversions. Easily adjust the combining tube on-the-fly to control the shear to fit process requirements. Customers turn to this solution because of its versatility, reliability, and performance.

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**VOLUME CAPABILITY** 1 up to 180 gpm [0.2 up to 41 m<sup>3</sup>/hr]

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**APPLICATIONS** Applesauce heating, baby food cooking, clean-in-place, cosmetics, egg cooking, Inline cooking, kettle cooking, mayonnaise heating, pasteurization, sauce thickening, soup-base cooking, starch cooking, tomato paste heating, pharmaceuticals

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### IMPACT

A large pet food processor replaced a legacy sparging system with Hydro-Thermal's Hydron™ Sanitary Hydroheater for thawing, mixing, and cooking a premium dog food that required tight temperature controls within +/- 1(degree). The Hydron™ Sanitary Hydroheater not only outperformed their legacy system, but reduced maintenance downtime and eliminated plugging and burn-on, while saving time and money and improving overall production efficiency.

## INFUZE SANITARY COOKING SKID™

The Infuze Sanitary Cooking Skid™ provide fast “plug & play” implementation and on-demand heating for low shear applications such as soups, sauces, slurries, or beverages. This compact, small design is an economical solution that provides instantaneous temperature control for cooking, pasteurization or blended emulsification processes, while being 3A certified and meeting all EHEDG and FDA requirements.



**VOLUME CAPABILITY** 3 up to 225 gpm [0.7 up to 57.9 m<sup>3</sup>/hr]

**APPLICATIONS** Soups, sauces, slurries, beverages, dairy-based products, tomato-based products, starch-based products, high or low shear products, blended emulsification, pasteurization, batch or continuous processing

These applications apply to both Infuze Cooking Skid™ and Silverline™ Smart Cooking System

### IMPACT

Producing Grade A applesauce inline with an Infuze Sanitary Cooking Skid™ preserves the texture of the sauce and improves the freshness – taste and color – over traditional batch cooking.

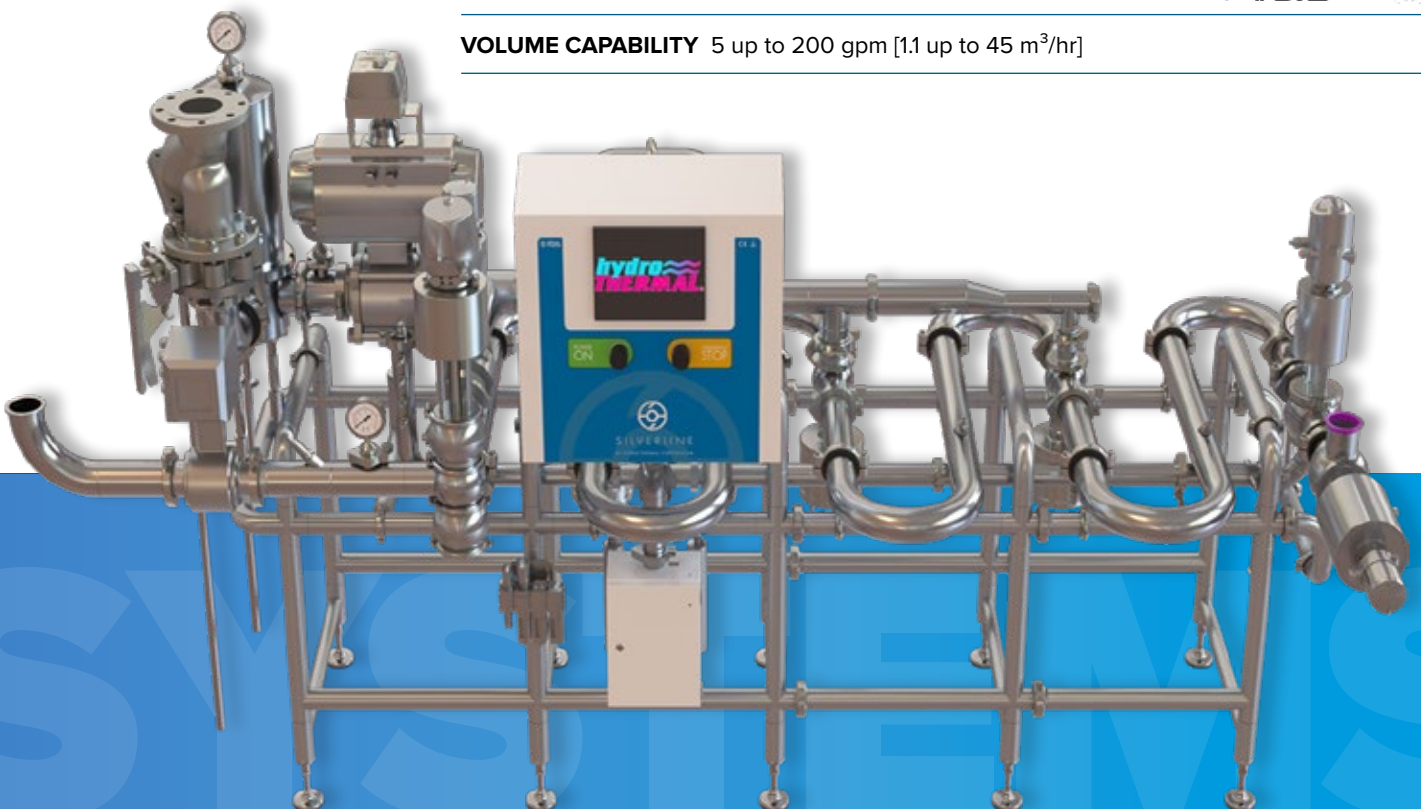
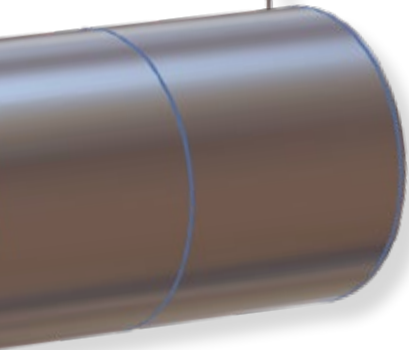
## SILVERLINE SMART COOKING SYSTEM™

The latest innovation in steam cooking, the SilverLine Smart Cooking System™ is the most powerful and versatile steam cooking system available. Its modular design allows for more versatility to add heaters, extend hold tubes to increase capacity or adapt to changing needs.

With a built-in CIP (clean-in-place) cycle, you minimize downtime and save labor costs. This variable shear, stainless steel system delivers consistent results with precise temperature control as a versatile cooking solution.



**VOLUME CAPABILITY** 5 up to 200 gpm [1.1 up to 45 m<sup>3</sup>/hr]



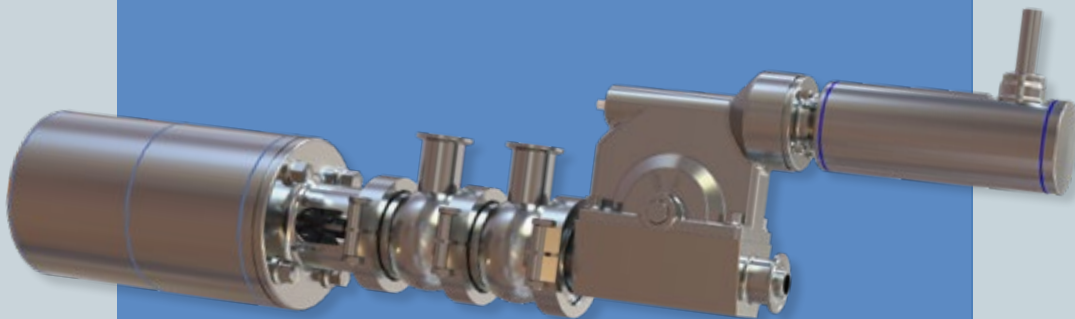
SYSTEMS

THE PERFECT TEMPERATURE.  
EVERY TIME.

IMPACT

## HOW OAT AND NUT MILK PRODUCERS ARE GATHERING STEAM IN A CHALLENGING ECONOMY

A popular, widely distributed producer of nut and oat milks are making a quality product – thanks to Hydro-Thermal’s direct steam injection heating technology. The Hydron™ Sanitary Hydroheater, with automatic shear control, cooks the oat slurry and shears it in a single operation, producing a more consistent, creamy texture. The design and clean-in-place (CIP) technology of the Hydron™ Sanitary Hydroheater helps keep processes running smoothly. It’s a great example of how the positive impact of Hydro-Thermal’s direct steam injection technology stretches far - from the factory floor to store shelves, and ultimately, to satisfied customers.



**HYDRON™**  
SANITARY HYDROHEATER





# WATER ONLY

## HEATING SOLUTIONS

We understand the importance of having hot water when and where you need it. From its early launch, the EZ Heater® has helped thousands of facilities optimize their critical hot water requirements. When temperature control is a fundamental aspect of your operating conditions, we guarantee you will achieve and maintain precise temperature control within 1° of setpoint. Our patented heater design utilizes internally-modulated technology to ensure stable operation and consistent results.

### EZ HEATER® / EZ SKID® Water-Only Applications

The EZ Skid® is an all-in-one turn key solution for heating water in a compact footprint. Out-of-the-box functionality includes our EZ Heater® plus components that connect directly to your utilities for instant access to hot water. Our +/- 1 degree temperature control guarantee ensures optimized energy efficiency while minimizing your maintenance requirements.



**VOLUME CAPABILITY** 2 up to 1,350 gpm [0.5 up to 306 m<sup>3</sup>/hr]

**APPLICATIONS** Central hot water systems, CIP/washdown, hose stations for 140°F or 180°F water, spray bar tempered water, jacketed reactor heating, tank heating & washing

#### IMPACT

A meat processing facility achieved a **40% reduction in cycle times and 20% decrease in energy costs** by installing an EZ Heater for their hose stations.

A pet food processor realized a **\$10,000 cost savings when utilizing 7% less steam** by installing an EZ Skid system. By using less energy, the processor was able to meet corporate sustainability goals, while still producing 195°F water for their extruder spray bars.





## EZ HEATER® IS THE IDEAL SOLUTION FOR:



### HOSE STATIONS

The hot water you need, where you need it, when you need it, always at the right temperature. The EZ Heater® provides safe and accurate temperature control from a centralized location with steam-safety features integrated directly into the system. Eliminate the need for expensive steam piping and make maintenance problems a thing of the past.



### CENTRAL HOT WATER

Provide instant hot water at your desired temperature during production or plant washdown with Hydro-Thermal's EZ Heater®. Designed to respond to the ever-changing water requirements of a busy facility, the EZ Heater's turndown capabilities are flexible enough to guarantee you will always have hot water when you need it.



### CLEAN IN PLACE (CIP)

Proper sanitization and cleaning are of utmost importance. The EZ Heater can optimally clean equipment in one pass.



### TANK HEATING & WASHING

Need hot water on demand? The EZ Heater® can: heat fluid entering your tank, re-circulate tank to maintain specific temperature, or only heat fluid/liquid exiting the tank.



# BEST-IN-CLASS INDUSTRY SOLUTIONS

## INDUSTRIAL

### CHEMICAL MANUFACTURING

Jacketed vessels/reactors, tank heating & washing, reverse osmosis (RO), deaerator/boiler feed water, and rubber slurry

### PAPER PRODUCTION

Whitewater chest/silo heating, freshwater uses (wet-end), re-pulping/recycled fiber heating, and starch cooking

### METAL PROCESSING

Annealing, pickling, scrubbing, tank heating, reverse osmosis (RO), de-aerator, boiler feed water, and in-line heating

### PULP & RECOVERY

Pulp stock heating, green liquor heating, black liquor heating, and sodium chlorate railcar unloading

### MINING

Ore/Slurry processing, starch cooking (potash), precious metals lixivation, soda ash heating

### WASTEWATER HEATING

Anaerobic digestion, industrial pre-treatment, and tank heating

## FOOD & BEVERAGE

### FOOD & BEVERAGE

General cooking, hot fill, aseptic heating, can topping, starch cooking, ingredient water, and immersion cooking

### MEAT & POULTRY

140°F/180°F water critical areas, central hot water, point of use hot water, rendering, scald/dip tanks, and wastewater/anaerobic digestion

### PET FOOD

Meat slurry heating, dye/color injection, starches & gravy cooking, central hot water, and mix/hold tank heating

## ETHANOL, STARCHES & SWEETENERS

### ETHANOL & BIOFUEL

Liquefaction/slurry mash heating, slurry tank heating, depressurization, corn syrup production, and cellulosic pretreatment.

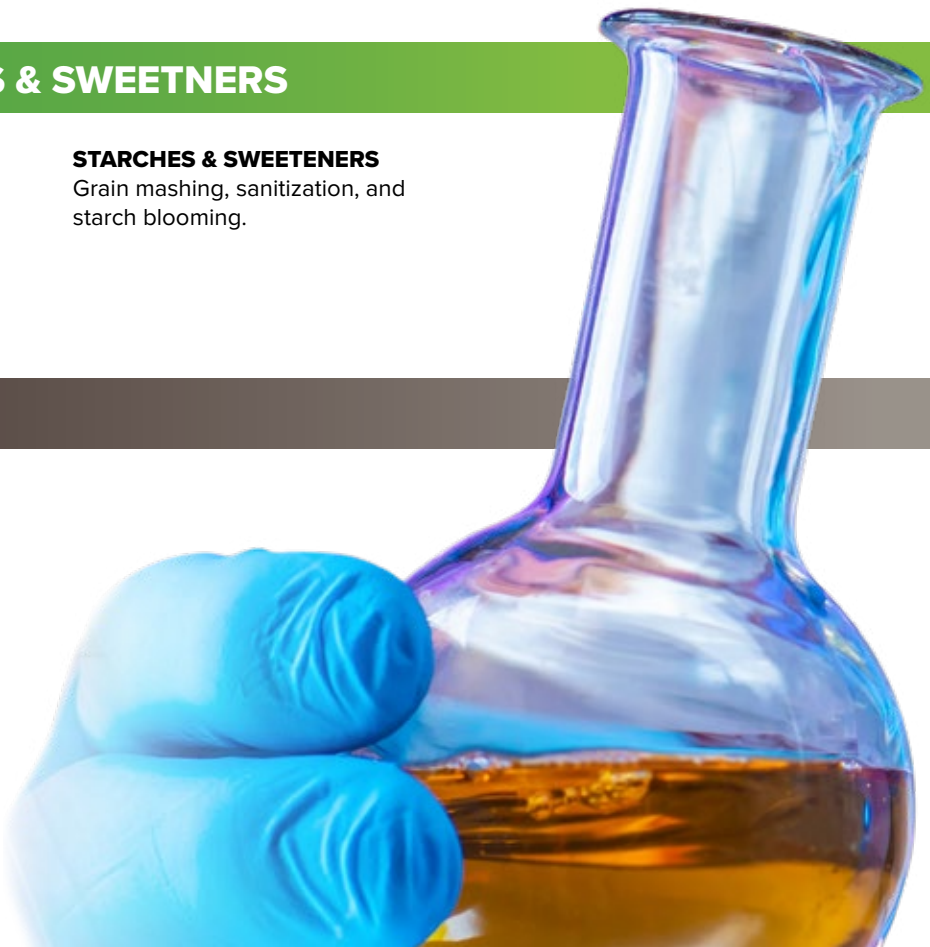
### STARCHES & SWEETENERS

Grain mashing, sanitization, and starch blooming.

## WATER HEATING

### WATER HEATING

Central hot water, hose stations, tank heating, clean-in-place (CIP), jacketed vessels/reactors, annealing, and boiler feedwater



# WHAT MAKES US STAND APART

## Dedicated Support Team

As a leader in the steam heating industry, Hydro-Thermal has the most knowledgeable and dedicated team of employees ready to work around the clock with you. From assisting you with your installation, maintenance, refurbishment or training—our service technicians are here to guide you through any step of the process.

## Industry-Leading Engineering

Our Engineering staff is critical to our innovation and understanding of what our customers need to be successful. With more than 20 certified mechanical, fluid, electrical controls and steam system design engineers, specialists, and PE's (professional engineers), Hydro-Thermal is the only manufacturer of DSI technology with engineer representatives in the U.S. Department of Energy (DOE) Committees for Energy Efficiency and Process Heating.

## On-Site Laboratory & Testing Facility

Hydro-Thermal's lab testing facility gives our customers the opportunity to test out equipment before purchasing. Assist, observe, and verify your own trials before receiving your specific lab results. Combined with our 24/7 global support team and 100% performance guarantee, we want you to feel confident that our steam heating solutions are right for you.



# VALUE

# GLOBAL REACH

The Perfect Temperature. Everytime. Everywhere.



Countries We Serve

Regional Offices

Global Headquarters  
Waukesha, Wisconsin, USA

European Regional Office  
Lyon, France

APAC Regional Office  
Hua Hin, Thailand

Latin America Regional Office  
Varginha, Brazil

With more than **20,000 heaters installed in more than 90 countries**, Hydro-Thermal is truly the global leader in on-demand steam injection heating and cooking systems. With offices in the United States, France, Brazil, and Thailand, and a global network of authorized representatives, we serve all industrialized areas on six continents.



Need more information about Hydro-Thermal products?

✉ [info@hydro-thermal.com](mailto:info@hydro-thermal.com)

🌐 [www.hydro-thermal.com](http://www.hydro-thermal.com)

☎ 800.952.0121

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Every time.

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