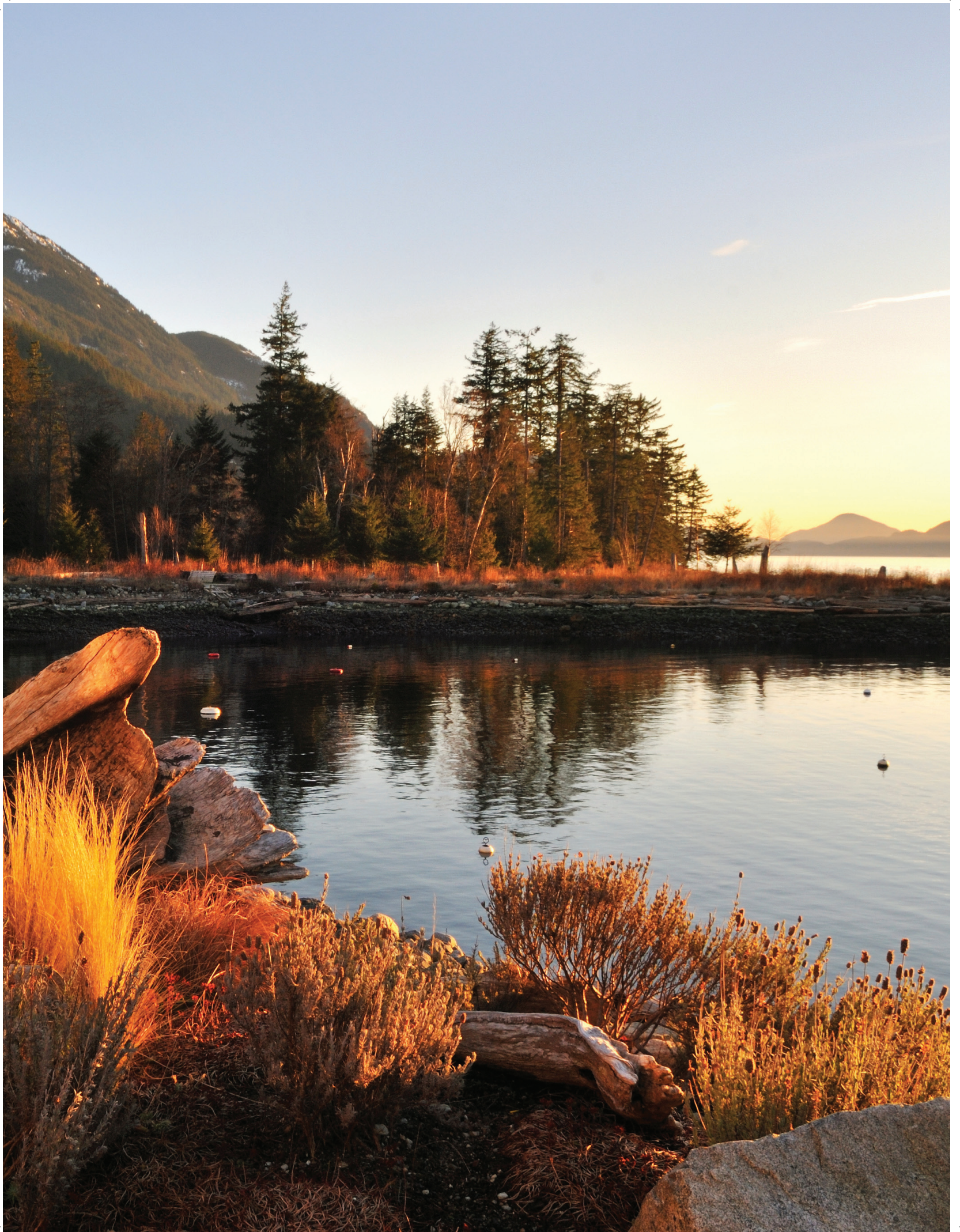




**ULHERM** The Next Generation Of  
Industrial Process Heaters



# INTRODUCTION

Utherm was founded with one objective in mind: to provide the process industry with with the most efficient, environmentally friendly and robust fluid heating package available anywhere, designed and manufactured proudly by our own workforce right here in Canada.

**EXCEPTIONAL VALUE** – well-engineered and manufactured heaters that provide the lowest total cost of ownership in the market

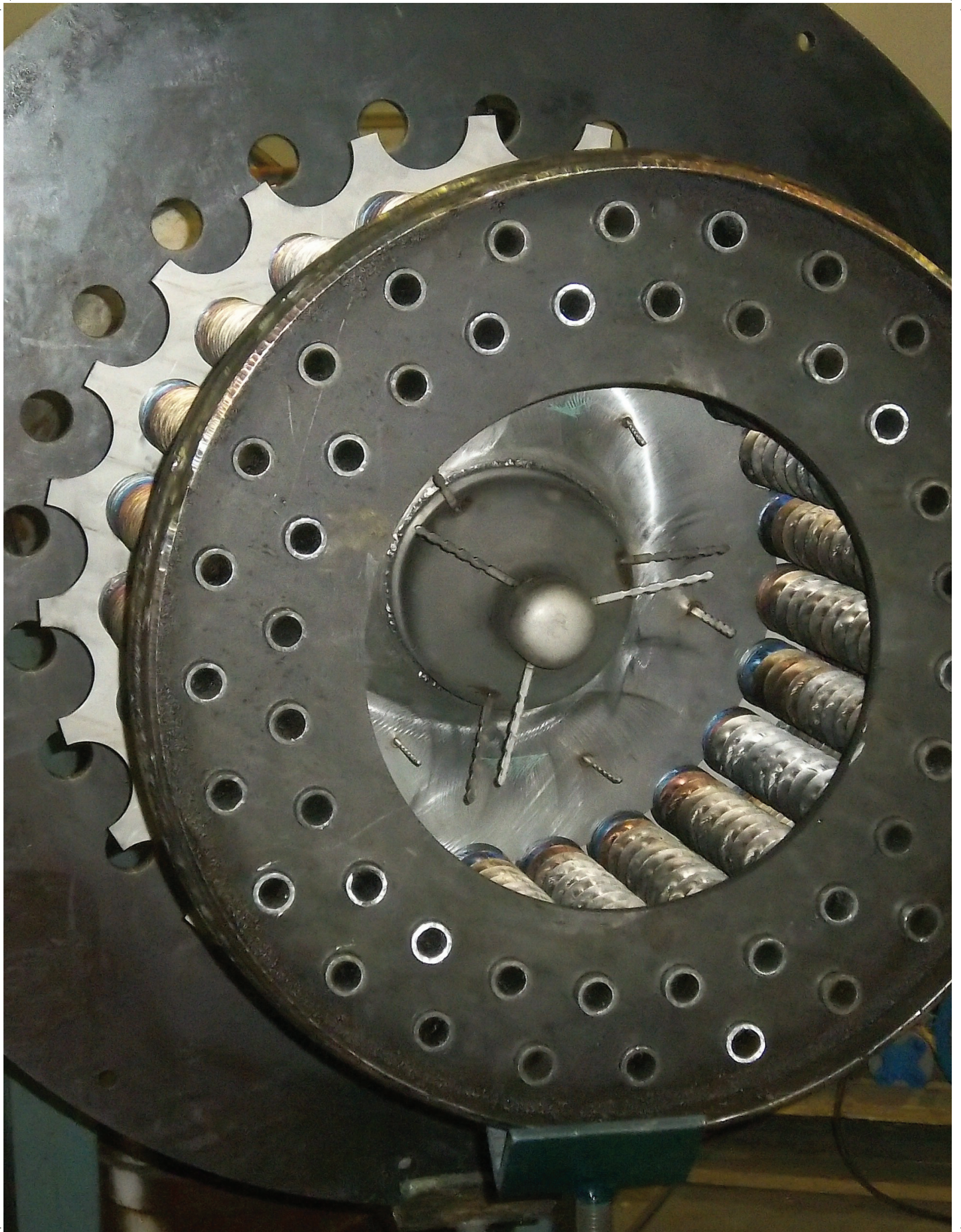
**EXCEPTIONAL PERFORMANCE** – high efficiency and ultra-low emissions using the innovative “FIRECAGE” exchanger

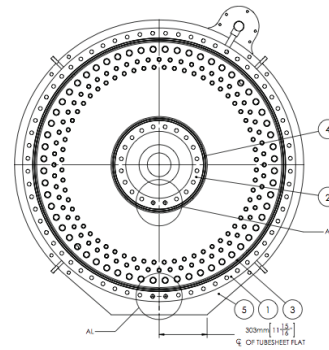
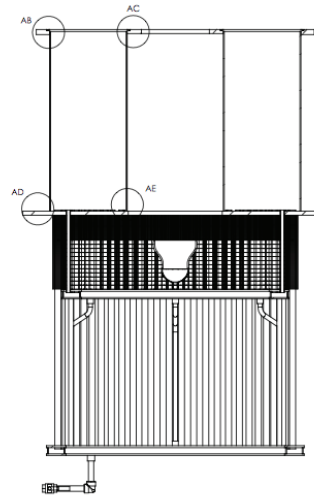
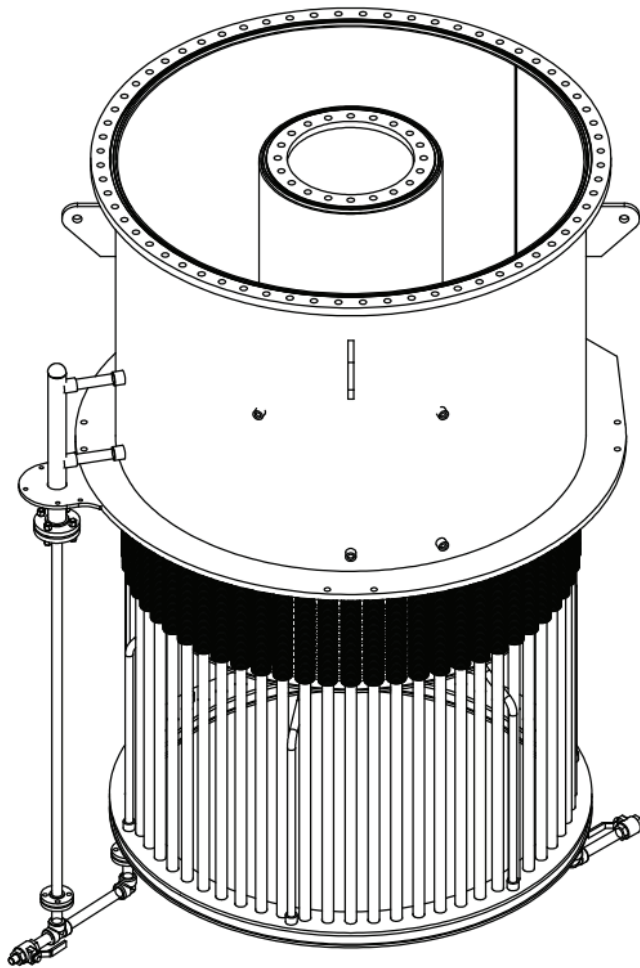
**EXCEPTIONAL QUALITY** – all heaters designed and manufactured by Utherm using the latest manufacturing and quality assurance processes

**EXCELLENCE BY DESIGN** – modular, lightweight, fully self-contained, small footprint and easy to operate and maintain

**FIELD-PROVEN** - for safety, reliability, and robust performance from minus 50 to plus 50 degrees Celsius







## INNOVATE “FIRECAGE” HEAT EXCHANGER

The core of the Utherm heater is the high efficiency FIRECAGE heat exchanger that combines vertical tubes in a generously sized radiant section with a tightly finned upper convection section to capture all remaining heat from the flue gases. An internal SST baffle plate features a condensate collection and evaporation chamber which, when combined

with the insulated 316 stainless steel chimney, allows the heater to provide exceptional thermal efficiency without concern for cold-end corrosion. The FIRECAGE is wrapped in a low mass thermal blanket supported by a rigid shell that provides a fully sealed unit.



## LOWEST TOTAL COST OF OWNERSHIP

### COMPETITIVE PRICE + REDUCED FLUID VOLUME & SIZE + LOW MAINTENANCE

Utherm heaters are designed for indoor or outdoor use and can be mounted side by side for modular installation and operation. They are less than one third the size and mass of traditional firetube bath style heaters with significantly lower process fluid volumes. All major components can be removed or easily inspected for maintenance including the process coil, firecage, burners, valves and controls. The compact size and low fluid volume combined with ease of installation and maintenance ensures a low total cost of ownership.



## ADVANCED COMBUSTION FOR LOW EMISSIONS

Utherm heaters utilize radiant metal fiber matrix burner technology in order to considerably reduce the environmental impact of the customer's operations. The whisper quiet burner provides some of the lowest emissions available in the industry. This field-proven burner is safe and reliable and extremely simple to operate. Where higher gas pressures are available, the burner can operate without power due to available high performance air entraining venturi injectors. Where only low gas pressures are provided, a rugged industrial cast aluminum blower provides the dynamic force for the efficient mixing of the fuel and air to the burner.



## FULLY MODULATING OPERATION

Thermal processing equipment is often operated well below the design capacity of the system. Traditional heaters have great difficulty accommodating the required turndown which results in frequent on/off cycling of the burner to reduce the heat output. This wears out components, lowers efficiency through off cycle losses and provides poor temperature control.

Utherm heaters combine a fully modulating burner and fuel flow control valve with a PID temperature control system that provides a **5:1 turndown with a constant fuel-to-air ratio** ensuring smooth temperature control and ideal combustion efficiency under all operating conditions. This modulation feature is available in both our natural draft and forced draft heaters.





## SIMPLE, FLEXIBLE CONTROLS

Utherm heaters come with a comprehensive fuel train, instrumentation and safety controls package to ensure safe, reliable and efficient operation with full compliance to North American safety standards including CSA, UL, ASME and NFPA. Utherm uses PLC based control with a colour touchscreen display for simple operation and extensive diagnostics including first out annunciation. A variety of communication options are offered for interfacing with central control systems and remote monitoring stations.

## HAZARDOUS RATED AND ENVIRONMENTALLY RUGGED

Our heaters are built to last with a fully weather proof enclosure that can operate in any weather conditions from the frigid arctic to the scorching desert. They are designed for use in a Class I Zone IIB or Class I Division II, Group C, D location. A flame arrestor is provided along with hazardous rated equipment and controls to ensure compliance.

## Heater Sizes Ranging from 250,000 to 60,000,000 Btu/hr

Utherm's standard "off the shelf" natural draft heaters and boilers range in size from 250,000 Btu/hr up to 5,000,000 Btu/hr. In this size range, the modular, standardized design of the Utherms allows for smaller heaters to be combined as needed to meet larger heating applications. Alternatively the customer may choose the option for a more customized larger heater design, based on the Utherm principles, for duties up to 60 Million Btu/hr.

## Process Options

We offer single and multiple pass coils for different pressure drops and flow regimes in a range of materials, thickness and flange ratings for almost any operating pressure, temperature and process fluid. If you can pump it or compress it, Utherm can heat it. The low heat flux design of the heaters allows for the safe heating of almost any fluid. Utherm also provides multiple coils for preheat, reheat or multiple service applications. Utherm has extensive experience with most steam, oil and gas, process heating, chemical and petrochemical applications and can ensure that your process requirements are met.



# SKID MOUNTED PACKAGED SOLUTIONS

Utherm heaters are typically skid mounted as fully integrated and complete systems including pressure, flow, level and temperature control/metering stations, surge drums, expansion tanks, pumping equipment, heat exchangers, fuel separation/scrubbing and filtration packages, process buildings and control systems.

## SPECIALTY APPLICATIONS

Utherm's team of highly experienced engineers and designers are the driving force behind our innovations. This team also provides process, mechanical, structural, electrical, instrumentation and controls engineering solutions for complete thermal processing facilities. Utherm utilizes a variety of industry leading software for thermophysical property simulation, computational fluid dynamic modelling and finite element analysis which allows our team to tackle almost any thermal-fluid heating application.

## STATE-OF-THE-ART UTHERM MANUFACTURING FACILITY

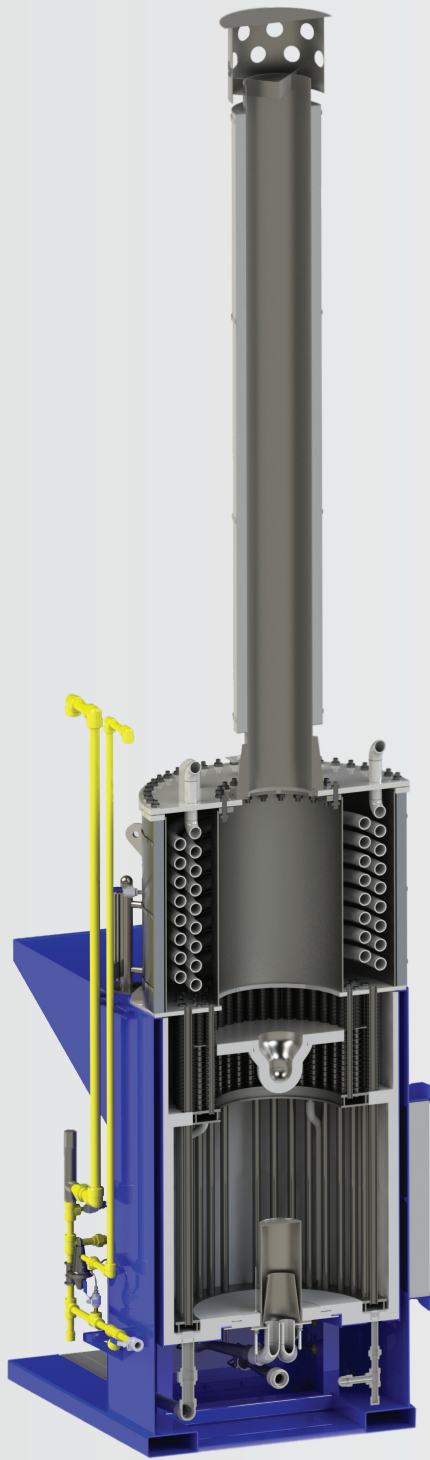
Traditional heaters are most often fabricated in a "job shop" environment by companies that specialize in fabrication processes for a wide variety of products rather than specializing in fluid heater design and manufacturing. This is Utherm's niche.

"Fabricated" heaters are inefficient in operation, difficult to operate and maintain and excessively costly. Utherm heaters are built in our modern, flexible

manufacturing facility that is based on automated, repeatable manufacturing processes and equipment. Every Utherm starts in our facility as raw steel and all operations are conducted in house to ensure the highest product quality and manufacturing efficiency.

Utherm's manufacturing facility provides cellular manufacturing operations such as CNC plasma cutting, CNC machining, CNC rolling, automated welding, blasting, painting and insulation. Our innovative LEAN manufacturing operations and stringent quality standards allow us to offer heaters of exceptional quality built proudly by our workforce.

Our facility, built from the ground up by our Utherm team, has full ASME certification to ASME I, ASME IV, ASME VIII-1, ASME B31.1 and ASME B31.3. We have a multitude of different welding procedures and utilize advanced welding processes, allowing us to offer a wide range of materials, thicknesses and flange ratings to suite your process needs. We are also CWB certified for structural welding with CWB and AWS certified welding inspectors.



### COMPARISON OF UThERM HEATER VS BATH STYLE HEATER

CATEGORY	UThERM	BATH STYLE HEATER
Heater Diameter	1.2m	1.1m
Heater Length	1.2m	3.7m
Heater Height	2.0m	1.2m
Efficiency (LHV)	93%	75%
Fluid Volume	120 liters	2,000 liters
Dry Weight	1,500 kg	3,000 kg
Filled Weight	1,620 kg	5,000 kg
Radiant Surface Area	3.2m <sup>2</sup>	2m <sup>2</sup>
Average Radiant Heat Flux	45kW/m <sup>2</sup>	80kW/m <sup>2</sup>