



FIRED HEATERS
for the refining and petrochemical industries



TULSA HEATERS INC.

Since incorporation in 1985, **TULSA HEATERS INC. (THI)** has grown into a technically-sophisticated, financially-capable worldwide manufacturer of fired heaters and waste heat recovery products. As of 2011, **THI** has manufactured more than 700 new products, executed more than 900 revamps and retrofits and completed more than 300 engineering studies.

A worldwide network of representatives and suppliers enables **THI** to provide quality products and services in all of the major industrial markets both before and after the sale. Combining the technical and financial capabilities of a large company with the flexibility and responsiveness of a small company, **THI** manufactures cost-efficient, state-of-the-art products for all general service applications, regardless of product size and complexity.

Technology

THI has consistently placed a high priority on empowering its staff with leading-edge engineering and design tools. Consequently, **THI** has a family of proprietary process design programs, 3D finite element analysis structural design software, 2D and 3D CADD systems and an array of complementary programs and tools.

These tools collectively support the objective that every product—regardless of size or complexity—meets or exceeds our customer's expectations. With these historically-proven, time-efficient tools, every product offering is underwritten by a robust thermal model and the complementary combustion, draft and hydraulics models.

THI's engineering and design tools enable our staff to create, model and guarantee products for a broad range of services and sizes, in compliance with a customer's specifications and expectations, with minimal technical risk to **THI** and to the customer. Our typical product duty range of 4 to 400 MMBtu/h includes all industrial services (except services with catalyst-filled tubes) in a broad variety of product types, as summarized on the next page.

Quality

Since incorporation, **THI** has continuously maintained a meaningful Quality Management System (QMS) that includes engineering, design, purchasing and fabrication modules. The **THI** QMS has been certified to ISO 9001:2008. The goal of the **THI** QMS is "to be the preferred source of fired heaters and waste heat recovery units." Our QMS policy also states that this goal will be achieved through our commitment to offer quality products and customer service at competitive prices.



Products and Services

Heater Products, by coil type

- › Horizontal Cabin Heaters
Single or twin cell with single or double-fired radiant coils
- › Horizontal Cylindrical Heaters
Single cell with single-fired serpentine or helical radiant coils
- › Horizontal Octagonal Heaters
Single cell with single-fired serpentine or helical radiant coils
- › Vertical Cylindrical Heaters
Single or twin cell with single-fired serpentine or helical coils
- › U-Tube/Wicket Box Heaters
Single or multiple cell with single or double-fired coils

› Vertical Box Heaters

Single or multiple cell with single or double-fired radiant coils



› Horizontal Box Heaters

Single or multiple cell with single or double-fired radiant coils



Complementary Heater Subsystems

- › Air Preheat Systems
Forced, induced or balanced draft systems of any complexity
- › Burner Management Systems
For gas and/or oil fired heaters of any complexity
- › Emissions Reduction Systems
Multiple CO, NOx and/or SOx reduction technologies
- › Local Process Piping
Manifolds, local spools and transfer lines of any complexity
- › Steam Systems
Complete with pumps, drum, desuperheater and/or local piping
- › Sootblowing Systems
Complete with sootblowers, local piping and control panel
- › Burner Fuel Piping
For gas and/or oil fired heaters of any complexity

Waste Heat Recovery Products, by flue gas flow

- › Horizontal Heat Recovery Units
Single or multiple services with fixed or removable coils
- › Vertical Heat Recovery Units
Single or multiple services with fixed or removable coils

Complementary Waste Heat Recovery Subsystems

- › Bypass Systems
Provide safety, duty control and noise abatement of any complexity
- › Emissions Reduction Systems
CO and/or NOx reduction technologies
- › Local Process Piping
Manifolds and/or local piping of any complexity
- › Steam Systems
Complete with pumps, drum, desuperheater and/or local piping

- › Supplemental Firing Systems
Complete with burners, fuel gas train and control panel

Modules, Parts and Services

- › Emergency Replacements
Components, systems and entire products (regardless of OEM)
- › Field Services
Commissioning, troubleshooting, inspection and testing (regardless of OEM)
- › Mechanical Engineering Services
Coil stress and vibration models, failure analyses (all OEMs)
- › Process Engineering Services
Debottleneckings, emissions reductions, CFD/CF models (all OEMs)
- › Retrofits and Upgrades
In-kind replacements, debottleneckings and enhancements (all OEMs)
- › Spare Parts
In-kind or engineered-by-*THI* spare and replacement parts (regardless of OEM)

Worldwide Fabricators

North America
South America
Europe
Oceania
Asia

Worldwide Representatives

North America
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Middle East

Customer Support

www.tulsaheaters.com
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or
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International Plaza
1350 S. Boulder, Suite 800
Tulsa, OK 74119



TULSA HEATERS INC.



**STANDARD HORIZONTAL "SHO"
FORCED DRAFT HEATERS**
For Midstream Applications



TULSA HEATERS INC.

Since incorporation in 1985, **TULSA HEATERS INC. (THI)** has grown into a technically-sophisticated, financially-capable worldwide manufacturer of fired heaters, waste heat recovery products and now introducing SHO Heaters. As of 2012, **THI** has manufactured more than 800 new products, executed more than 1000 revamps and retrofits and completed more than 300 engineering studies.

A worldwide network of representatives and suppliers enables **THI** to provide quality products and services in all of the major industrial markets both before and after the sale. Combining the technical and financial capabilities of a large company with the flexibility and responsiveness of a small company, **THI** manufactures cost-efficient, state-of-the-art products for all general service applications, regardless of product size and complexity.

Technology

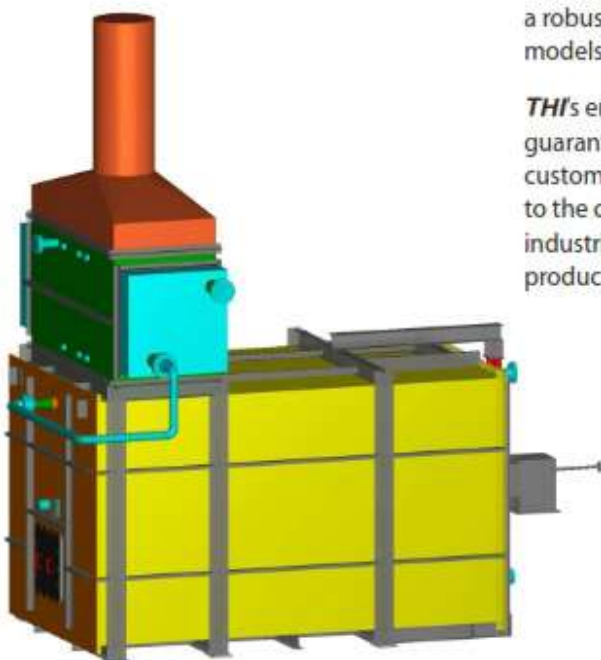
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TULSA HEATERS INC.

Products and Services

Standard Horizontal Heaters

Single cell with single fired coils
Serpentine



Helical



THI's SHO line currently consists of fourteen (14) standard sizes ranging from 2.5 to 50 MMBTU/HR

SHO Subsystems

Combustion Management Systems

THI currently has five (5) standard sizes of CMS's ranging from 1" to 4" NPS



Standard Gas Fired CMS's comply with NFPA 87, ASME B31.3 are rated for Class 1, Division 2, Groups C&D, T3 service, and provide BMS (flame safeguard), duty control, and combustion control functions

Oil Circulation Skids

THI currently has thirteen (13) standard sizes of skids ranging from 110 to 1990 USgpm



SHO's offer twin 100% job specific pumps and job specific expansion drums integrated into robust pre-engineered skids complete with interconnecting piping

SHO Model	250	500	750	1000	1250	1500	1750	2000	2500	3000	3500	4000	4500	5000
Typ. Duty*	2.5	5	7.5	10	12.5	15	17.5	20	25	30	35	40	45	50
CMS Model	CMS.1500					CMS.2500			CMS.5500					
Max. Release*	15					25			55					
Skid Model	110	220	330	440	550	660	770	880	1100	1220	1440	1660	1880	1990
Typ. Flow**	110	220	330	440	550	660	770	880	1100	1220	1440	1660	1880	1990
* Typ. Duty and Max. Heat Release are given in MMBTU/hr														
** Flow rates are given in USgpm														

Heater Products, by coil type

- › Horizontal Cabin Heaters
 - Single or twin cell with single or double-fired radiant coils
- › Vertical Cylindrical Heaters
 - Single or twin cell with single-fired serpentine or helical coils
- › U-Tube/Wicket Box Heaters
 - Single or multiple cell with single or double-fired coils

- › Vertical Box Heaters
 - Single or multiple cell with single or double-fired radiant coils
- › Horizontal Box Heaters
 - Single or multiple cell with single or double-fired radiant coils

Waste Heat Recovery Products, by flue gas flow

- › Horizontal Heat Recovery Units
 - Single or multiple services with fixed or removable coils
- › Vertical Heat Recovery Units
 - Single or multiple services with fixed or removable coils

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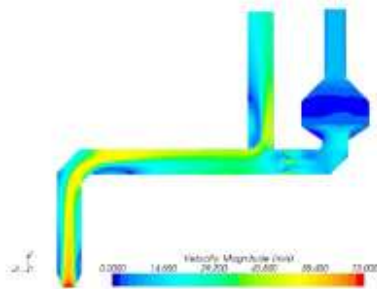
WASTE HEAT RECOVERY UNITS
For Onshore and Offshore Applications



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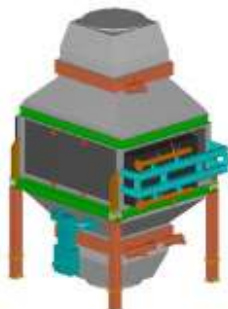
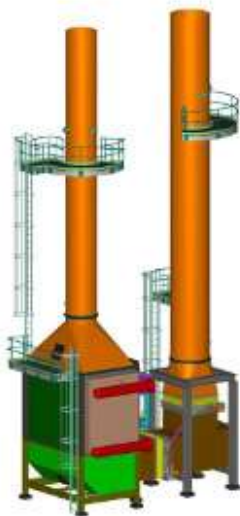


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Products and Services---Waste Heat Recovery Products, by Configuration.

Waste Heat Recovery Systems

- › Bypass Systems
Provide safety, duty control and noise abatement of any complexity
- › Emissions Reduction Systems
CO and/or NOx reduction technologies
- › Local Process Piping
Manifolds and/or local piping of any complexity
- › Steam Systems
Complete with pumps, drum, desuperheater and/or local piping
- › Supplemental Firing Systems
Complete with burners, fuel gas train and control panel

Horizontal Configurations

- › Single or multiple services with fixed or removable coils.
- › Ideal for axial turbine exhaust applications



Vertical Configurations

- › Single or multiple services with fixed or removable coils
- › Ideal for vertical turbine exhaust applications
- › Can be designed as a external or integral bypass



Heater Products, by Coil Type

- › Horizontal Cabin Heaters
Single or twin cell with single or double-fired radiant coils
- › Horizontal Cylindrical Heaters
Single cell with single-fired serpentine or helical radiant coils
- › Standard Horizontal Heaters
Pre-engineered for Midstream applications
- › Vertical Cylindrical Heaters
Single or twin cell with single-fired serpentine or helical coils
- › U-Tube/Wicket Box Heaters
Single or multiple cell with single or double-fired coils
- › Vertical Box Heaters
Single or multiple cell with single or double-fired radiant coils
- › Horizontal Box Heaters
Single or multiple cell with single or double-fired radiant coils

Complementary Heater Subsystems

- › Air Preheat Systems
Forced, induced or balanced draft systems of any complexity
- › Burner Management Systems
For gas and/or oil fired heaters of any complexity
- › Emissions Reduction Systems
Multiple CO, NOx and/or SOx reduction technologies
- › Local Process Piping
Manifolds, local spools and transfer lines of any complexity
- › Steam Systems
Complete with pumps, drum, desuperheater and/or local piping
- › Sootblowing Systems
Complete with sootblowers, local piping and control panel
- › Burner Fuel Piping for gas and/or oil fired heaters of any complexity

Modules, Parts and Services

- › Emergency Replacements
Components, systems and entire products (regardless of OEM)
- › Field Services
Commissioning, troubleshooting, inspection and testing (regardless of OEM)
- › Mechanical Engineering Services
Coil stress and vibration models, failure analyses (all OEMs)
- › Process Engineering Services
Debottleneckings, emissions reductions, CFD/CF models (all OEMs)
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