



COOPERHEAT

FURNACES & OVENS

LEADING INNOVATORS IN THERMAL TECHNOLOGY
TO THE OIL & GAS, CHEMICAL AND POWER INDUSTRIES

www.stork.com/cooperheat

Cooperheat is a Stork brand

FURNACES

Cooperheat design and manufacture industry leading furnaces and ovens to a range of sectors including oil and gas, power, chemical, heavy fabrication, forging, foundry and any other industry where heating processes are required. With extensive global experience and expertise, Cooperheat offer unparalleled product excellence.

Cooperheat have the skill and expertise to supply a range of innovative and versatile furnaces and ovens specifically designed with the needs of the operator and industry in mind. This ensures we deliver tailored solutions to meet individual client requirements and specifications.

As a market leader in the field of heat treatment, our range of products and services are recognised around the world for their quality, durability, reliability and the highest standards of safety.

Our sales engineers' extensive experience in the field of heat treatment ensures they are fully qualified to provide consultations prior to placing orders, ensuring specific requirements are understood and met, whilst providing comprehensive before and after sales support.



Low thermal mass furnaces reduce overall heat treatment costs by increasing production and improving product quality. Their special linings require less total heat input to reach operating temperatures quicker than old-style refractory lined furnaces. Therefore, the lower thermal conductivity of the linings delivers much lower heat loss from the furnace, achieving impressive energy savings. Close temperature uniformity can be achieved using Cooperheat's advanced programmable temperature control systems with multi-zone controls.

The theory of high velocity heating is now accepted practice industry wide and Cooperheat has been one of the pioneers of high velocity heating within fuel fired furnaces. The rapidly recirculating gases break down the layer of still air surrounding the object being heated and increases the heat transferred by convection. Shorter heat up times and improved temperature uniformity are the resulting benefits.



FEATURES

- High burner discharge velocity requires no extra recirculation fans
- Close temperature uniformity throughout the furnace
- Positive furnace pressure via pressure control prevents cold air ingress and improves temperature uniformity
- Hot spots eliminated by low flame temperatures
- Fewer burners needed reducing the cost particularly in expensive burner safety systems

FINANCIAL BENEFITS

- Reduced energy costs using low thermal mass materials in furnace construction, ensuring energy is used to heat the load, not furnace brickwork

OVENS

OPERATIONAL BENEFITS

- Uniform distribution of heat controls the heating cycle and heating zones providing by a fully automatic temperature programmer.
- Design and operational flexibility associated with low thermal mass furnaces.
- Modular construction enables the furnace to be extended in length to cope with larger work pieces or alternatively a temporary extension for one off applications can be added. The larger furnaces use preformed panels as standard. In many instances it can be more economical to extend existing furnaces rather than replacing them
- Wide range of fuel sources which can be more economical.
- It is Cooperheat's philosophy to design a system around the fuel choice of the customer, or if necessary to convert existing units

APPLICATIONS

- Stress Relieving (PWHT)
- Annealing
- Hardening
- Tempering
- Aging
- Quenching
- Normalising
- Solution Ann
- Pre-heating
- Refractory Dryout



The high thermal efficiency and lightweight construction of Cooperheat ovens is achieved by the use of low thermal mass insulation. Our ovens make the most efficient use of the available energy, giving fuel savings due to the use of proven materials. A variety of energy sources can be used, for example electricity, light fuel oil or gas.

FEATURES

- Wide range of custom built ovens with various configurations of loading access and load support furniture.
- Forced air circulation achieves efficient and uniform heating. This means fan (or fans) force air through the heating unit and circulates in a convection pattern within the load area, eliminating any stagnant air pockets.
- Both non-exhausting and exhausting ventilation systems are available.
- Electrical industrial ovens feature high performance mineral insulated seamless sheathed heating elements, rated to give a prolonged working life.
- Fuel fired burners are either indirect or direct depending on the requirements of the intended application.
- All fuel fired burner systems comply with the requirements of BS EN 746-2 and have full flame failure safety.
- Close control of temperature with automatic controls providing close uniformity at equilibrium conditions. Adjustable programming for heat up and timed soak periods, temperature recording, over temperature limit and alarm, as well as solid-state load switching are all available options

FINANCIAL BENEFITS

- Using low thermal mass materials in oven construction, ensures that the energy is used to heat the load, not the oven, providing lower energy costs

APPLICATIONS

- Drying
- Curing
- Drum Warming
- Pre-heating
- Tempering
- Annealing
- General Purpose



OTHER SERVICES



SPARES, REPAIRS & CONSUMABLES

Cooperheat provide a complete heat treatment service, supplying consumables and spare parts for heat treatment equipment from an extensive stock held at our UK headquarters, various manufacturing sites and overseas operational bases.

SALTBATH PUMP OUT

Cooperheat deliver a highly specialised process to remove molten salt from a saltbath at temperature whenever a saltbath needs to be drained for inspection or repair.

CONSULTANCY

Cooperheats' experienced teams provide a consultancy service either directly or as part of a larger integrated project package.

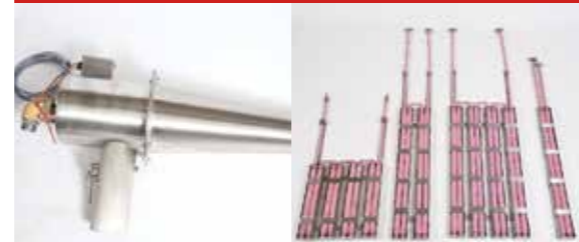
This includes general advice and expertise on a variety of industry challenges including:

- Reducing energy consumption
- Best practice operational procedures
- Optimising efficiency

TRAINING

Product specific training from Cooperheat either in-house or at site includes:

- Latest technology relating to furnaces and ovens controls and instrumentation
- Operating procedures
- Installation and commissioning
- Set up, operation and control of high velocity gas or oil fired burners systems



PORTABLE GAS & OIL BURNERS

Cooperheat offer a range of portable, high velocity gas and oil burner equipment that can be used for a variety of refractory dryout and heat treatment processes, either as stand-alone units or in conjunction with a modular design portable furnace. Gas burners come in standard sizes of 1.0 and 6.0 Million Btu per hour, suitable for either natural gas or LPG whilst the standard oil burner is rated at 6.0 Million Btu per hour and is suitable for light fuel oil. The combustion control equipment and combustion air fans are trolley mounted for ease of portability and come complete with connecting hoses. Both manual and automatic control options are available together with a range of complementary accessories.

LADLE PREHEATERS/DRYERS

Cooperheat's ladle and tundish heating stations consist of a specifically designed refractory lined cover with a burner mounted on it. This can be positioned on the ladle or tundish by winches, pneumatic cylinders, cranes, etc. and retracted when the ladle or tundish is ready for use. The specifically designed structural steelwork required to support this unit and provide access is also supplied. A self-contained control and safety package incorporating mechanical and electrical items is included with the burner. This packaged system takes care of pressure safety, flame safety, temperature programming and control, fuel / air ratios, excess air facility and all the manual combustion system functions. Special features can be included as these units are usually tailor made to suit individual requirements. The primary application for these units is within the iron and steel industry.

REFURBISHMENT & UPGRADES

Cooperheat offer a refurbishment service for existing furnaces to allow structure re-use minimising capital spend for clients. Inefficient linings, degraded insulation, replacement of ceramic fibre insulation (RCF), combustion or heating systems and obsolete control equipment can be replaced by modern systems which provide improved performance and prolong the lifespan of the furnace. This service also extends to modernising ovens and can include changing the fuel source of the existing equipment. Cooperheat can provide a complete refurbishment service for any branded heat treatment furnace or oven and incorporate the very latest developments technology in thermal to enhances efficiency and, where required, increase capacity.



CALIBRATION SURVEYS

Cooperheat provide a range of calibration, survey and maintenance services to end users, including:

- Temperature uniformity surveys
- Instrument calibration
- Furnace inspection
- Furnace maintenance (one off or annual service contracts)

RECENT PROJECTS



Major global titanium product manufacturer, UK

Automated Electric twin hearth top hat type Creep Flattening furnaces for the aerospace industry. The furnace is 7m x 3m x 2.5m rated at 640kW fully equipped with a SCADA System including a Visual Supervisor HMI and fault finding sensors. The twin hearth configuration enables 24 hour production and allows the process to achieve optimum efficiency.

Global power generation, transmission and rail infrastructure provider, Saudi Arabia

A 700kW Electric Bogie hearth furnace used to anneal stainless steel gas turbine components. The furnace is 6.5m x 6.5m x 8m in size and has assisted cooling in the form of roof vents to improve the cycle time efficiency. This is the show piece feature in the recently commissioned Rabigh Thermal Services Workshop.



Global provider in advanced technology equipment and services for drilling and production, LNG, pipelines, refining and petrochemicals, Norway

The 250kW Electric Bogie hearth furnace used to stress relieve components for the oil and gas industry. The furnace is 6m x 4m x 5m and is equipped with assisted cooling in the form of roof vents.



Leading oilfield engineering equipment design and manufacturing company, Doha

286Kw Electric Guillotine Door Bogie Hearth Furnace used to perform PWHT on wellhead equipment. The furnace is 4m x 4m x 8m with controlled cooling and is built to achieve high uniformity tolerances.

Leading design and construction engineering provider to pharmaceutical, chemical and nuclear industries, UK

66kW Gem Stone cleaning skid comprising of preheat furnace stations and salt cleaning stations. The corrosive cleaning salt has resulted in robust design of the salt pot. This will be incorporated into a comprehensive laboratory spec cleaning procedure resulting in commercially usable gem stones. The system is fully automated and designed to involve little or no human interaction in order to protect against the corrosive nature of the salt.

Selection of recent furnace projects



FURNACE SPECIFICATION	SIZE IN METRES	APPLICATION AND LOCATION
700KW, 1150°C, ELECTRIC BOGIE HEARTH WITH FORCED COOLING	5.3 x 4.0 x 5.5	HIGH GRADE TURBINE REPAIRS, MIDDLE EAST
48KW, 550°C, ELECTRIC BOGIE HEARTH WITH RECIRC FAN	1.0 x 1.0 x 3.5	PRE HEAT, MILITARY, MIDDLE EAST
24KW, 375°C, ELECTRIC TOP LOADING OVEN	1.8 x 0.8 x 0.8	CURING, MIDDLE EAST
18MW, 650°C, SECTIONED, 600T PWHT FURNACE LPG FIRED. D&P	30 x 10 x 10	MODULAR, VESSEL PWHT, MIDDLE EAST
18KW, 600°C, ELECTRIC BATCH FURNACE STACKABLE	1.0 x 0.6 x 0.6	CURING, UK
80KW, 700°C, ELECTRIC AUTO UN/LOAD, WITH RECIRCULATION FAN	1.5 x 1.2 x 1.2	SUBSEA HARDWARE (VALVES) UK
180KW, 750°C, ELECTRIC BOGIE HEARTH WITH COOLING	3.1 x 3.1 x 2.0	SUBSEA HARDWARE (VALVES) UK-MIDDLE EAST
13KW, 400°C, ELECTRIC WELDING ROD BAKING OVEN	0.8 x 0.8 x 1.5	INTERNAL SHELVED UNIT, NORTH AFRICA
9MW, 1150°C, TOP HAT DOUBLE HEARTHS, GAS FIRED. D&P	11.5 x 4.5 x 3.0	40T STRESS RELIEVING, H.T. OF PIPES, E.U.
120KW, 750°C, ELECTRIC GUILLOTINE DOOR FRONT LOADING	2.0 x 1.8 x 1.7	PRECISION ENGINEERING, UK
286KW, 650°C, ELECTRIC BOGIE HEARTH WITH RECIRC FAN	3.2 x 3.0 x 2.8	INCONEL CLADDING OF VALVES, MIDDLE EAST
286KW, 650°C, ELECTRIC TOP HAT	5.0 x 2.0 x 1.8	BRAKE SHOE CURING, UK
70KW, 500°C, ELECTRIC CALCINING OVEN	1.5 x 1.5 x 1.5	CALCINING, UK
250KW, 750°C, ELECTRIC BOGIE HEARTH, RECIRC FAN, AND COOLING	3.2 x 3.0 x 2.8	POWER GENERATION, EU
67KW, 1000°C, ELECTRIC BOGIE HEARTH WITH NITROGEN ATMOSPHERE	2.0 x 1.0 x 1.0	BRAKE SHOE CURING, UK
3.5MW, 800°C, BOGIE HEARTH GAS FIRED	8.5 x 4.8 x 4.0	PWHT PIPES, REFRACTORY CURING, UK
112KW, 720°C, ELECTRIC TOP HAT RECIRC FAN	2.5 x 2.4 x 1.7	SUBSEA HARDWARE (VALVES), UK
350KW, 260°C, ELECTRIC COMPARTMENTED OVEN FOR WHEEL SWEATING	1.4 x 0.3 x 1.5	PREHEAT RAILWAY WHEELS, UK
9.4MW, 950°C, PWHT FURNACE WITH TWO DOORS, LPG FIRED. D&P	24 x 8.5 x 9.0	260T VESSEL PWHT, MIDDLE EAST
110KW, 1000°C, ELECTRIC FURNACE WITH HINGED LID	7.0 x 1.0 x 0.6	PWHT PIPE HEADERS, EU
1.7MW, 700°C, BOGIE HEARTH GUILLOTINE DOOR, OIL FIRED. D&P	13 x 3.0 x 3.0	30T PWHT PIPES/SMALL VESSELS, MIDDLE EAST
640KW, 1000°C, ELECTRIC TOP HAT DOUBLE HEARTH, FORCED COOLING	7.0 x 3.0 x 3.0	80T CREEP FLATTENING OF TITANIUM, UK

SAFETY IS OUR A CORE VALUE

Safety is not a priority at Cooperheat, it's our first core value. Whatever priorities we have each day, taking care of each other's safety, health and protecting the environment is central to how we do things.

Our global HSE platform to help us turn our core value into a day-to-day reality. It is our aspirational vision for HSE. 'Zero' because we believe that incidents are not inevitable, they are preventable. By working together, we can create a future at Cooperheat that is free of incidents, because we are always pushing ourselves to go further, to continuously improve our HSE performance. There are six building blocks that help us.

People create safety

Recognizing that it is our behaviors and attitudes that make the difference. At Cooperheat, we have well developed behavioral safety programs, leadership training, recognition and awards to ensure we are all skilled and motivated to be safe.

Global standards, local ownership

Setting out our expectations for HSE across the Cooperheat business, with global consistency where it makes sense, whilst making the most of the expertise and diversity of our local teams. Global standards include our minimum safety expectations for all tasks that are described in our 10 Life-saving rules.

HSE intelligence

Using the experience and knowledge of our employees worldwide to help direct our HSE activities. This includes looking out for new risks in the work environment. Reporting hazards, near misses and events and analyzing these events for trends. We use leading indicators to measure the effectiveness of our risk prevention measures.

Adding client HSE value

As a global leader in operations and maintenance, we bring a wealth of expertise in HSE to our clients. At every client location, it is our aim to exceed our clients HSE expectations and be an active partner in improving our clients HSE performance.

Strong HSE function

Cooperheat has a global network of HSE professionals who support our operations teams in delivering safe operations. This global function ensures that we always have the capability to succeed in HSE.

Learning and innovating

Central to our HSE vision are the opportunities to apply learning from our own incidents and those that occur within wider industries. At Cooperheat, we are continuously scanning the market for innovations that may help us reduce our HSE risks.

At Cooperheat we aim to be the industry reference for HSE. Every day, everywhere.

For more information visit our website:
www.stork.com/cooperheat

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