По всем вопросам обращайтесь в наш офис ООО "ТИ-Системс":
Тел/факс: (495) 7774788, 5007154,55, 65, 7489626, 7489127, 28, 29
Эл. почта: info@tisys.ru Интернет: www.tisys.ru www.tisys.kz www.tisys.by www.tesec.ru

Hot Water Heaters

CTH
SERIES

cannon
BONO ENERGIA

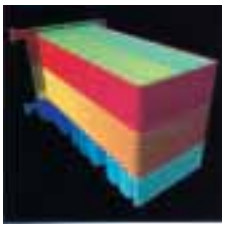
По всем вопросам обращайтесь в наш офис ООО "ТИ-Системс":
Тел/факс: (495) 7774788, 5007154,55, 65, 7489626, 7489127, 28, 29
Эл. почта: info@tisys.ru Интернет: www.tisys.ru www.tisys.kz www.tisys.by www.tesec.ru

Hot Water Heaters

CTH Series

HIGH TEMPERATURE HOT WATER HEATERS

BONO ENERGIA new CTH Hot Water Heaters are designed for thermal capacity ranging from 5 to 60MWt with hot water outlet temperature up to 260°C and total operating pressure up to 65 bar. Up to 30MWt, thanks to its innovative design, CTH heaters are delivered as complete package solution



- CTH heaters are based on a multi tubular water tube structure with direct flame heating.
- This structure allows compact heater design, easy access to internal parts, complete heater deniability.
- The innovative water circulation within tubes of combustion chamber and convection section has been studied to avoid internal steaming and circulations “dead zones” without the aid of supplementary circulation device

APPLICATIONS

Through the years, BONO ENERGIA CTH Hot water heaters have found their main application within district heating and industrial processes where hot water (less then 120°C) was required. Within these application CTH offered a complete and reliable solution for all required process needs.

In the last years, BONO ENERGIA CTH have found further applications where high process water temperature in conjunction with high pressure and flexibility are required, such as pharmaceutical and chemical process, power plant start up equipment etc.

For these applications the precise temperature control, high hot water circuit pressurisation and fast thermal response are required.

Thanks to its compact multi-tubular water tube structure, CTH achieve all the process requirements allowing for a simple installation circuit and granting heater overall efficiency higher than 94% based on L.H.V.

CTH EVOLUTION

Having more than 35 years of experience in manufacturing industrial thermal fluid heaters, BONO ENERGIA knowledge of hot water process is unique:

1960: Supply of the first hot oil heater based on a multi-tubular water tube structure;

1970: Supply the first hot oil package unit having more than 13 MW capacity;

1982: Installation of the first hot water heater based on multi-tubular water tube structure;

2000: Supply of a 20MW hot water boiler for one of the biggest world wide pharmaceutical company;

2002: CTH has been delivered to one of the biggest world wide electrical utilities company.

At present, BONO ENERGIA multi-tubular thermal heaters are world-wide installed (more than 2,000 units) also thanks to an efficient and distributed after sales network through the Cannon organization consisting in more than 30 locations all over the world.

World Wide Certifications

BONO ENERGIA Heaters have been technically approved from most important International certification companies (ASME, APAVE, ASIT, SQLO (Chinese) etc.). This, in conjunction with BONO ENERGIA standards for auxiliary and control system, ensures the highest now a day quality and reliability for this kind of equipments

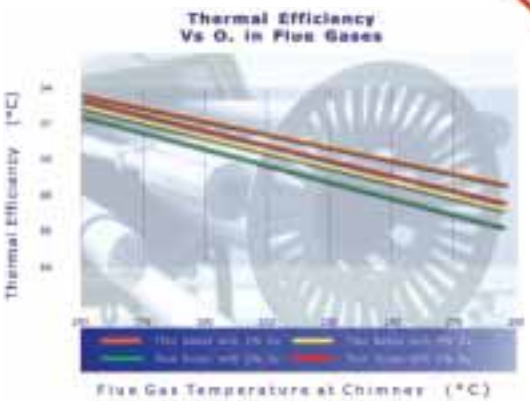
По всем вопросам обращайтесь в наш офис ООО "ТИ-Системс":
Тел/факс: (495) 7774788, 5007154,55, 65, 7489626, 7489127, 28, 29
Эл. почта: info@tisys.ru Интернет: www.tisys.ru www.tisys.kz www.tisys.by www.tesec.ru

COMBUSTION SYSTEM

Although the CTH heaters have an open design for the installation of several kind of burner, BONO ENERGIA has developed through the years it own burner technology. Cicolinc RV series in the base integrated burner model installed on CTH heaters. The total capability of handling combustion problematic assures the clients on the possibility for BONO ENERGIA to install ultra low NOx burner from
the market.

CTH heaters are designed for firing several kind of fuels,from natural gas to very heavy fuel oil (70°E at 50°C).

Moreover, firing applications with Off Gas have been developed. This due to the possibility of efficient combustion for residual coming from the process thanks to furnace dimensions with reduced heat loads, high flue gas turbulence and low flue gas pressure drops across the CTH.



CICLONIC RV COMBUSTION SYSTEM

CICLONIC RV COMBUSTION SYSTEM
Ciclonic burner, exclusive BONO ENERGIA design, has been installed on over 15.000 boiler and is continuously upgraded to satisfy a market that is becoming always more exigent and qualified.

LOW NO_2 EXECUTION

Low NOx Execution
Ciclonic burner can integrate a flue gas re-circulation system that can reduce flame temperature reducing 02 content.
The creation of zones with different 02 concentration has demonstrated the possibility to reduce NOx

Natural gas combustion

Through air register and diffuser, two different combustion airflow are generated the flame centre, in sub stechiometric conditions and an external zone with high vortex conditions. With operation carried out from burner front it is possible to adapt every single component for obtaining the better flame profile compatible with furnace dimension. The possibility to create a zone with low axial speed grants the flame continuity at low charge and reduce transit time of combustion products in the hot flame zone with reduce NOx production.

Heavy Oil Combustion

Atomisation with auxiliary fluid (steam or compressed air) represents the most reliable industrial combustion to assure optimum combustion also using heavy fuel oils. A complete fuel heating system can also be supplied in order to complete the package installation.

Complete Maintenance

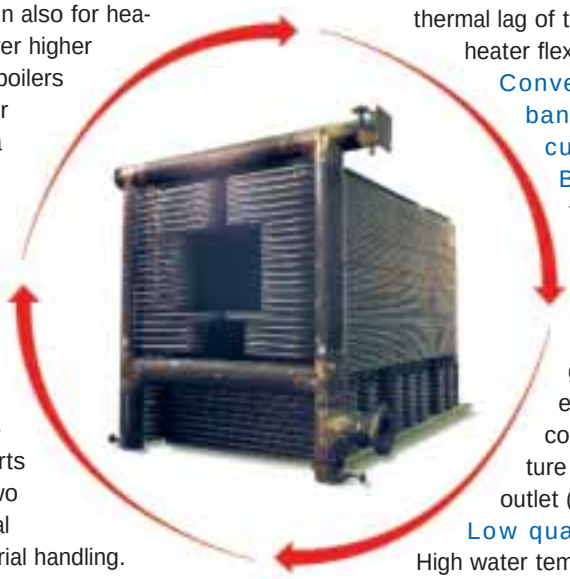
- CTH heaters are designed for complete and fast maintenance.
- Access doors are installed for every heaters key point:
  - Furnace
  - Lateral convection banks
  - Front at the base of the air pre heater

  When firing heavy flue oils, in the convection section, there will be installed soot blowers whose efficiency avoid any obstruction due to unburned particles.

По всем вопросам обращайтесь в наш офис ООО "ТИ-Системс":
Тел/факс: (495) 7774788, 5007154,55, 65, 7489626, 7489127, 28, 29
Эл. почта: info@tisys.ru Интернет: www.tisys.ru www.tisys.kz www.tisys.by www.tesec.ru

GENERAL SOLUTIONS

The CTH is an innovative fully screened hot water heater giving several advantages versus shell type design or steam water tube boilers with intermediate hot water condensation exchanger.
The CTH design is identical to the one used for hot oil heaters where sever conditions have to be matched.
CTH are the right answer for a modern hot water plant with cost efficiency for installation from 5 to 60 MWt.
CTH has a compact design also for heaters having a thermal power higher of 30 MWt where steam boilers are required; forthis power requirement CTH grants a simplified plant solution with a reduced number of auxiliary components. This aspect has a benefit aspect on overall maintenance and LCC plant cost.
Over 30MWt a field erection of the heater is required; the CTH pressure parts will be delivered in only two sections reducing the local assembly costs and material handling.
CTH has a complete and full accessibility for cleaning and maintenance. There is no need of heavy external lifting structures for repairing due to the complete internal access through proper inspection doors and screened tube design.



CTH MAIN TECHNICAL ITEMS

Large furnace (water tube screened)

CTH furnace is suitable for high capacities up to 60 MW with high efficiency radiation heat exchange. The furnace dimensions allows easy matching of the most stringent emissions NOx level. External heater walls reach max 20-30 °C above ambient temperature.

Reduced refractory materials

Small presence of refractory reduces the thermal lag of the heaters, thus increases heater flexibility.

Convection section made of banks of horizontal counter current flow tubes

Built in air pre heater vertical tube type built into the front part of the heater

This structure is built into the heater as a package unit arrangement Highly efficient heat exchanger between flue gas and combustion air. Reduced temperature of the flue gases at the stack outlet (higher thermal efficiency).

Low quantity of water content

High water temperature outlet response for high transient applications.

Multi tubular heater structure with welded distribution headers

High elasticity of the tube structure (structure expansions are completely absorbed); the front headers allows the free expansion of the whole tube structure.
The CTH heaters design allow the full drainability of the heater.

- Combustion chamber and convection section tubes are pre formed through automatic bending machines as warranty of quality production matching most international codes and standards

- Complete quality control of all manufacturing phases and high-specialised personnel assure the highest operation reliability of CTH reducing overall plant maintenance costs.

По всем вопросам обращайтесь в наш офис ООО "ТИ-Системс":
Тел/факс: (495) 7774788, 5007154,55, 65, 7489626, 7489127, 28, 29
Эл. почта: info@tisys.ru Интернет: www.tisys.ru www.tisys.kz www.tisys.by www.tesec.ru

Hot Water Heaters CTH series

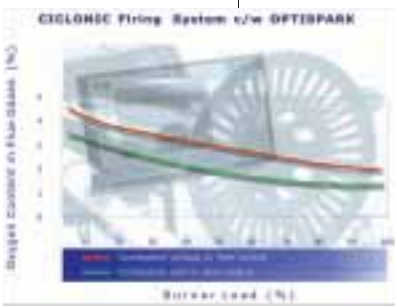
Innovative integrated control system powers new CTH series.

By using a touch screen, easy calls into a library routine allows the visualisation of relevant information of the plant operation and programmed maintenance operations (alarm list, technical data of equipment, heater and Optispark operating instructions, etc.).

Optispark, the fourth generation heater control system developed by Automata (BONO ENERGIA sister Company specialized in dedicated hardware and software production) is the answer to the needs of an integrated control developed conjunctly by boilers and new technologies specialists.
Optispark is the "technological core" of the CTH heaters and is based on two separate sections: Integrated control. The integrated controller manages all those control functions that where before separated between different controls like regulators, electromechanical positioner, O2 controllers and boiler alarms.

Man Machine Interface (MMI). Through an animated synoptic-video and touch screen all the information necessary to the plant operation (burner's ignition sequence, process variables status and set points) are transferred to the operator in a simple and aggregated form.

Optispark provides the control functions for both CTH heaters and process variables such as water outlet/inlet temperature, three way valves positioning, flow rates, differential pressures, which are directly displayed on the synoptic video. Alarm and shutdown are signalised by the system, by means of an ISA sequence with first-out and shutdown priority.



Moreover Optispark provides the optimisation of the heater efficiency and combustion through the most sophisticated control systems like:

- Combustion regulation through electronical positioner
- Continuous regulation of O2
- Flue gas re-circulation system control
- Forced draft fan control through variable speed electrical driver

Man machine interface offers several services like:

- Synoptic-video with Multilanguage text
- High resolution colour graphics
- Real time variable trends with related history
- Alarm historic acquisition

Benefit offered by OPTISPARK

New integrated technology system.

Due to integrated solution offers equivalent performances of normal DCS with lower costs.

Combustion optimisation with environmental benefit.

Reduces fuel consumption.

Verifies and display in continuous mode the combustion parameters.

Reduces start up and maintenance scheduling.

Deletes hysterics and settings of traditional combustion control systems.

Integrates all control functions allowing an easy operation of the heater.

Allows data transmission to remote control.

Guarantees always-safe operation of the heater implementing availability with consequent cost saving.

Optispark is opened to all new communication systems like SMS and email alarm transmission, Intranet and Internet, supervision with OPC server, interface with most common filed bus (Modbus, Profibus, CAN).