ENERGY-RELATED ENGINEERING

oil & gas / petrochemicals

BOUSTEAD ENGINEERING SERVICES

“Energising” process performance
“Energising” the world of the future

Stabiliser Reboiler, Algeria
Central to Boustead’s energy-related engineering capabilities for the downstream oil & gas / petrochemical industries, we design, supply and revamp direct-fired process heater systems and waste heat recovery units. “Energising” downstream process performance is our business.

Heat Transfer Technology Leadership
Our company, Boustead International Heaters (BIH), is the leading global specialist in designing, supplying and revamping direct-fired process heater systems including gas skids and burner management systems where required, waste heat recovery units and associated heat transfer technology for the downstream oil & gas / petrochemical industries. As process heater systems play the most critical role in downstream processes, “energising” these systems is our way of helping our clients to maximise performance and profitability.

In-Depth Domain Expertise
Collectively, the BIH management team has over 250 years of experience with heat transfer technology. Our in-depth domain expertise includes a vast knowledge base of over 2,000 process heater system installations worldwide. BIH has engineered many of the world’s largest and most advanced process heater systems, in challenging environments, within cost and schedule requirements, and with the highest degree of quality and safety.

Global Experience
Having undertaken projects in 50 countries globally, BIH has gained immense international project experience and a keen understanding of heat transfer applications across diverse climates and terrains. We ensure that our process heater systems provide our clients with optimal performance even in the most challenging environments.

Total Quality
At BIH, we believe in delivering uncompromising quality in everything that we undertake. Our commitment to absolute quality is visible in our ISO9001 certification and strict adherence to the guidelines detailed in the Pressure Equipment Directive 97/23/EC for equipment installed at European sites.

Turnkey Project Capabilities
BIH is capable of engineering turnkey process heater systems. Our client-centric approach encompasses:
Steam Superheaters, Chile
heat transfer technology & services

BIH is committed to remain at the forefront of heat transfer technology and places a strong emphasis on “energising” downstream process performance through our advanced technology and services.

Advanced Heat Transfer Technology

BIH’s core expertise includes the engineering of the following types of advanced process heater systems:

• Crude heaters
• Vacuum heaters
• Cokers
• Hydrocrackers
• Visbreakers
• Thermal crackers
• Reboiler heaters
• Charge heaters
• Platformers
• Steam superheaters
• Heat recovery steam generators
• Crackers
• Aromatic furnaces
• TiCl4 heaters
• Oxygen heaters
• Hot oil heaters
• Regeneration gas heaters
• Natural gas heaters
• Steam superheaters
• Reformers
• Waste heat recovery units
• Once through steam generators

Value-Added Services

In addition to BIH’s core expertise in engineering process heater systems, we provide the following value-added services:

• Erection and commissioning supervision
• Procurement and inspection services
• Consulting services for increased efficiency / NOx / SOx noise reviews
• Supply of spare parts for all types of process heater systems and heat transfer equipment
• Fuel saving, de-bottlenecking and revamping of existing process heater systems and furnaces
• Air preheat systems
• Burner management and control systems
• Noise attenuation
• Piping and control valves with tie-ins around process heater systems
• Computerised piping stress analysis
• Computerised structural analysis
• Coil vibration analysis
designing the heat transfer process

BIH’s established global headquarters and technology centre in the UK has developed progressive designs for some of the world’s largest and most advanced process heater systems ever built.

In-House Process Heater System Designs
Leveraging on BIH’s vast expertise and experience, our design team has developed advanced process heater system designs addressing the stringent heat transfer requirements of individual clients. Utilising the latest computer-aided design software such as AutoCAD and 3D Solid Works, and tools such as the FRNC5 furnace simulation programme, we have been able to optimise designs through meticulous analysis and verification. Coupled with our vast knowledge of heat transfer applications across diverse climates and terrains, our designs ensure enhanced performance, quality, reliability and safety in all environments.

Externally-Developed Process Heater System Designs
In addition to BIH’s in-house process heater system designs, we also mechanically engineer process heater systems and steam reformers in accordance with internationally-licensed designs developed by:

- Axens
- Davy Process Technology
- Exxon Chemical
- Exxon Research and Engineering
- Haldor Topsoe
- MW Kellogg
- Lurgi
- Shell International Moatschappy
- Stone & Webster
- Universal Oil Products (UOP)

Our flexibility ensures that our clients receive the widest range of heat transfer technology available.
Energy-Related Engineering – Oil & Gas / Petrochemicals

fabrication, modularisation, construction, project management & revamp

BIH understands the importance of total quality and timely delivery. From process conceptualisation to project completion, we ensure that every stage of the project is skillfully-managed and detailed.

Fabrication / Modularisation
BIH always looks to extend our worldwide fabrication network in order to suit our clients’ quality, cost and schedule requirements. The location of fabrication is selected according to the size of process heater systems, the degree of prefabrication and modularisation, transport restrictions, site limitations and the geographic location of the project. Our fabrication partners are required to meet our stringent international standards for quality and safety.

Construction / Commissioning
Process heater modules can be delivered to the project site in a variety of arrangements, thus providing flexibility and optimisation to the overall construction programme. After delivery to the project site, we are able to construct, test and commission process heater systems on greenfield or brownfield sites, or even at live operational refineries and petrochemical plants, operating to strict permit to work systems.

Project Management
Our objective is to ensure that every detail of the entire project is skillfully-managed. From the first time we meet with our clients until project completion, we guarantee a total focus on understanding and achieving client requirements with the level of diligence our clients expect, given the critical nature of BIH process heater systems in projects which frequently involve multi-billion dollar total investments.

Heat Transfer Technology Revamp
Revamping heat transfer technology commences with an in-depth study of our clients’ heat transfer processes in order to identify significant bottlenecks. BIH is capable of implementing solutions to remove these bottlenecks, improve existing processes and revamp process heater systems with minimal disruption to refinery or plant operations. Combined with blending automation services and process diagnosis consultation offered by Boustead’s other companies, we are capable of “energising” downstream process performance by up to 20%.
delivering heat transfer technology globally

BIH has engineered direct-fired process heater systems with capacities ranging from 1.5MW to 300MW. We deliver a total service package, from turnkey process heater systems down to the smallest and most critical spare part.

Heat Transfer Technology for All Environments
To date, our management team has experience in installing more than 2,000 process heater systems worldwide, in terrains ranging from harsh desert environments to arctic tundra. Our systems are engineered with uncompromising quality. Our quality orientation is espoused by every member of our team and is supported by our ISO9001 certification and strict adherence to the Pressure Equipment Directive 97/23/EC for project sites within Europe.
project showcase

“Energising” process performance

NORWAY
Reactor Effluent Furnace

ALGERIA
Waste Heat Recovery Units

VENEZUELA
Horizontal Cabin Heaters

HUNGARY
Reformer & Waste Heat Recovery Unit
Oil Refinery Revamp
**UPGRADING & REVAMPING REFINERIES**

Boustead's downstream capabilities extend to cover the complete upgrading and revamping of refineries through revamping heat transfer technology, blending automation and process diagnosis to “energise” downstream process performance by up to 20%.

**Blending Automation Refinement**

In-line product blending is the single most critical link in the upgrading of refinery automation to maximise profitability. Ineffective blending techniques inevitably lead to loss of profit through quality giveaways, off-specification product penalties or poor tankage utilisation. With Boustead’s expertise in blending automation, we can maximise profitability for our clients through streamlining the blending process to achieve increased margins. Our blending automation services include:

- Blending head and pipe system design
- Analyser design and inference of process stream quality
- Blending control applications
- Blending operational aids
- In-house support systems

**Process Diagnosis Consultation**

Complementary to Boustead’s product blending automation services, we provide process diagnosis consultation to increase process reliability. Integrating patented mechanistic models with process data, we are able to help our clients identify key operating parameters, provide early warning of incipient abnormal events and suggest methods to achieve process enhancement. Our process diagnosis and enhancement services include:

- Comprehensive process diagnosis models supported by the world’s most extensive collection of patented mechanistic models
- Remote support facility
- Process simulation
- Real-time optimisation

With the utilisation of Boustead’s upgrading and revamping services for refineries, our clients will be able to effectively monitor and enhance operational processes, implement short-term and long-term strategies, and “energise” downstream process performance by up to 20%.
To discover more about “energising” process performance, please contact us at:

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