

Steam Air Heaters

Sterling
thermal technology

From first principles to lasting partnerships

Steam air heaters that thrive under pressure

What are steam air heaters?

Steam air heaters are used across a range of industries as a way of rapidly and efficiently heating and cooling media in a process.

Sterling Thermal Technology supplies industry-leading steam air heaters designed for the toughest environments, with the ability to improve plant performance through rapid start-up and reduce costs by optimising the use of steam.

We customise the manufacture and design of the units to a clients' exact requirements.



Key benefits

- 1 Flexible:** modular design and custom-built units to match the steam pressures and layout of the client's process. Customisation includes everything from the layout of the air heater to the materials used in construction. Simplicity of design allows modules to be easily removed, inspected, maintained and replaced. They can be designed and built to a range of international standards and codes.
- 2 Robust:** ideal for extreme environments. Highly efficient Elfin plate fin technology can be used in temperatures up to 400°C and in highly corrosive environments. The Elfin fin design helps to manage thermal stresses experienced in steam air heaters.
- 3 Improved productivity and efficiency:** huge savings on steam consumption; reduced warm-up times bring processes online more quickly and help to reduce downtime.
- 4 Long lasting and reliable:** stainless steel Elfin tubes and headers for long life, able to cope with shock loading and thermal expansion due to a 'U' bend construction complemented by fin design.



Using Sterling products has led to significant energy savings, both with the new heater which replaced the older identical unit and with the additional recovery condensate section fed from the Lactose Plant. The average steam consumption reduced from 4.5 tph in 2016 to 4.0 tph from Feb 2017, which is far better than forecast during the CapEx funding stage.

*Ruairi O'Brien, Project Engineering,
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How it works

Steam is used as a fast and efficient way to heat materials, especially air and liquids. The temperatures and stresses involved in industrial processes can be extreme, but at the same time need to be managed carefully. Reliability and durability are essential, especially where foodstuffs, pharmaceuticals or expensive industrial products and processes are involved.

Steam heaters typically consist of a row of tubes in a casing or duct. Steam is passed through the tubes. Any air or gas passed over the tubes is heated. The condensing steam transfers heat more effectively than gases, so fins are fitted to the tubes to correct the imbalance and improve the heat transfer to the air or gas.

Large steam air heaters are usually made of two or more sections. These may include 'steam', 'condensate' and the optional 'flash' sections. As the steam heats the air, it cools down, condenses and turns to water. The heater configuration is in counter flow, so that cold air entering is warmed by the condensate section, then brought up to temperature in the steam section.

Sterling Thermal Technology designs, manufactures and installs a wide range of steam air heaters.

Configurations, duct sizes and even the materials used in our manufacture are customised to align process, plant layout and steam pressures constraints. The units are manufactured from various grades of stainless steel or aluminium; we frequently use alternative materials at the request of the customer to meet specific process requirements.

Our products also benefit from our highly efficient Elfin fin plate technology which can be used in extreme environments; up to 400°C. The technology helps to ensure the cleanliness of the heated gases, alleviate thermal stresses in the heat exchanger and reduce the impact of corrosive environments. The Elfin design also reduces the need for exotic materials because special coatings are already incorporated within our product portfolio.

Our expertise in fin design and understanding of extended fin surfaces and their application helps us to deliver highly customised solutions for specific applications and environments.

The modular design of our units can also deliver significant benefits for our clients. The heater sections are bolted together directly. Instead of being installed in a cassette within a housing, they are assembled as complete units with interconnecting manifolds. This simpler design allows individual modules to be removed, inspected, maintained and replaced as and when required. It also makes it relatively easy to thermally lag our steam air heaters.

We design and manufacture heat exchangers to custom specifications, from first principles.

Working in collaboration with our customers to solve their challenges, we operate as a technical partner.

We deliver bespoke solutions to their business to provide benefits that truly last.

For more information:

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