



heat exchangers

Growth in the heat exchanger market.

In recent years, there has been a rising demand for heat exchangers in various industries such as power generation, chemical processing, and HVAC. This can be attributed to the increasing need for energy efficiency and the growing emphasis on environmental sustainability.

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heat exchangers

growth in the heat exchanger market

The heat exchanger market is poised for growth due to the increasing demand for energy-efficient solutions. Businesses across various industries can benefit from investing in heat exchangers, as they offer improved energy efficiency, reduced operating costs, and enhanced equipment performance. By taking advantage of these devices, businesses can not only contribute to environmental sustainability but also improve their overall efficiency and profitability. More and more businesses are exploring the potential of heat exchangers to incorporate them into their operations to stay ahead in the market.

What are they?

Heat exchangers play a crucial role in transferring heat from one liquid or gas to another without them mixing, thereby optimising energy usage and reducing greenhouse gas emissions. They typically consist of a number of thin metal plates with complex channels that the liquid or gas flows between. Chemical etching from Tecan is an efficient way to produce large volumes of precision channels which can be diffusion bonded to create a block.

Benefits of heat exchangers

Heat exchangers offer numerous benefits, including improved energy efficiency, reduced operating costs, and enhanced equipment performance. By efficiently transferring heat, heat exchangers enable businesses to optimise their processes and minimise energy wastage. Moreover, they help in maintaining desired temperature levels, which is crucial for industries that rely on precise temperature control. By investing in heat exchangers, businesses can not only reduce their environmental impact but also improve their bottom line.

The benefits of chemical etching from Tecan

By using specialist chemical etching processes, Tecan can produce complex designs, with a precision of $\pm 25\mu\text{m}$ and with a low tooling cost. We can significantly reduce limitations on channels, ridgetops, headers, collectors and port features. The process also removes

mechanical or thermal stress and leaves no compound planarity. Almost any metal can be used, even highly corrosion-resistant ones.

Similar plates can be used in applications such as cold plates and cooling plates for electric vehicles, printed circuit heat exchangers and heat sinks. In addition, they can be found in applications for the food and beverage market, aerospace, electronics and linear motors.

The global heat exchanger market shows no sign of slowing. This is due to a rising focus on sustainability and decarbonisation driving rapid technological advancements. Here at Tecan we have seen increased demand for more efficient plate heat exchangers for processes across a number of sectors.

These include:

- **Food & beverages**
- **Chemical processing**
- **Oil & gas**
- **Pharmaceuticals**
- **Energy & power**
- **HVAC & refrigeration**
- **Marine**

We're seeing how heat exchangers are critical components for many. For instance, we work with organisations in the food and beverage industry where the equipment is installed for pasteurisation, and in the oil and gas and power sectors where it is used to recover heat. Mainly used as cooling equipment across the industrial sector, coolants are run through exchangers to manage the operating temperature of the whole system.

This has led to a hike in power demand and energy requirement. Due to this, the global market is growing rapidly. Consider China alone where the government has committed to transforming to a high-end manufacturing country, the growth of industrialisation will boost the adoption of related equipment like heat exchangers.

Market drivers

COVID-19

The ongoing crisis caused by the COVID-19 pandemic caused a slowdown in production and supply chain activities due to nationwide lockdowns and transport regulations across the globe. Moving forward, supply capabilities are seeing steady growth after the end of the pandemic and manufacturers like Tecan are continuously planning for increasing production rates. In a climate of post-pandemic recovery and economic recession, we are working with businesses to develop products with new and improved design, considering efficiency-superior material enhancement, superior durability, higher lifecycles and competitive pricing that comply with all the standards and criteria for industry players.

At the same time, the conflict between Russia and Ukraine is impacting market growth and we're seeing increases in raw material prices, energy charges as well as disrupted supply chains impacting other manufacturers.

See also How Tecan benefits the supply chain

Urbanisation

The global population will rise by approximately one third and already the urban population has increased significantly over the last two decades and nearly 2/3rd of the population is forecast to live in cities by 2033 according to Future Market Insights. The growing urban population has increased demand for food, pharmaceuticals, chemicals and more which in turn has increased demand.

With this in mind, it is not surprising that the construction industry is growing rapidly across the world, leading to demand for HVAC (heating, ventilation, and air conditioning) systems in residential, commercial, and industrial buildings. Heat exchangers are an important component of these systems and can reduce energy consumption by up to 50% and with the increasing demand for air conditioning systems, demand will increase.

Rapid industrialisation in developing countries like India and others is leading to investment in industries such as food and beverage, power systems and petrochemicals. The food and beverage industry in particular requires equipment to adapt to multi-purpose production, and a cost-effective production

system. The most basic operations in beverage processing use heat exchangers for heating, sterilisation, and cooling.

Nuclear power

There is also a rise in nuclear power facilities which will significantly boost the heat exchangers market. The heat exchanger has a large impact on a nuclear power station's overall effectiveness and power production. Key growth prospects for the heat exchanger market include technological advancement in heat exchangers used in nuclear reactors, upgrades, and new plant project proposals. Since heat exchangers are used in all coalfired power plants as well, the market is projected to experience significant growth.

Marine

We've also seen growth in the Marine industry -from cruise ships to large commercial ships – where heat exchangers cool engines and hydraulic oil to ensure optimum lubrication and working conditions of each transmission and power system on board. Emerging and developing markets are also driving demand as they focus on introducing energy efficient equipment. This in turn is driving technological innovation and smart design.

We are working with customers which are strategically focusing on the introduction of new innovative and highly durable and efficient products along with acquisition and merger activities to complement their revenue growth and attain higher market shares. At the same time, smaller-sized regional manufacturers are focusing on introducing cost effective, customised and value for money products to improve their market penetration.

Types of heat exchanger

Different types of heat exchanger have a variety of potential applications including: pasteurisation, beverage processing, connectors between chillers, boilers, and cooling towers, and other process engineering applications.

Gasketed plate

These are made up of multiple sheets of thin metal of different materials according to the end use application. End users can add or remove plates dependent on what the process requires. Gasket plate heat exchangers can be used in a variety of heavy-duty HVAC, automotive, and process engineering applications. They have an extraordinarily high thermal efficiency despite their small size. These types of plate heat exchanger use high-quality gaskets and a well-designed seal to keep plates together and prevent leaks. Plates may be quickly removed for washing, extension, or replacement, significantly lowering maintenance costs.

Brazed plate

largely used in the HVAC & Refrigeration Sector, particularly for automotive and refrigeration applications they are highly corrosion-resistant due to the stainless-steel plate composition and copper brazing. This type is economical, efficient and lightweight.

Welded plate

Welded plate heat exchangers are similar to gasket plate heat exchangers but plates are welded together rather than bolted together. This type is highly robust and is suitable for moving fluids that are hot or corrosive. They can be fully welded or semi-welded plate: semi-welded plate heat exchangers are made up of welded and gasket plates, in two-plate pairs that are welded together and then gasketed on other pairs since one fluid path is welded and the other fluid path is gasketed.

Process heating

This type is used for continuous processes for, for example, the Chemical Industry, Food & Beverage Industries, HVAC & Refrigeration sector, etc. and make up the majority of applications.

Batch heating

These are used in batch processes for the purpose of heat transfer. Batch heating or cooling systems are used by various sectors such as the food industry, pharmaceutical industry and the chemical industry. In these systems, a vessel is filled with content and needs to be heated or cooled over a predefined time period. It is important to make a distinction between directly heating the vessel (using a jacket or internal coil) or indirect heating using an external heat exchanger and product recirculation pump.

Heat recovery interchangers

Heat recovery interchangers are commonly used in the commercial refrigeration industry and can be found in refrigerant systems.