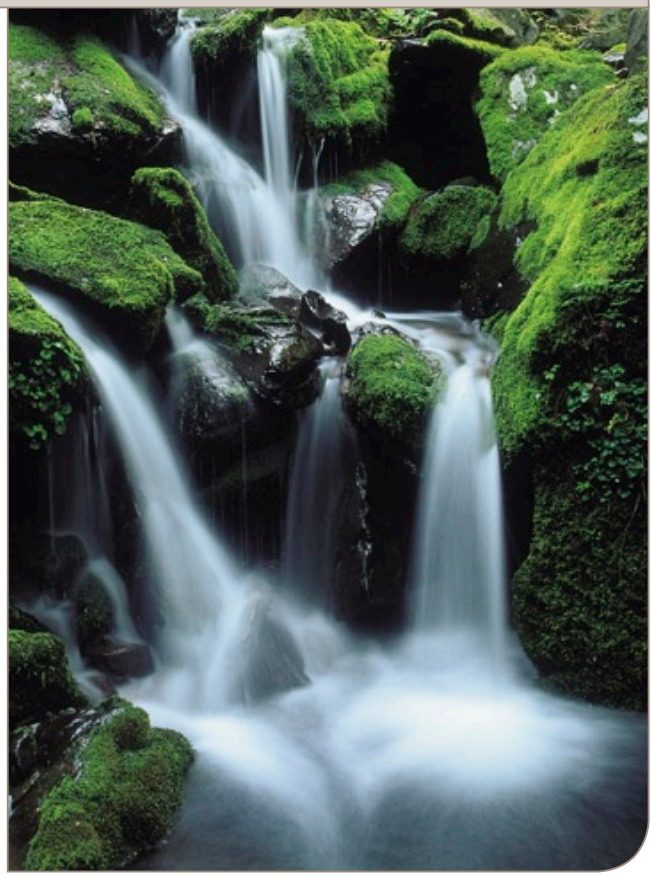
Environmental Product Declaration

Plate heat exchanger



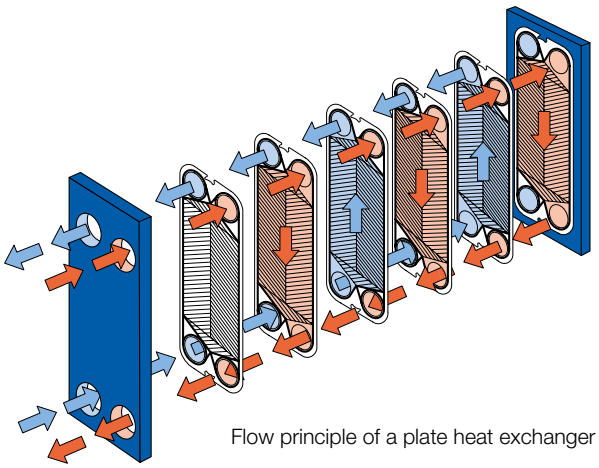
Alfa Laval endeavours to perform its own operations as cleanly and efficiently as possible, and to take environmental aspects into consideration when developing, designing, manufacturing, servicing and marketing its products. It does this by identifying the significant environmental impacts of its products and operations and taking appropriate measures to reduce them. This work is supported by implementing environmental management systems (normally certified to ISO 14001) in all its manufacturing operations.

This Environmental Product Declaration is made in accordance with ISO 14021. For more information, Life Cycle Assessment and Sustainability Reports are available on request.

The product

A plate heat exchanger consists of a pack of corrugated metal plates. Each plate is fitted with a rubber gasket, which seals the channel formed between two adjacent plates. In an alternative design, every second gasket is replaced by a laser-weld to allow for fluids aggressive to the gaskets. The plate pack is assembled between a fixed frame plate and a movable pressure plate and compressed by tightening bolts. The frame plate and the pressure plate are suspended from an upper carrying bar and guided by a lower guiding bar, both of which are fixed to a support column.

The size of the unit and the material and number of plates are determined by the requirements of the particular application and duty. Each individual plate heat exchanger is optimised for its duty and, as a result, the usage of materials is kept to a minimum.



Flow principle of a plate heat exchanger

Construction materials

Plate materials

The most commonly used plate material is stainless steel type 316, which accounts for about 80-85% of the volume. Other materials used include highly alloyed stainless steel, titanium, nickel and nickel-based alloys. The degree of recycled material in stainless steel 316 is typically between 60-90%.

Rubber gasket materials

The most commonly used rubber gasket materials are nitrile and EPDM. Other gasket materials used include FKM-type of materials and PTFE.

Frame components materials

The frame and pressure plate are normally made of carbon steel. Other frame components are made of aluminium, chromium steel and various types of stainless steel. The degree of recycled material in carbon steel varies between suppliers.

Packing
Packing material consists of wood, plastics, cardboard boxes and, in some cases, metal straps. Alfa Laval enforces strict environmental demands on suppliers for all types of packing material.

Paint
The frames are painted using a water based two-component polyamide cured epoxy coating pigmented with zinc phosphate. The coating thickness depends on the corrosiveness of the environment and is applied in accordance with ISO 12944-2.

Restricted substances
All components are checked against EU legislation and global agreements such as the Montreal Protocol and the REACH Candidate List. No components contain any substances on those lists.

Manufacturing

The major environmental impact during manufacturing comes from the construction materials. Energy (electrical, fossil fuels) typically accounts for less than 3% of the total environmental impact of manufacturing.

All Alfa Laval's manufacturing sites operate with an environmental management system. Data on energy consumption and emissions to air and water and other environmental factors are reported annually in Alfa Laval's Sustainability Report.

Use

The heat exchanger as such does not give rise to any emissions and does not consume any energy. To create a pressure drop – the driving force for heat transfer – across the heat exchanger, external pumps are normally needed.

During the lifetime of the heat exchanger, there may be the need for the replacement of parts such as gaskets and plates. In order to maintain the level of performance, Alfa Laval recommends cleaning at regular intervals, of which the frequency depends on application and duty. Alfa Laval provides non-toxic cleaning chemicals containing biodegradable surfactants.

Transportation

Transportation accounts for a large part of Alfa Laval's CO_2 emissions. In order to reduce these emissions, all transportation providers are evaluated and classified from an environmental point of view. Furthermore, strict demands are placed on transportation providers to propose ideas for reducing the environmental impact of Alfa Laval's transportation.

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End of life

Dismantling instructions are provided in the user manual. The unit is readily disassembled into its main components. Waste of the product is not hazardous (EU Directive 91/689/EEC). Chemicals must be drained off before any end of life treatment and treated according to local regulations.

Recycling of metals
It is possible to recycle all metallic material, thus reducing the use of virgin material for the new production of metals. Plates are sorted according to type of material and frame components are sorted as mixed scrap.

Incineration/Landfill of gaskets
Rubber gaskets can either be sent for incineration, thus recovering energy, or be used as landfill depending on the local directives of the country in which the unit has been used.

Packing
Wood and cardboard boxes can be reused, recycled or used for energy recovery. Plastics should be recycled or incinerated at a licenced incineration plant. Metal straps should be sent for material recycling.

How to contact Alfa Laval
Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com