

# Heat Exchangers Made of Moldflon™

*PFA, ECTFE, PVDF, PP, PE*



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Heat exchangers made from Moldflon™, PFA, ECTFE, PVDF, PP or PE have been manufactured by ElringKlinger Engineered Plastics for many decades. Standard solutions as well as custom designs are available and supplied across a wide spectrum of global industries.

These include:

- Semiconductor and solar industry
- Electroplating industry
- Sewerage, food and technical textile applications
- Chemical industry
- Geothermal applications
- Machine and Plant construction

The materials of Moldflon™ PFA, ECTFE and PVDF are characterised by a virtually universal chemical resistance, high temperature resistance and excellent anti-adhesion

properties. If the media used and operating temperatures permit, some models can also be manufactured using Moldflon™ PP or PE. Manufacturing based on tailor-made tools and computer-monitored welding machines guarantees long-lasting performance with maximum functionality and reliability.

## **Design and components**

A wide range of heat exchanger models are available to suit different application-specific heat transfer requirements. Process parameters such as operating temperatures and pressures, temperature difference as well as the media used greatly influence the model selection. Optimised in terms of efficiency and space requirements, we offer the following standard models:

- **Shell-and-tube heat exchangers**
- **Surface heat exchangers**
- **Modular heat exchangers**
- **Circular heat exchangers**
- **Mini heat exchangers**

Individual models can be designed for special applications.

## **Design, documentation and quality**

The heat exchangers are designed using computer models based on customer-specific process data. Apart from the process-related design, the heat exchanger is also classified according to the categories and modules of the Pressure Equipment Directive 2014/68/EEC. This includes the strength analysis, design and manufacturing documentation as well as the final pressure test. Each heat exchanger comes with an inspection certificate and a declaration of conformity. The plant in Mönchengladbach follows the quality, environmental and work safety policy of ElringKlinger Engineered Plastics.





# Shell-and-Tube Heat Exchangers

## The all-rounder

- External use
- PFA, ECTFE, PVDF as well as PP and PE



Shell-and-tube heat exchangers consist of an outer casing and an inner bundle of tubes having low nominal diameters. This inner bundle of tubes is first welded to two perforated bases and these are then welded to the outer casing using a special process. The first medium flows through the bundle of tubes and the second medium flows around the tubes through the casing space so that the warmer medium cools down and the cooler medium heats up. In order to achieve optimal heat transfer, the media are guided in a counter flow or cross counterflow manner.

Completely made of Moldflon™ PFA, ECTFE, PVDF or PP, any impurities due to other materials are avoided. This ensures maximum process safety for the application. In addition,

all the welded joints for the flow of inner media are fabricated based on a non-contact IR butt welding process which is particularly important when using pure and high purity media. Dead spots where for example bacterial contamination may occur, are ruled out by this welding process. All the IR welds are computer controlled and the welding parameters of all the joints are documented. Furthermore, the inside and outside of all the heat exchangers are individually pressure tested.

Shell and tube heat exchangers from ElringKlinger Engineered Plastics are typically manufactured with one

inner and one outer circuit and fabricated in a completely closed welded design. Alternatively detachable fixed or loose flange joints can be incorporated that open on one or both sides of the heat exchanger if, for example, replacement of complete tube bundles or cleaning of the individual tubes is required.

Our Shell-and-tube heat exchangers are designed such that the outer medium does not flow directly to the inner tubes but is deliberately guided via a diffuser.

The position and the type of side connections can be customised. The joints of the inner media flow can be supplied with either in-line or radial connections to best suit the installation requirements. Any necessary venting and draining options can also be provided.

## Surface Heat Exchangers Made of Moldflon™

### The efficient one

- Internal use
- PFA, ECTFE, PVDF, PP and PE

Especially suitable for smaller process equipment or restricted spaces, our surface heat exchangers stand out because of their good heat exchange surface to space requirement ratio achieved by using thin walled tubes which deliver greater thermal and packaging efficiencies.

Surface heat exchangers can be fabricated in U-shape with a single circuit or in a rectangular shape with multiple circuits which can be installed both on the bottom or side wall of a tank. The connection tubing and the type of joints used can be made to standard dimensions or customized to suit individual installations.



## Modular Heat Exchangers Made of Moldflon™



### The versatile one

- Internal use
- PVDF, PP and PE

Modular heat exchangers made of Moldflon™ PVDF, PP or PE are used for cooling or heating aggressive liquids in containers. They are made of individual tube modules and standardised components. The tube modules are provided with a rigid frame into which the inflow and outflow lines of the medium are integrated. The module panels are then screwed to the frame and the tube connections welded to the parts of the frame through which the

medium flows. This modular design enables a wide spectrum of dimensions and heat exchange surfaces to be combined in a compact and stable design. Up to 3 modules side by side and up to ten layers enable heat exchange surfaces from 0.4 m<sup>2</sup> up to 45 m<sup>2</sup>. The position and type of brackets as well as the connection tubing can be customised to suit an individual installation. Every single tube module is tested before final pressure test of the complete assembly.

## Circular Heat Exchangers Made of Moldflon™



### The strong one

- Internal use
- PVDF, PP and PE

Circular heat exchangers made of Moldflon™ are a variant of modular heat exchangers intended for use in circular containers with a heat exchange surface of up to 150 m<sup>2</sup>. The tubes are arranged in a spiral fashion and welded using specially developed tube connections. Depending on the medium,

the tube diameter and tube partition can be varied to optimise the process. Our circular heat exchangers can be designed to be compact, circular or cylindrical with free space inside for cleaning purposes or when agitators are installed.

## Suspension / Plug-in Heat Exchangers Made of Moldflon™

Our suspension or plug-in heat exchangers are made of PFA, ECTFE, PVDF or PP, and represent a special type of tubular heat exchangers. The outer casing is used as a perforated safety tube but can be omitted if necessary. The medium flows through the tubes in two circuits and is redirected in an end cap that is designed as a floating head. They are especially suitable

### The compact one

- Internal use
- PFA, PVDF, PP and PE

where limited space is available for vertical or horizontal installation in containers. Depending on the application, they can be installed on manholes or with appropriate tube supports via flange connections, glands or welding. Heat exchange surfaces and dimensions as well as type and position of the connection fittings can also be customised.



## Mini Heat Exchangers Made of Moldflon™

Our mini heat exchangers made of Polytetraflon™ PTFE and Moldflon™ PFA are typically used in the semi-conductor industry. The centrally arranged centre-piece has a hole which holds the perforated plate which in turn accommodates the PFA tube. The design is given special stability by a cover on both sides having perforated PTFE safety plates.

### The durable one

- Internal use
- PTFE/PFA

Typically, tubes having an outer diameter of 6.35 mm are used. Do you need special dimensions? We will be glad to advise you. The material Moldflon™ PP can be optionally used for designing the frame with the same standard dimensions.



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