

# Polymer heat exchangers SYNOTHERM®

**Polymer heat exchangers are suitable for heating and cooling various fluids when metal plate heat exchangers cannot be used.**

The required size can be selected according to the desired heat output and the tank dimensions.

The exchangers can be installed in the tank either using factory-fitted fasteners or by using the frame structure.

The tube design involves **a large heat transfer surface area.**

The transfer surface is even larger than that of plate heat exchangers for the same displaced volume.

This means that adequate heat output can be achieved despite the lower heat transfer properties of polymers.

Polymer heat exchangers consist of PFA tubes wound on an armature. Spacers between the tubes ensure adequate flow with the process media. The whole unit is covered with a mechanical protection plate.

The length of the risers can be made to measure.

The tubes are grouped together on flanges to form the inlet and outlet. The required flange dimensions correspond to EN 1092-1, type 5.

The polymer exchanger is suitable for heat transfer media with inlet temperatures from **- 10°C à 110°C.**

It should be noted that the maximum operating pressure depends on the operating temperature. For example, at an inlet temperature of 70°C it is 6 bar.

The maximum possible temperature of the process fluid is determined by the polymer exchanger material. For PP it is 60°C and for PVDF it is 90°C.



The heat transition coefficient  $k$  depends on various application-specific influencing factors, e.g. the heat transfer from the heat transfer medium to the PFA tube. This effect is more or less important depending on the flow velocity of the medium. The heat transfer coefficient in SYNOTHERM® polymer heat exchangers is calculated on the basis of the operating parameters, which means that the size is optimally adapted to the application.

**SYNOTHERM® polymer heat exchangers are designed with the PFA tube as the only pressurised polymer component.**

**The tube material is characterised by outstanding temperature resistance, even at high pressures. The wall thickness of the tube has been chosen to achieve significant stability while at the same time having a high thermal conductivity.**

The other components are not pressurised and only serve to support the tubes, so that materials such as PP and PVDF are sufficiently stable. This allows a material-optimised combination of components to be created that is suitable for a wide range of operating parameters.

**SYNOTHERM® polymer heat exchangers are pressure tested and comply with the Pressure Equipment Directive 2014/68/EU.**