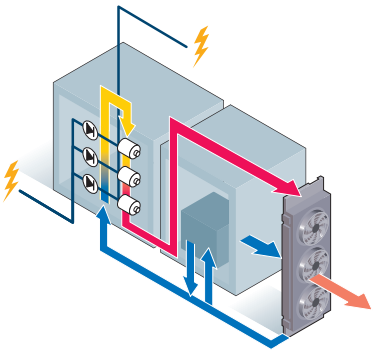
Rectifier cooling

A rectifier converts alternating current (AC) to direct current (DC). The vital part in a rectifier is a thyristor valve or diode. A thyristor valve or diode is a semiconducting device which in operation releases heat and needs to be cooled. Compact rectifiers are normally cooled directly by air while medium and high current rectifiers are more commonly cooled by deionized water. Especially on HVDC (High Voltage Direct Current) thyristor valves, deionized water has replaced pressurized air and oil due to its high cooling efficiency and insulation characteristics. Apart from cooling the thyristor or the diode the deionized water can also cool fuses and other components in a rectifier module.

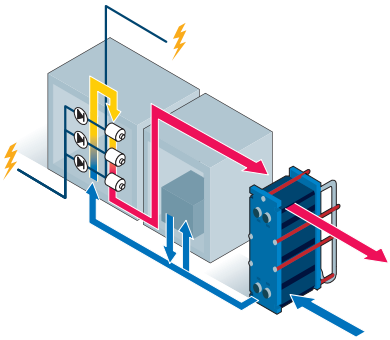
Because of the deionized water, material selection in the heat exchanger is vital. Stainless steel is standard. Rectifiers can also be combined with transformers with the whole unit cooled by two separate cooling circuits.

Rectifiers are to be found in a wide range of applications within different industries. Some examples are HVDC transmission stations, surface treatment and process lines in the steel industry, the chemical industry, metallurgical industry and various electrolysis processes.

Air cooled rectifier



Water cooled rectifier



For rectifier cooling
Alfa Laval offers:

- AlfaBlue and AlfaBlue Power air heat exchangers
- Gasketed plate heat exchangers
- AlfaNova fusion-bonded plate heat exchangers.

The compact fusion-bonded heat exchanger in 100% stainless steel is particularly well suited for pure water when space is limited.

Rectifier transformer, water cooled