

# Compact high-temperature syngas cooler

Heat exchanger adopting an SCF tube

Cooling high temperature gas of about 200 to 300°C with low flow rate and low pressure loss



- Application
- Fuel cell system
- Energy saving, environment conservation equipment, etc.

This product has adopted a multi-lobe high-efficiency heat transfer tube. With a proper fluid velocity, the heat transfer performance is improved and the product size is reduced.

## ◆ The next generation heat exchanger will change the common sense of heat.



In the field of heat exchangers requiring high efficiency, Regal Joint achieved cost reduction effect of several tens of percent while maintaining the heat transfer performance of the multi-lobe double tube heat exchanger and successfully commercialized the “shooting clover fin (SCF) tube” type double tube heat exchanger featuring compact size, high efficiency, and high durability.

## ◆ Heat transfer area is twice or more larger than the area of a conventional round tube type product with the turbulent effect maintained.



SC (multi-lobe) tube

SCF (fin) tube



- The multi-lobe high-efficiency heat transfer tube is adopted.
- Size reduction of the heat exchanger was achieved while maintaining the element tube heat transfer area.
- By reducing the flow passage cross-sectional area, the inner fluid velocity is improved.
- Fluid on the high temperature side can be flown inside the SC tube while fluid on the low temperature side can be flown outside the SC tube, making it possible to design a thermal stress resistant product.
- Various shapes such as straight shape and twisted spiral shape can be selected depending on the application.
- Various shell and tube type heat exchangers such as double tube type and multi-tube type can be designed.
- Depending on the application, it is possible to create an SCF tube (double tube structure consisting of an SC tube and round tube) by utilizing the SC tube as a fin.



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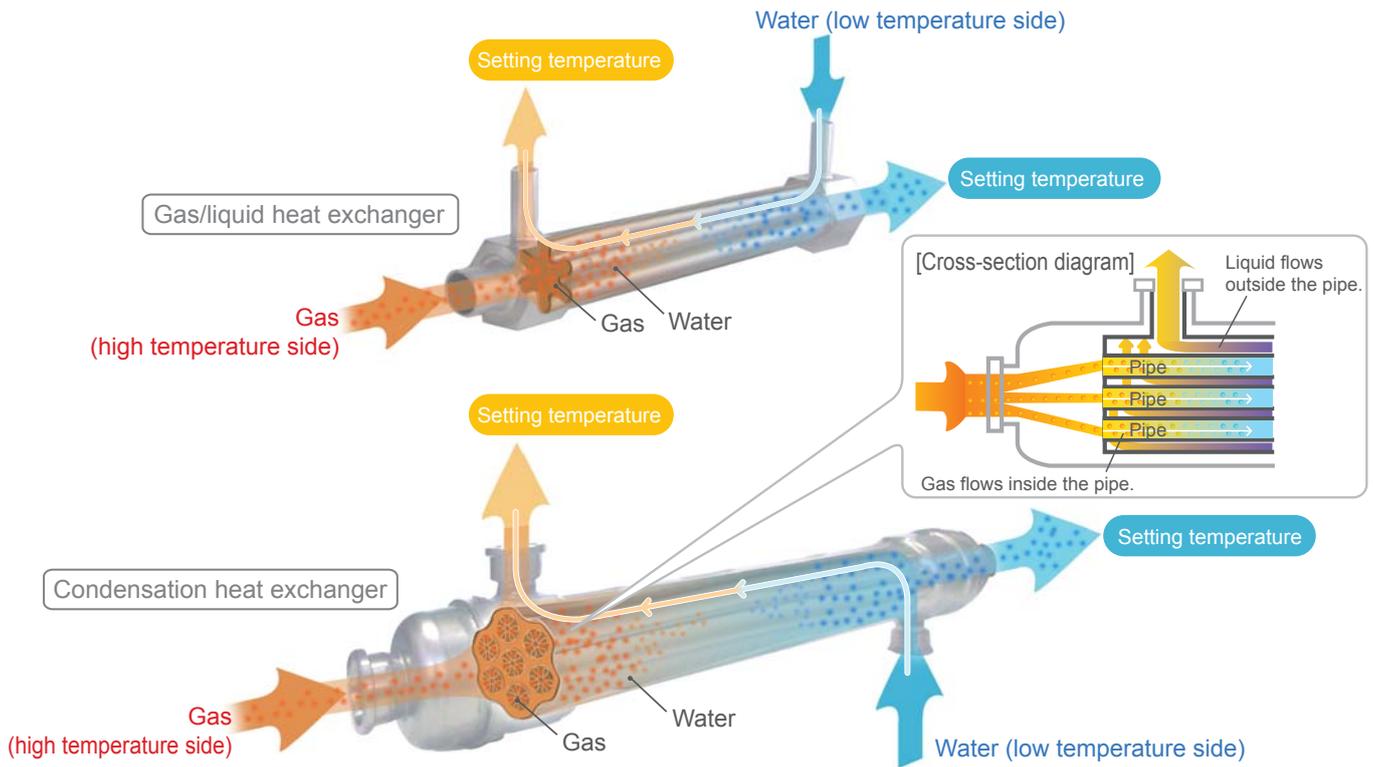
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# ◆ Mechanism of Regal Joint Heat Exchanger (Example)

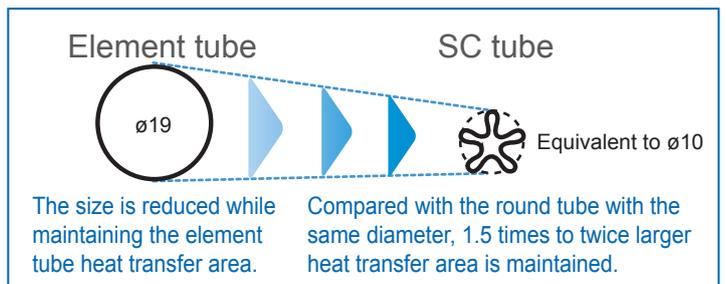
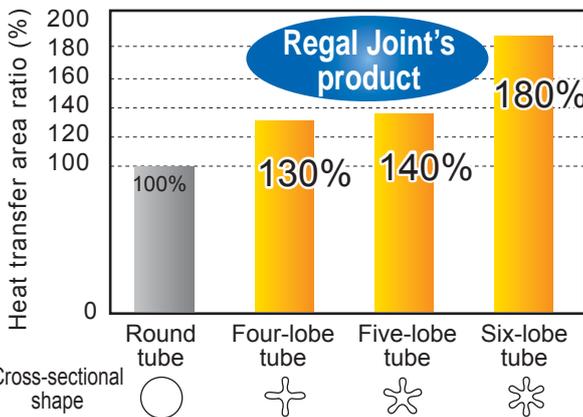


# ◆ Features of the SC tube

The heat transfer area and the flow passage cross-sectional area can be adjusted in accordance with the specifications.

Leading to the improvement of the heat transfer coefficient

Heat transfer area ratio The size can be reduced while maintaining the element tube heat transfer area.

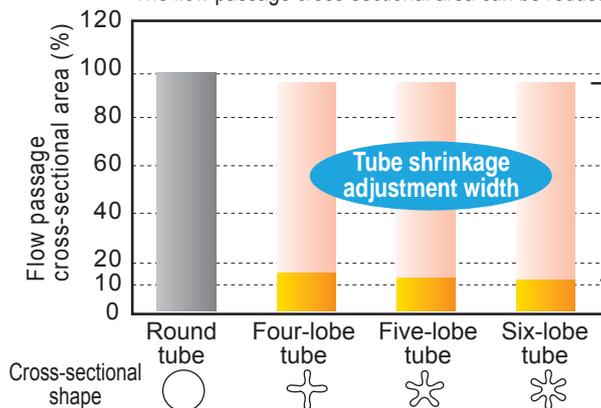


Allowing flexible selection of diameters

Flow passage cross-sectional area The flow passage cross-sectional area can be reduced.

Leading to

- Improvement in the velocity of flowing substances
- Size reduction



The tube shrinkage rate can be adjusted. There is a flexibility in the cross-sectional area.