

## **IMPROVEMENT OF THE GAS-OIL HEAT EXCHANGERS BASED ON THE BIMETALLIC FINNED TUBES**

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The heat exchanger is essential for the process of heat transfer in the industrial equipment. It is widely used in all areas of industry, especially in technology, metallurgy, power, transportation, aviation, aerospace and other sectors. In recent years, with the development of new technologies and energy, the necessity of improving the heat exchanger performance is drawing more and more attention of industry. Devices with finned tubes are one of the most common types of extended surface heat exchangers. Finned tube heat exchanger core is composed of a variety of components, their quality will directly affect the performance of the heat exchanger. Therefore, now bimetallic finned tube with spiral fins is the most promising of all kinds of finned tubes.

Such bimetallic finned tubes are widely used in air coolers of chemical and petrochemical industry and gas pumping compressor stations of main gas pipelines.

Aluminum is the main material for manufacturing of finning due to high corrosion resistance and thermal conductivity, and low cost. However, to provide the connection of aluminum fins to the bearing tube by soldering or welding is extremely difficult. So nowadays, bimetallic finned tubes are widely used, in which contacting the carrier tube and fin is carried out by mechanical intervention, received in the process of their manufacturing. Bimetallic finned tubes manufactured by the extrusion method, has certain advantages in terms of heat resistance and mechanical strength. The special features of the extruded finned tubes allow operation at temperature as high as 300 °C (572 °F).

Gas-oil heat exchanger based on the bimetallic finned tubes is a shell and tube heat exchanger type. It is intended for heating fuel and start gas of gas turbine engine by the heat of lubricating oil. For security purposes, to prevent the ingress of high-pressure fuel gas into the lubricating oil, the use of a secure channel was provided for. The secure channel is a spiral groove on the outer surface of the carrier tube.

Intensification of heat exchange in oil flow, the development of more efficient, reliable and well-operated in the production of designs ribbed tube, the rational layout of the tube bundle, enhancing accuracy of thermal calculation, optimization of the size of the mobility of heat exchange are the main ways of saving material and energy to produce gas-oil heat

exchanger. Therefore, the problem of intensification of heat exchange in gas-oil heat exchanger is rather actual.

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