

## **Abstract**

In this invention, a new sequential spiraling-cut arrangement of multiple baffle plates is used for shell-and-tube heat exchanger. The sequential spiraling-cut arrangement of the baffle plates causes a spiral fluid flow in the shell. With this design, the excessive turbulence and vibration can be reduced since the force is distributed on the shell's inner surface. There will be lower pressure drop which leads to lower energy usage. The orientation of shell side outlet port can be flexibly adjusted according to the implementation required. The implementation of this new invention in our products proves to manifest better performance compared to the traditional design.