

WHITE PAPER

Twinozzle

Performance improvement for desuperheater systems



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TwiNozzle: Performance improvement for desuperheater systems

The TwiNozzle multi-spindle product line is a new series of nozzles designed to either improve the performance of desuperheaters or reduce the cost (CAPEX) of desuperheater systems. They consist of a single retainer (the nozzle holder) which holds two spring loaded nozzles which are arranged in such a way that both nozzles spray against the steam flow (see figure 1). This is to ensure a wider spray pattern and enhanced spray performance compared to standard nozzles. The TwiNozzle multi-spindle design is patented under PAT. No. US 2014/0252125.



Figure 1: Multi-spindle nozzle design



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TwiNozzle: Performance improvement for desuperheater systems

IMI Critical
Engineering



Secondary breakup (water fractionation induced by the drag force exerted by the steam on the droplet) is the most effective way of achieving high levels of water droplet fractionation. IMI CCI has been a leader for years in maximisation of secondary breakup capabilities of our desuperheaters. Extensive research in the physics of evaporation has led to the development of the TwiNozzle. This innovation can improve spray plume distribution (see Figure 3) and secondary breakup at the same time, reducing evaporation distances by more than 25%.

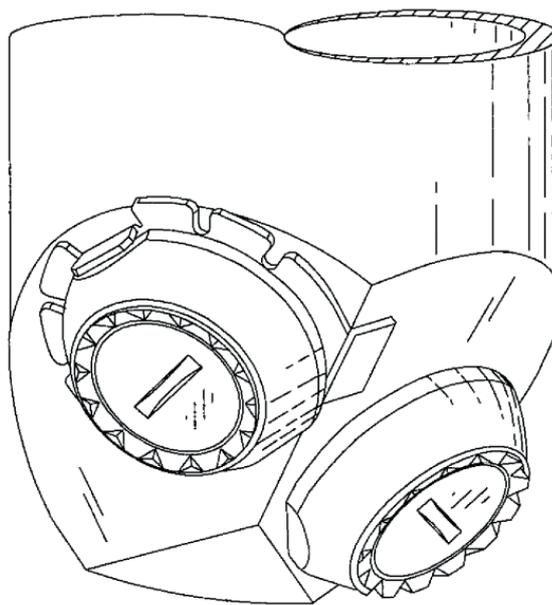


Figure 2: Multi-Spindle nozzle
breakdown

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TwiNozzle: Performance improvement for desuperheater systems

Sizes and Material

The TwiNozzle comes in 3 sizes and is compatible with IMI CCI standard nozzle studs. Furthermore, there are also two high-capacity versions available dedicated to turbine bypass applications where a lower number of nozzles, holders, studs and welded pipe branches can significantly reduce the overall cost of the desuperheater.

All springs used are made from Ni Alloy 718, spring tempered and hot relaxed to ensure optimal performance in the harshest environments.





Sizing and Selection

The complex TwiNozzle multi-spindle design can be sized and selected by use of IMI CCI's EDME-Tool. This tool allows the creation of an optimised flow profile inside the desuperheater which is very often required in challenging application requirements.

All existing desuperheaters can be upgraded with the TwiNozzle spray solution and this product can also be used as a cost-effective alternative to probe style desuperheaters.

Reach out to your IMI CCI sales representative, application engineer or Valve Doctor® to talk about your desuperheater system and how our TwiNozzle solution can enhance it.

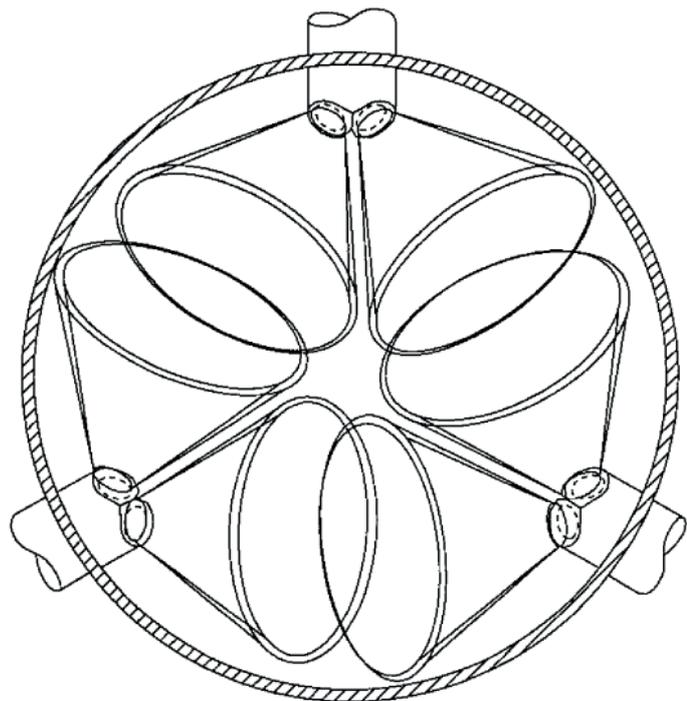


Figure 3: Spray plume distribution within the desuperheater

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