

How SPRINT™ machine tool scanning technology can aid production of shell and tube heat exchangers

On-machine scanning

Commonly used in oil refineries, chemical processing, and nuclear power plants, shell and tube heat exchangers transfer heat from one medium to another.

Each unit comprises a cylindrical outer shell and a series of tubes. These tubes are held in place by tube sheets: metal sheets with a series of precision-machined holes.

Spacing between each hole – the pitch – is critical for efficiency of heat transfer and structural integrity of the overall assembly. Fast, accurate and repeatable inspection to determine hole size and position is therefore paramount.



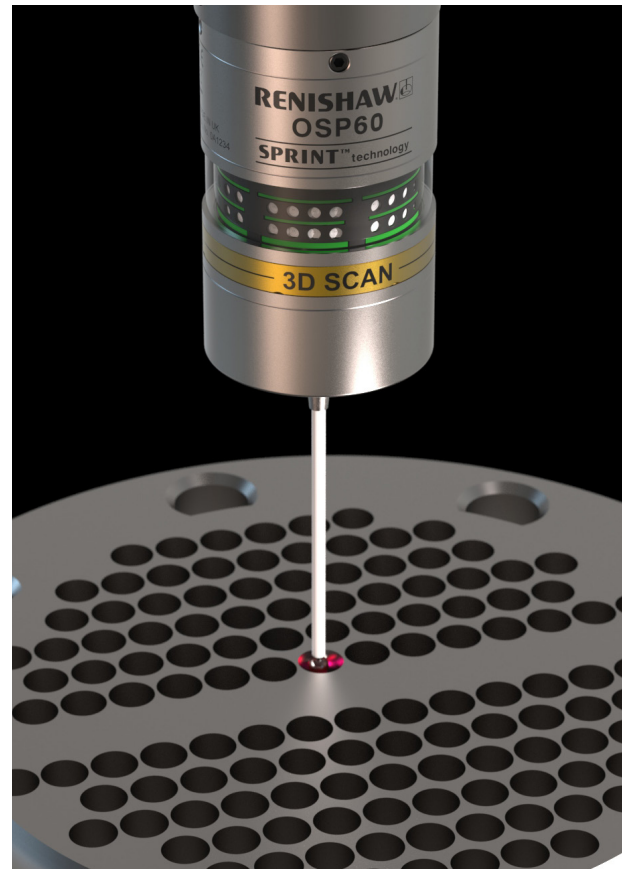
How can investment in on-machine scanning technology help you?

Some methods of feature verification such as manual gauging or CMM inspection require parts to be removed from the machine tool. This can be impractical for large and heavy components, and risks damage to expensive workpieces during transport. SPRINT™ technology provides an in-process, on-machine solution for fast, accurate part set-up and feature verification.

Highly repeatable and reproduceable, SPRINT technology is ideal for the verification of high-volume prismatic features, such as the holes on heat exchanger tube sheets.

As inspection takes place on the same machine tool used for metal cutting, manufacturing defects can be spotted early on. Where remedial rework is possible, this can be performed immediately: no further set up or alignment operations are required.

Reliance on time-consuming and sometimes error-prone methods such as manual gauging can be reduced or eliminated. Additionally, offline inspection can be replaced with a faster, more repeatable, reliable in-process inspection process.



Information in this document is based on an existing installation of a Renishaw OSP60 probe with SPRINT technology.



The Renishaw OSP60 probe with SPRINT™ technology provides:

- An on-machine solution for reduced reliance on offline inspection processes
- High-speed, data-dense metrology information
- Highly accurate results, reducing scrap and rework
- Increased machine capacity and profitability
- Application flexibility beyond part set-up and feature verification

www.renishaw.com/sprint



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 +44 (0) 1453 524 524  uk@renishaw.com

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