



How SPRINT™ machine tool scanning technology can increase throughput in medical implant manufacturing

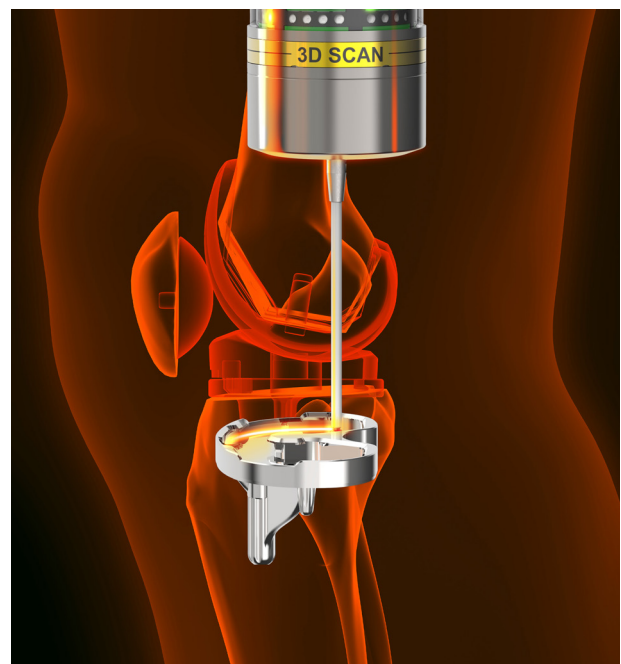
On-machine scanning

Each year approximately 10 million knee joints are replaced worldwide. In 2022 the global knee replacement market size was valued at over £5 billion and is projected to reach £8.5 billion by 2030 ¹.

Knee implants comprise free-form femoral and tibial components, separated by a plastic spacer. These free-form elements are often produced from hard-to-machine cobalt-based superalloys to ensure longevity and to meet their weight-bearing requirements. These components have complex geometries and require production to tight tolerances.

As implants are manufactured in a range of sizes, production and inspection programs must be flexible enough to accommodate this. Manufacturers need to consider how to maximise production volumes using the most effective and efficient inspection techniques.

¹ Source: Market Research Future (July 2024).



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

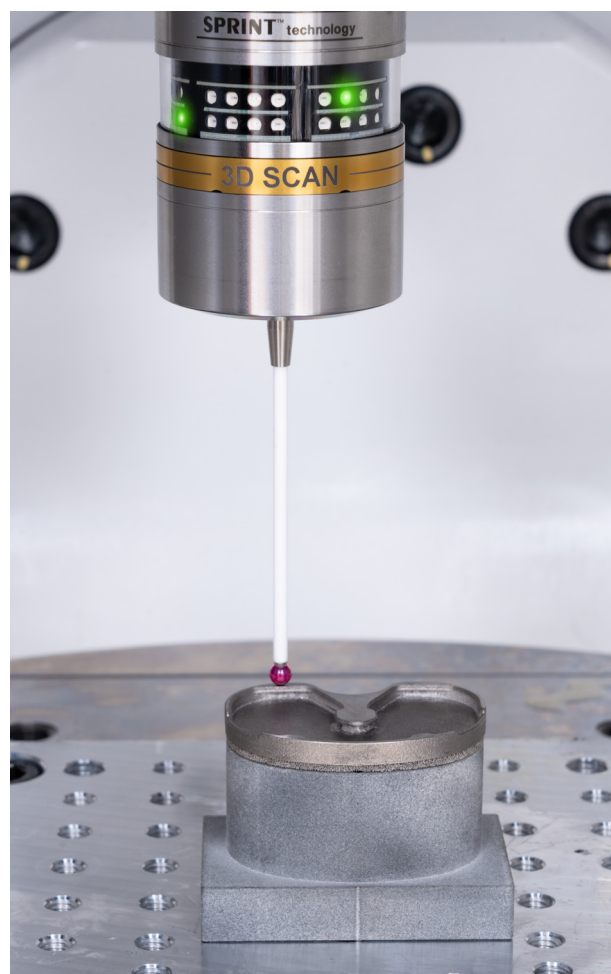
The Renishaw OSP60 probe with SPRINT™ technology offers manufacturers a fast and highly accurate on-machine scanning solution for the set-up, alignment, and inspection of free-form components such as knee implants.

This automated, on-machine scanning probe solution can collect significantly more data than a touch-trigger probe process within a shorter cycle time. This is critical for accurately determining free-form component geometry and maximising profitable machining time.

In a demonstration for a leading orthopaedic implant manufacturer, Renishaw has proven the benefits that SPRINT technology can provide. Set up and inspection time for a tibial tray component accounted for 20% of overall cycle time when using a touch-trigger process. Introduction of SPRINT technology has reduced this to just 2% of overall process time.

This immediate increase in production capacity allows manufacturers to boost throughput without having to invest in additional machine tools.

SPRINT technology can also be used to determine component surface condition, a crucial factor for minimising bacterial growth in medical components and devices.





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

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