

Machining process optimisation

We can help you optimise your machining processes to improve productivity and quality, and reduce cost, risk and lead time.

The large size of many nuclear components, together with strict precision and quality requirements and a high cost of raw materials, presents significant challenges for standard machining processes. Our machining engineers will work with you to identify areas for improvement, and apply a range of technologies to reduce costs and improve quality.

Your challenge

Machining optimisation can add value if:

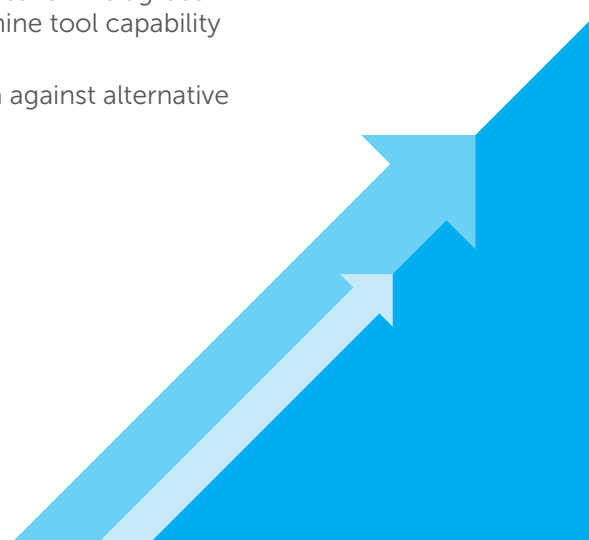
- You want to increase the profitability of your machining process.
- You want to reduce the environmental impact of your machining operations.
- You want an independent assessment of the best machining technology for your needs.

Our service

- We review your current machining set-up, component drawings, challenging features and business drivers.
- We work with your team to understand the key criteria for optimisation. These could include cycle time, costs, environmental impact or surface integrity.
- We develop a trial plan and machining strategy to optimise your process for the agreed criteria, considering factors such as tool paths, fixturing, tooling, machine tool capability and coolant methods.
- We can conduct cutting trials to analyse your baseline machining data against alternative processes, using techniques such as dynamic analysis.
- We provide a detailed report with evidence and recommendations.

Benefits

A machining process optimisation study can help you:

- Reduce the cost of your machining processes.
 - Improve productivity.
 - Better understand the capabilities of your machine tools.
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Our expertise & capabilities

The Nuclear AMRC machining technologies group includes research engineers, post-doctoral research associates, machine operators and project managers, delivering multi-disciplinary programmes for industry customers of all sizes. We regularly meet industrial challenges of 40 per cent reductions in process cost and time, while increasing robustness.

We work with the full range of stainless and structural steels used in the nuclear industry, and have extensive experience in machining other specialist metals.

Our research factory in Rotherham hosts a variety of large machine tools for milling, turning and deep-hole drilling. We can handle workpieces of up to five metres diameter, and weights up to 50 tonnes. We also have a selection of smaller machine tools to tackle production challenges along the supply chain.

For more information, contact Andrew Wright,
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The Nuclear Advanced Manufacturing Research Centre, part of the High Value Manufacturing Catapult, helps UK companies improve their capabilities and performance for nuclear and other high-value industries. We focus on large-scale high-precision manufacturing processes for quality-critical applications.

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Process

A typical machining process optimisation study includes the following steps:



1 Scoping and planning

We work with you to scope the project and develop a delivery plan. We will provide a statement of work detailing our scope, costs and timescales. A machining optimisation study typically takes eight to 12 weeks.



2 Understanding your needs and drivers

We review your drawings, current process, and relevant codes and standards to understand your challenges, drivers and operational constraints, and agree the criteria for process optimisation.



3 Trial development

We develop a trial plan based on your needs and the agreed criteria. We typically use a design of experiments statistical approach to investigate multiple factors.



4 Trials & data capture

We conduct the trials to the agreed plan, capturing and analysing all required data.



5 Present findings

We present our findings with underpinning evidence and recommendations.



6 Implementing improvements

We can work with you to help implement the recommended changes in your workshop.