as Invar, various grades of stainless steel, nickel alloys, aluminium and plastics.

Since attaining ISO 9001:2015, the organisation has doubled its operations and is on track to achieve significant growth again this year. Maintaining strict quality standards throughout the business is a fundamental part of its manufacturing philosophy and vision. Caitlin Howell has been appointed as engineering coordinator, managing all aspects of quoting, job scheduling, cost and quality control, allowing the business to grow and enhance customer relationships.

However, the company was experiencing issues with residue build up on components and machines and consequently approached Chem Arrow Europe for a recommended solution.

Chem Arrow specialises in providing innovative solutions to complex metalworking issues and recommended trialling its latest e4 technology coolant – ArrowCool SOL-835-H. The new e4 technology uses a combination of performance enhancing esters and proven technology to optimise productivity and component finishes, even in areas of extreme hard water.

AJ Cook Engineering trialled the new fluid on one of its milling machines and noted significant improvements in terms of cleanliness and quality plus a marked reduction in hard water deposits on components. Additional benefits of improved surface finish, reduced top-up and increased tool life means the company will be converting all machines across to the new grade.

'To say we are impressed is an understatement," enthuses managing director, Alistair Cook. "Coolant is something that is often overlooked when talking about part quality and finish but the addition of this new formula has transformed our component finishes.

"We deal with a wide variety of materials and while we can't accurately measure our tool life, we have noticed that over long batches of parts and job to job, our finishes don't deteriorate and the tooling looks as good as it did when we received it.

"We occasionally process large batches of 7000 series aluminium components and have noticed staining in the past with our previous coolants. However, since changing to the new ArrowCool product this is no longer an issue meaning we

Double platen lathe slashes cycle times

At the subcontract machining facility of Witon Engineering, Barnstaple, turn-milling of relatively complex components from 16mm diameter bar used to be carried out on 32mm capacity sliding-head lathes, rather than smaller capacity models, to take advantage of the extra CNC axes and tools available on the larger machines.

This type of work has now been transferred to a more nimble, 25mm bar capacity Citizen Cincom D25-VIIILFV sliding-head turning centre, installed in January 2021. The first two jobs have shown significant cycle time reductions of 20% or more.

Since the mid-90s, the contract machinist has bought 17 bar-fed lathes from this supplier, of which one was a 42mm bar capacity Miyano fixed-head machine, the others being various Cincom sliding-head models for turning up to 32mm stock.

There are currently 11 Citizen machines on the shopfloor, earlier models having been exchanged over the years. Lathes from this supplier therefore account for approaching half of the 25 of bar autos in the factory, comprising 13 sliding-head models, eight single-spindle fixed-head turning centres and four CNC multi-spindle automatics.

Machine operator Alexandre Da Silva in front of the Citizen Cincom D25-VIIILFV sliding-head lathe on the shop floor in Barnstaple

The first component to be transferred to the D25 was an EN1A steel shaft for a lawnmower. The part was formerly produced on an L32-VII, of which there are three on site. As 180,000 have to be produced to fulfil the current contract, the 20% cycle time reduction leads to a significant production cost saving.

The second component benefiting from being machined on the D25 is a 304 stainless steel fuel inlet fitting for an automotive customer. It used to be turn-milled on one of a pair of Cincom M32s in a cycle time of 72 seconds. This has been cut to 53 seconds, representing a 26% saving. With 55,000-off needed, the economy gained is significant.

Ian Clapp, workshop manager at the Barnstaple factory explains: "We operate a couple of 20mm capacity, dual-platen sliders of another make and knew this configuration offered quick cycle times.

"However, we saw what our longstanding sliding-head lathe supplier Citizen was offering in the D25, a machine with larger bar capacity plus the ability to carry out work up to 32mm diameter without the guide bush for more economical material usage when producing shorter components. The model also has the benefit of a programmable B-axis, so we decided to go for this option."

The gang tool platens are in front of and behind the spindle centreline, with Z-axis motion provided on the rear carrier to allow balanced turning, milling or drilling, or simultaneous rough and finish turning.

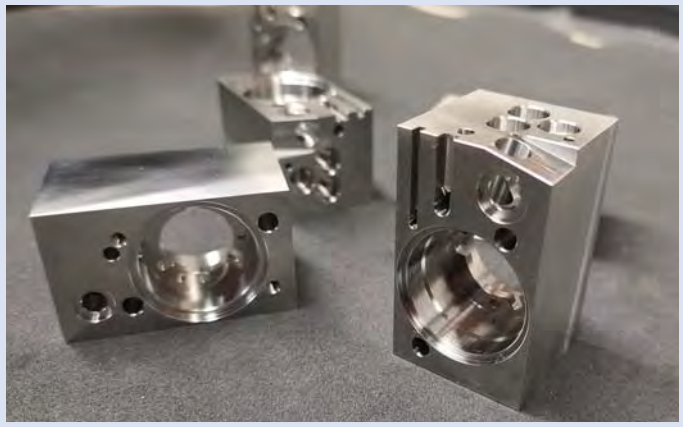
The B-axis on the front post, carrying up to four driven tools on either side to service either the main or counter spindle, swivels by up to 135°. A further feature of the lathe is that three axis groups can be controlled simultaneously by the Mitsubishi 800 CNC system, so three tools can be

The working area of the D25, showing the twin-platen design

are not wasting time washing down parts in between different ops to prevent discolouration."

He continues: "On a personal note, as an eczema sufferer, previous coolants caused irritation and sores. The new product from Chem Arrow leaves me with none of these problems. All in all, we are very pleased with the new formula and will be converting all our machining centres over in the coming months."

Since moving across to the new grade, AJ Cook Engineering has reported improved operations as a direct result of the e4 technology coolant resulting in significant cost savings due to zero rejection of parts, reduced coolant usage, improved part quality and enhanced overall customer satisfaction.



James Mitchell, area sales manager at Chem Arrow Europe comments: "We have built an excellent relationship with AJ Cook Engineering and it's been a pleasure to see their business go from strength to strength and be able to work alongside them in achieving their objectives.

"We are pleased that the time invested in our latest e4 technology fluids is delivering exceptional results. It's great to be able to help our customers achieve cost savings alongside improved quality and reliability in these difficult times."

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in cut at the same time.

Another potential benefit of this 12-axis CNC turn-mill centre is that it incorporates Citizen's programmable LFV (low frequency vibration) chipbreaking technology in the control. It automatically breaks the long, stringy swarf produced when machining materials such as copper, plastics and high alloy steels into smaller pieces.

Bird-nesting around the tool and component and the consequent damage that may be caused is therefore avoided. Although LFV cycles have not been included in programs run so far on the D25 at Barnstaple, it is nevertheless there to use when appropriate jobs come along.

Witon Engineering underwent a change of management at the end of 2016 when second-generation owner and managing director Ian Sheldon retired. The firm is now run by Ian's son-in-law Tom Courtney, who is the general manager and Ian's daughters, directors Hayley Neate and Gemma Courtney. Operations still predominantly centre on precision turned parts production on CNC lathes, the cam multi-spindle auto shop having closed in 2018. Two 3-axis, vertical-spindle machining centres are also in use.

Large batch runs are the norm: one electrical connector part is produced at a rate of 100,000 per month and even one of the machining centres is currently completing a contract for 500,000-off prismatic components.

Hayley Neate commented, "We are keeping Witon Engineering basically on the same trajectory, with the accent on turning and long periods of unattended running of our bar autos during the day and to the end of a twilight shift finishing at 12.30am every weekday.

"The onset of the pandemic reduced business early on, especially as work for the automotive sector, traditionally a large proportion of our business, was badly affected. However, we have gained extra contracts in other sectors to compensate, such as parts for lubrication systems and household goods.

"When the automotive work returns, our production throughput will be at a record high and we will carry on investing in top quality plant like Citizen lathes to meet the demand."

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The lawnmower shaft (left) and a machined 304 stainless steel fuel inlet fitting, which was the second job to be put onto the D25