

## EDM cuts cycle times

### Sodick EDM cuts hours off machining time for flat form tooling and helps keep prices competitive.



Warwick-based PJ Tooling has reduced the cycle time for finishing profiled form tools from 3 hours to just 40 minutes. The company, a manufacturer of special production tooling, achieved this after acquiring a Sodick wire EDM machine.

Established in 1969, PJ Tooling's original customer base was focused on the automotive and white goods market, but the company now supports a diverse range of industries including aerospace, pneumatics, defence, pharmaceutical, Formula One and fluid power. Small batches or one-offs are typical, with virtually all types of production tooling manufactured on site,

including flat form tools, special inserts, round shank milling tools, reamers and step drills. The company also manufactures centres, jaws, hand tools and refurbishes HSS, carbide and brazed tip tools. Managing director Mark Webb says: 'Customers come to us when they need tooling to create special profiles externally or within a bore, either with static or rotary tooling. It's a specialised niche in which fewer companies are now involved or wish to compete in, due to the complex nature of the tools, process capability and the skills required to provide a quality product'

PJ Tooling employs 19 staff and has a turnover of around £1.25 million, but despite having a broad range of toolroom technologies, until recently wire EDM remained absent from its Warwick facility. 'We've invested over £800,000 in new technology over the past seven years, including three CNC 5-axis grinders, but until we bought the Sodick we were still subcontracting our wire EDM requirements,' says Webb. 'However, the ongoing increase in the number of customers requiring increasingly complex profiles made us look again at our machining capabilities.'

PJ Tooling had been using a combination of in-house manual and CNC grinding and external subcontracting to fulfil some contracts, but the time, expense and loss of control involved was becoming prohibitive and it became clear that investment in an in-house EDM capability was the only sensible option. Webb therefore instigated a series of trials with the leading wire EDM vendors. 'In the end the overall ergonomics and operator interface of the Sodick AQ327L won the day, together with its physical capacity in relation to its footprint - and this from a machine that can achieve a 0.1Ra surface finish. We also received excellent feedback from the market regarding the reliability of Sodick machines and the support and training available from Sodi-Tech EDM.'

Installed in April 2009, the Sodick AQ327L has already reduced the cycle time for both roughing and finishing operations on flat form tool inserts from 3 hours using the grinder, to just 40 minutes. And it's not only in the production of flat form tools that PJ Tooling is reaping the benefits of the new machine. The ISO9001:2008 accredited company also specialises in radial tools, typically multi-diameter for producing stepped bores and SAE forms in hydraulic manifolds. Such tools can cut cycle times massively as well as reduce the number of tools required for a given application.

For this type of work, the Sodick AQ327L features an integrated horizontal rotation A-axis to provide eight-axis simultaneous machining capability using the advanced Sodick LP34 controller. This ensures accurate positioning through continuous rotation, to enable the creation of complex precise shapes using very small diameter wire. 'With this capability we can now rough out and profile larger solid carbide or tipped cutters,' says Mr Webb. 'Previously we would rough grind conventionally between centres, but, to be honest, this process was far from ideal. With wire EDM we can profile and remove stock simultaneously - without an operator - after initial set-up.'

The company's new Sodick AQ327L has cut cycle times, eliminated subcontract costs and put PJ Tooling back in control of its deliveries. In-house jobs and general toolmaking can now be carried out entirely on site at Warwick rather than subcontracting specific operations best done by wire EDM, such as keyways, slots and hexagonal bores.

'Wire EDM was the missing link in our capacity,' concludes Mark Webb. 'The machine has only been here a short time but already we are anticipating payback within three years, which is excellent in what is a very tough manufacturing environment. Furthermore, the machine is helping us keep our prices competitive, a factor that is crucial to our ongoing success.'