



# Graphical Real Time Scheduler CASE STUDY

## A software focus for fluid control

A steep increase in ongoing business placed Integrated Hydraulics Limited under pressure to deliver its products to demanding deadlines. To help meet these demands the company turned to manufacturing software specialist, Seiki Systems, to supply its market-leading planning and scheduling package.

Based in Leamington Spa, Integrated Hydraulics Limited is a global leader in the design, manufacture and supply of hydraulic screw-in cartridge valves and integrated electro-hydraulic control systems for numerous business sectors. The business has seen growth of more than 25 per cent year-on-year, with a target of £30 million turnover for this year. The company's philosophy is to design valves and systems that are suited to a customer's application, and not to try to force an application to fit a range of standard products. Hydraulic manifold blocks are manufactured in-house to exacting standards, from high grade steels and aluminium with close tolerance finishes for higher functional accuracy and a longer working life.



With a total of 280 employees, there are 42 staff working in the machine shop split over three shifts. Senior production engineer, Tony Cave, says: "Our philosophy is to offer the complete range rather than focus on high volumes of a small variety of hydraulic blocks, so the machine shop has a staggering variety of low volume work to cope with - having made around 1000 different variations last year." Around 80 per cent of Integrated Hydraulics work is bespoke to a customer's requirement/design needs for fluid control. The company produces approximately 160,000 cartridges per month with up to 15 individual components in each one in a variety of different styles. Of the machined parts required, all turned components are manufactured externally as are high volume block orders of 500 or more. The in-house machine shop addresses about 30 per cent of the company's needs, and batches tend to be small at 5, 10, 25, 50 or 100-off. Setting the machines for the many different parts takes time and this lost production hits the efficiency and profitability of the operation.

Tony Cave explains: "With no real visibility of what was being made, orders went into the machine shop and people worked on infinite capacity plan to try and fulfil them. Two senior staff attempted to work out what was going through the workshop and in what order, using an Excel spreadsheet which tended to reflect past performance and/or hopeful targets. Effectively, nothing was done on time because there was always too much to do." To address this the decision was made to invest in a production scheduling software package from manufacturing software specialist, Seiki Systems, to provide a transparency of data so that everyone involved could see what was happening in real-time. The new software had to work in conjunction with the existing Sage Line 500 ERP system used across the company as well as the Seiki Systems networked manufacturing software (NMS) used to transfer manufacturing data to the shopfloor. It also had to capture data from the various machines' controllers to provide a status check - job start, job finish, waiting time, alarm...etc, as well as analysis information for engineering improvements. Data collection from the shopfloor is achieved via relays hardwired into the machines' control system, providing accurate information for weekly analysis of where production time has been lost, be it breakdowns, waiting for operator or waiting for material. This allows the company to target specific problems rather than trying to fix everything at once. The Seiki Systems' software now provides a closed loop control method for the manufacturing operation with jobs logged all the way through the manufacturing process.

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REAL TIME GRAPHICAL SCHEDULER & NMS

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## Integrated Hydraulics Integrates its Production Management Systems

The production engineering department operated the system for about one month prior to training the shopfloor staff in its use. It interfaced smoothly with the existing Seiki Systems NMS system and expanded the data capture to include more machining processes to extend the control. The software has focused the company and made a major impact. Now it has an identified capacity and can accurately predict an overload several weeks in advance. This allows time to alter the schedule with the redeployment of work out to a trusted subcontract engineering base or brought back in if there is available capacity. Better feedback for production control allows that department to match up cartridge and body manufacture to make the final assemblies. A lot of chasing of piece parts internally and at subcontractors is carried out by the production control department, and it was very difficult not knowing when parts are going to be ready.

Says Paul Hone: "Now the software allows the accurate forecast of a due date and, if a priority change comes in from sales or production control the company can instantly tell what the impact will be on the rest of the jobs in the queue. This could not be done before, it was just haphazard and things were hidden in the system. It also places the decision with the departments that are talking to the customers that may be affected." When the system was first implemented the company was chasing 97 different orders that represented around 120 items which in manufacturing terms were more than one week late. Now there are just nine that are overdue. Better scheduling has reduced the number of set ups and brought the late deliveries under control. Each upset customer is potentially worth the whole of their contract so removing this concern has very tangible benefits. Also, the 120 items that were previously late had a value of around £150,000 with the reduction of parts due down to nine the value of the late parts has been cut to around £10,000. This will reduce further as the accurate scheduling is now starting to allow the machine shop to get ahead of the order list. "There are cost advantages to the whole business, as the benefits of the scheduling software roll out across the company." confirms Paul Hone, "For example, the efficiency of the assembly operation is directly influenced by the delivery of the finished machined parts. If the parts are not available then the assembly staff will be idle. One assembly unit, which is set up next to the machine shop, only works on specific valve bodies and if the machine shop is late delivering then there is nothing for the operators to do."

With clear and accurate information about the manufacturing operation it is also allowing a change in operating principles moving away from the traditional 'machine everything as soon as it's available' to a 'machine just in time to meet the order' methodology. Not fighting fires has provided a clear vision of the capacity and therefore delivery. It has also reduced the need for overtime to try to catch up with the backlog of late orders. This removes an additional cost that was coming straight off the bottom line. It also provides around 20 per cent extra spindle capacity due to overtime capacity being available so that sales can be increased with new business opportunities. The software also provides data for future machine investment decisions and allows the 'what if' scenario to be played out. This means that the benefits or impact on the operation can be measured before any changes are made. The cost of the investment was relatively small compared to the rewards that Integrated Hydraulics is receiving and there has been a significant commitment in terms of time and effort from the production engineering department to ensure that the full capabilities of the system, including real-time feedback and reporting facilities, are utilised in order to support ongoing continuous improvement strategies. Data is available across the company so that everyone that needs to know is kept informed. It also allows the production department to highlight any extra capacity that is available so that the business development team can go out to the market and try to fill this.

As Tony Cave concludes: "The systems' ease of use has also been crucial to its successful implementation, along with our willingness to move forward. For example, the person responsible for updating the system has only been with the company for four months but has quickly picked up how the software works and how it interfaces with the company."



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