



Graphical Real Time Scheduler CASE STUDY

Seiki Systems Supports Lean Principles

Following the introduction of lean manufacturing principles and the installation of powerful production scheduling software from Seiki Systems, railway electrification specialist, Brecknell Willis, has witnessed efficiency gains.

Based in Chard, Somerset, Brecknell Willis is one of the world's leading suppliers of technology and equipment for railway electrification and for more than a century has been supplying equipment to rail operators across the globe. Part of the Fandstan Electric Group, which has companies in North America, Australia and Europe, Brecknell Willis carries out all of its design and manufacturing at its extensive Chard facility. Many long running contracts and a large number of maintenance programmes are keeping the company busy. As production and material controller, Steve Crimp, explains: "Railways vary around the world and the reason why we have been successful is our ability to design and make bespoke systems for specific customers." Developing next-level technologies as well as designing to match customer specifications, the company's product expertise is evidenced by the fact that around 60 per cent of the 180 employees are directly involved in system and equipment design.



Both the train-borne equipment department and the electrification department (which looks after all fixed equipment) rely on the company's machine shop for component parts, and it is Seiki Systems' Networked Manufacturing System (NMS) and finite capacity scheduler modules that allow Steve Crimp to control the flow of parts through the machine shop. At present he uses the software for work planning of the machine shop, as Brecknell Willis has its own database system for stock control. The Seiki Systems integration software picks up all the parts from this database for both the rail and train-borne shops, and also controls the electrification parts that need to go through the machine shop. There is a mix of new systems for customers as well as repair work, as Steve Crimp points out. "The amount of Brecknell Willis equipment out in the field means that about half of the work going through the machine shop at any one time is refurbishment and overhaul work. We are currently repairing and overhauling between 30 and 40 pantographs every month coming in from all the different train operators. These could either be damaged or just scheduled maintenance to ensure safe operation."

Within the machine shop the company operates four twin-pallet horizontal and four vertical CNC machining centres, a manual turning/milling section with pillar drills, three CNC turning centres equipped with bar feeds and automated sawing machines that generate billets of raw material. It also houses a centreless grinding machine and a small boring machine as well as a router for composite machining. The machines cut castings, billets and bar stock material as well as fabrications from the company's assembly shop. From his desk via the Seiki Systems software he can access live data from the shopfloor. Terminals within the workshop allow the machine operators to log on and off jobs, with up to 1800 jobs loaded on the system at any one time. "Although currently there are just 900 jobs you still would not want to do this any other way," he says. The software provides graphical views of each machine loading and enables the operator to view a queue of the work due on the machine. Steve Crimp can manipulate this queue from his office, so rush orders can be dropped in and projects on longer delivery deadlines can be pushed back.

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Manufacturing Software
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REAL TIME GRAPHICAL SCHEDULER

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Scheduling is vital for Brecknell Willis because space is at a premium as there is little room for further expansion on the site that they have occupied since the 1930s. All of the company's forward orders are input into the scheduling system to provide a long-term capacity plan for the machine shop. "It is a really flexible and easy system to use," he says. "Projects can be put on a delayed start if we have, for example, a problem with the material supply or if there is an engineering concession raised by the customer." Full visibility on screen of each machine on the shopfloor means Steve Crimp simply rolls the mouse over the machine image to see exactly which job it is working on. Run over two shifts the manufacturing hours available each day are set by the machine shop manager. Any machine problems are compensated for by removing the hours available, in which case the software simply cascades the orders forward and re-adjusts the schedule. Steve Crimp says: "It will also highlight the change on the component screen, so I can see what the ramifications are. I can then make a decision to subcontract the work in order to hit the customer delivery timeframe if required.

One of the main benefits the Seiki Systems software has provided with its ability to accurately schedule work is eliminating the need to break down jobs. "Prior to installing Seiki Systems we were constantly fire-fighting and taking jobs off machines before the batch was finished," Steve Crimp recalls. "Since installing the software we have not had to break a job down unless there is a shortage of raw material. We let the jobs run because the software gives us the ability to look ahead and forecast our production performance. It's very visual and predictive, which allows us to act very quickly. Recent refresher training at Seiki Systems offices in Brighton has also taught me a great deal more about what the software can do." For example, he now uses the 'set up marking' function, which allows the user to pool together jobs that have similar machine set ups. These are typically families of parts, but they may be required by different customers. The software draws a line through each part in the schedule and allows the user to pull them together, thereby reducing the set up times required.

"Under our lean manufacturing principles we only make to order not for stock," Steve Crimp explains. "So, we may require batches of the same part 20 times but for different orders. Using the set up marking significantly improves our efficiencies, and I'm really impressed by the difference that such an easy-to-use tool makes to the way we operate." For the management team it also provides performance measurement statistics for each job. "I can also see machine tool utilisation and quickly adjust any overload situations by moving work from one machine tool to another. Although the route card is set for a particular machine, I can move it from one resource queue to another within the Seiki Systems software and it will then alter what the operator sees on the shopfloor," he says.

Prior to installing the software everything was done manually on Excel spreadsheets with paper 'work-to' lists. Now individual operators can see an electronic work queue for their machine. Because the stores have the same view of the Seiki Systems software as production control, the company introduced work station job packs. These allow the stores to kit jobs with the cutting tools and raw material required to complete the job.

Steve Crimp also uses the software to monitor trends and to check the lead times on the machines. "There are seven solid weeks of work loaded on to the machines at present, he says, "but I'm trying to manage them down to six weeks so that our projects people can work on a known delivery time - for new projects or spares/overhaul work." He concludes: "We have the proof that Seiki Systems scheduling system works and we know the benefits. Now we are considering extending the scope of the scheduling software to include the fabrication shop and the assembly shop to provide better visibility. I will be able to see the progress of work that is due to come into the machine shop and they will be able to monitor the progress of the parts required for any fabrications. As we subcontract on an overload basis, if we know it's going to happen we can control it."



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