



# Case Study



Electronic and mechanical torque measuring and calibration equipment for critical applications is supplied by Norbar Torque Tools to just about every industry sector. These include the power and wind turbine industry, MoD, mining, oil & gas including subsea pipeline joints fastened by remotely operated vehicles, through to the International Space Station where a Norbar torque multiplier is used to actuate an emergency exit hatch. To meet the demands of this varied customer base the company relies on advanced production control software from Seiki Systems to enhance communication and increase visibility throughout the organisation.

A family-owned business, Norbar has been manufacturing torque tools for nearly seven decades. Its Banbury facility is the main manufacturing headquarters where it employs just over 200 people, with the machine shop and other key manufacturing areas run on a day and night shift. Manufacturing manager, Martin Reynolds, says: "The directors have a rolling strategic plan which highlights the company's development for the next five years. Over the last couple of years we have exceeded the plan in terms of growth, and we intend not only to increase sales, but through continuous improvement become more efficient and effective throughout the company. The business is very focused on continuous improvement with a dedicated team that works in conjunction with the staff in various areas to look at ways we can improve all processes and procedures."

With manufacturing set up in cells, senior cell leader Neil Bennett recalls how the company used an MRP system with infinite capacity planning and very often found the machines loaded to 200 and even 300 per cent. "We applied some shift working and overtime but we clearly could not meet these loading targets," he says. As the company investigated different processes to improve efficiency it started to work on a Kanban system as well as works orders. This caused a priority conflict between the works orders generated by the sales and forecasts within the MRP system and the Kanban requests generated by cells consuming stock. Martin Reynolds explains: "Working to a forecast can lead to producing parts you don't require which uses capacity in the machine shop. This was one of the issues which prompted the change to a Kanban system which would promote making parts we actually needed. This situation has been exacerbated during the past two years when we had a growth of over 25 per cent."

Norbar was not just facing production control issues it was also struggling with corrupted transfer NC code on the shopfloor. An early advocate of DNC technology the company had linked all of its CNC machines via a system that relied on a complex switch box, which was temperamental. Following an extensive review of the solutions available Seiki Systems was called upon to install its robust DNC file transfer software and graphical Planning Board, both of which made dramatic improvements for the company. Neil Bennett says: "After installing the Seiki DNC package we now have the confidence that NC Programs will be transferred to the machines on the shopfloor without any data corruption."

## Norbar Torque Tools | Seiki NMS & Scheduler

Effective communication and increased visibility throughout the organisation is a key part of the continuous improvement process. The ability to see a realistic, graphical representation of the work-in-progress, combined with live data collection and feedback is a huge benefit as it allows the company to plan ahead more efficiently.



### Seiki NMS & Scheduler Features

- Fast and efficient shop floor communications
- Full audit trail of file transfers
- Factory wide distribution of work queues
- Remote live views of individual machine status and activity
- Graphic display of machine utilisation & lost productivity trends
- Drag and drop technology for 'what-if' planning
- Create a realistic model of your available capacity
- Link to other factory systems including ERP, PLM, PDM, etc.

### Seiki NMS & Scheduler Benefits

- Creates a centralised factory knowledgebase
- Supports a lean systematic approach to the manufacturing process
- Eliminates inaccurate & time consuming manual methods
- Ensures only the latest manufacturing data is used
- Provides a dynamic, real time view of resource activities
- Supports continuous improvement strategies with real and accurate data
- Helps increase productivity and efficiency



Work queues are delivered direct to the shop floor informing operators what needs to be produced next



Machine tool event status monitoring provides real time feedback for the Planning Board

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The Planning Board software provides a real-time dynamic view of the work-in-progress on the shopfloor. "Installing Seiki Systems' Planning Board has given us a much better insight of what we can do on the shopfloor on a daily basis. Jobs are loaded onto the relevant machines and the software provides a predictive graphical view of the capacity status," explains Neil Bennett

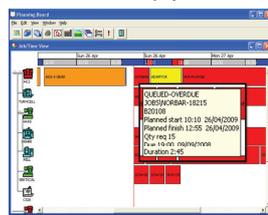
From its sales forecast data Norbar's management team plans production for the shopfloor up to two weeks ahead. Once that has been done the Planning Board software provides the cell leaders with a visual capacity check and the capability to alter the production sequence within predefined parameters. "They can drag and drop work from one machine to another to optimise their cell using the visual feedback provided by Seiki Systems Planning Board. It gives ownership to the cell leaders within achievable parameters," Martin Reynolds states.

Neil Bennett goes on to say: "One of the most frustrating things from a machine operator/setter's point of view is spending time setting up a job on a machine, and changing to the next job only to find the third job is virtually the same as the first one. Planning Board gives a clear view ahead and lets them manually identify and group together jobs of a similar set up."

Up until 18 months ago Norbar also operated a toolroom, which has been changed to an 'Engineered to Order' (ETO) cell, and this department suffered the same pull on its resource with works orders, production Kanban and the engineering department requesting time for prototype development work. With demands from three different areas, the work tended to get done for whoever shouted the loudest. Martin Reynolds says: "From the positive results achieved using Seiki Systems Planning Board in production we decided to enhance the solution by installing the Seiki Scheduler, the company's comprehensive finite capacity scheduling software, in the ETO cell as this cell requires more controlled definition of every resource such as machines and people. In the production facility you have jobs passing from one cell to another for different operations to be carried out; in the ETO cell they tend to be jobs that are done from start to finish. So we had to have the ability to break down each element for every part."



Seiki Scheduler



Seiki Planning Board

## Norbar Torque Tools | Seiki NMS & Scheduler

Feedback is crucial to measuring the performance of any manufacturing operation and as such Seiki Systems Machine Tool Monitoring software has been specified for all of the company's newer machine tools as it lets Norbar see exactly what is happening on the shopfloor. Capturing live manufacturing data provides real-time feedback for the Planning Board and also allows Norbar to make efficiency gains in set ups and changeovers, which means that the jobs that are causing the biggest problems can be targeted by continuous improvement activities. "All new machines are automatically monitored for spindle run, alarms and power off. If the spindle is not running it defaults to waiting and the operators have a sub status within waiting that can be manually updated. This is keyed in at terminals located within each cell. We check and report on our efficiency for set ups, time spent waiting and production time, which can then be sub divided into waiting, inspection, no setter available, no raw material and so on. This level of detail captured in the data coming back from the shopfloor resources via Seiki Systems software gives us a real insight as to where the problems are and what we need to do," Neil Bennett explains.

Work queues can be downloaded from the scheduling server on to the shopfloor terminal as required, informing the operators what needs to be produced next. For example, tooling support was introduced to increase efficiencies with tool offset measurement capability allowing tools to be pre set prior to any changeovers, which has a significant effect on the set up times. The tool stores controller has access to queue data via the Seiki system for all the machines, so he can look at whatever job is required next on any machine, look at the tooling suite required and pre kit it, usually two hours before the changeover occurs.

Effective communication and increased visibility throughout the organisation is a key part of the continuous improvement process. The ability to see a realistic, graphical representation of the work-in-progress, combined with live data collection and feedback is a huge benefit as it allows the company to plan ahead more efficiently. "Within the ETO cell the additional functionality within the finite capacity scheduling software that enables the cell leader to test different scenarios and highlight any capacity issues, means that it is possible to find windows of opportunity for essential prototype work. Seiki Systems has also allowed us to plan routine maintenance which, like most manufacturers, we had always tried to do. Now it can be scheduled in, we know that machine will not be available for two or three days and we can see what needs to be done to make sure we deliver on time. Seiki Systems allows us to plan and communicate efficiently in order to meet the demands of the customer. The next logical step will be to expand the full scheduling package out into the production workshop, one of Seiki Systems' strengths as a solution provider is its ability to increase functionality as your needs grow." concludes Neil Bennett

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Seiki Systems' suite of manufacturing execution software can be utilised for planning, controlling and improving the works order lifecycle - from top floor to shop floor - of any manufacturing company. Visibility and control of all stages of the manufacturing process is essential. Creating a leaner systematic approach can result in significant capacity and efficiency improvements that can lead to real cost reductions.