Advanced Planning & Scheduling

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It's important to understand the difference between planning and scheduling. Planning is about breaking down a works order into individual operations and defining a logical sequence of events that will deliver a completed product. Part of this is understanding and managing the dependencies between those events and resources. So planning is effectively defining what is to be done and how.

Scheduling is the when. It factors in times and due dates to apply a chronological order to the plan, so it can be visualised in a timeline. It also means that operations are assigned to a resource, ensuring that it will actually be available at the required date and time. Scheduling effectively provides specificity and targets to the plan.

Some systems specialise in planning and others in scheduling. Seiki Scheduler integrates both functions to make your job easier.

A Dynamic Solution

Striking a balance between the demands of meeting delivery dates and managing workflow efficiently and economically can be difficult when trying to plan and schedule your production manually. Especially when time is a critical factor. For example, managing complex planning and interwoven scheduling procedures in multiple, uncontrolled spreadsheets typically results in errors that can have a huge impact on the accuracy of your plan. This can be down to errors in formulas or simply because your information is out of date as the spreadsheets don’t dynamically update. By the time you’ve realised and investigated the source of the error your plan is obsolete. Seiki addresses this with a real-time, finite capacity solution that provides a high level of visibility and control so you can confidently and quickly make key planning decisions.

Advanced planning and scheduling helps you to:

- See the status and priority of each works order on the shop floor
- Understand the sequence of operations in the manufacturing process
- Know when the machines or resources are required for each works order and when they will be available
- Know the timings and delays between operations for more realistic production lead times

Seiki Scheduler can deliver benefits such as:

- Faster and more accurate scheduling
- Reduced outsourcing
- Reduced inventory and WIP
- Identification of untapped production capacity
- More realistic delivery promise dates
- Improved on time delivery levels
- Increased responsiveness to unplanned downtime events
- Planning of preventative maintenance
- Avoidance of production bottlenecks
- Greater visibility and communication
- Responsiveness to new or rush orders
- Increased customer service levels
Finite Capacity

Finite capacity planning ensures that your capacity is taken into account from the moment you start to plan. It means that anything that could potentially constrain the production process, such as people, machine capacities, tooling, and material availability, is factored into the schedule, resulting in a much more accurate calculation of your throughput capability.

Seiki Scheduler allows you to create a realistic model of your capacity by defining the key factors such as resources, individual workplace efficiency, shift times and calendars. It helps you to work leaner. Stock levels are reduced as materials are only ordered when required, improving cash flow. Operations are only scheduled when resources are available, reducing work in progress and avoiding bottlenecks in production. The resulting efficiency and productivity improvements also mean you can avoid unnecessary subcontracting.

Finite doesn’t mean you’re restricted to a short term view. The advantage of having a dynamic system combined with a comprehensive capacity model provides a more reliable view of future availability. This has company wide benefits as it supports strategic business planning and forecasting.

As a decision support tool Seiki Scheduler can help you maintain the balance between demand and capacity.

It can help to identify and justify opportunities for increasing capacity by:

- Offering overtime
- Subcontracting work
- Splitting batches
- Avoiding bottlenecks

It can help to visualise and account for events that can cause reductions in capacity such as:

- Machine breakdowns
- Operator absence
- Scrap or re-work
- Excessive changeover times

With the Seiki Scheduler you can be confident that you are always working with the latest information.
Interactive Graphical Planning Board

One of the features of the software that we’re frequently told makes it stand out, easy to use and simple to learn is the graphical planning board. It provides a fast visual summary of the loading of all active orders along with the essential production information associated to their individual operations, such as works order number, drawing number, quantity and due date. The routing information required for scheduling, e.g. operation numbers, resource(s) to be used, setting and cycle time, are also available.

- Quickly assess the impact of changes with colour coded analysis
- Create snapshots of your ‘what-if’ scenarios and then load the most effective plan
- See the live ripple effect of any operations not starting on time
- Adjust individual resource availability and efficiency for the most accurate capacity model
- Perform collaborative scheduling; sharing scenarios using graphical simulation

Your available capacity can be dynamically updated within the planning board. Reducing or increasing the number of available hours of each resource directly on the plan allows you to immediately see the impact of the change, which is essential when reacting to unexpected events, such as machine breakdowns or staff absence. With critical delivery dates to be met, this extra time to problem solve can be a significant advantage. It also means you can maintain a positive, open line of communication with your customer regarding the current status of their job.
The system helps take the time, complexity and errors out of planning with built-in rules that apply a sequencing logic when scheduling works orders onto the planning board. These scheduling rules can be further constrained at the operation level, which means that it is possible to set rules regarding overlapping and earliest start dates against individual operations, as opposed to being limited to a single global rule. This enhanced level of configurability means that all critical factors are accounted for and it helps to produce the most effective baseline schedule from which you can take any necessary interventions to make improvements.

It’s at this stage that you’re ready to harness the experience and insight of your planning team to refine and make adjustments to the plan. Individual operations can be easily moved around the planning board using the drag and drop feature to carry out ‘what-if’ analysis. A traffic light system provides you with a clear visual indication of the effects and impact of these changes across the entire workload. Any operations or orders that are delayed as a consequence can then be re-scheduled in order to prevent late deliveries. This process can be repeated without affecting the live schedule, until you achieve an optimal plan that keeps customers happy.

Integration

Seiki Scheduler can be run stand alone, allowing you to manually enter routings, or interfaced to your existing business management system for a completely integrated end to end manufacturing solution. Using our proprietary EAI (Enterprise Application Integration) software we offer an intelligent interfacing solution between your existing ERP/MRP/PLM systems or other industry standard databases to the Seiki Scheduler database. EAI provides bi-directional upstream and downstream data transfer, automatically exchanging customer and works order information for a dynamic, real-time connection between the shop floor and top floor operations.

“The visibility of upcoming capacity provided by Seiki’s planning and scheduling software is fantastic. It allows us to confidently decide whether to take on work and promise delivery dates we can expect to meet.”

NICK PHILLIPS, MANUFACTURING MANAGER
ILMOR ENGINEERING
Performance

Seiki Scheduler simplifies the performance analysis process by summarising resource and utilisation information into graphical displays for live reporting and forward visibility.

In the drive to become more competitive, now more than ever the pressure is on to minimise non-value added activities through the process chain. Metrics such as planned versus actual job time comparisons are the first stage in uncovering barriers to achieving maximum production efficiency. Resource utilisation data can then help to pinpoint the bottlenecked resources that are directly impacting the process chain so that you can focus on removing all the non-value added tasks that they are performing, resulting in improved throughput.

Production capacity management and resource utilisation are both critical contributors to improved business performance. As such the Seiki Core Scheduler is a strategic decision support tool that can help you uncover opportunities to increase profits, enhance competitiveness and improve customer service. It’s user-friendly visual format makes it easy to share this insight with your wider team.

- Get more valuable data to reduce decision and action time
- Visual format for easier interpretation and consumption of data
- Share your business critical production data with the wider team
- Create more time for problem solving and strategic planning activities
- Stay agile and flexible with a reliable, consistent and scalable solution
- Calibrate your business goals by balancing revenues, customer satisfaction and operational performance
- Understand your performance against KPIs.
- Identify critical factors, understand interdependencies and contextualise performance data
- Revitalise and enrich your ERP system with detailed manufacturing process information, from start to delivery
Stay Connected

The most effective way to ensure the flexibility and agility needed to initiate or respond to change is to maintain an effective, synchronised flow of accurate information throughout your business. This is where digital technologies help to create a holistic view of your manufacturing operations and enable you to visualise the ripple effects of events that occur throughout your business. Seiki helps your teams stay connected throughout the works order lifecycle with an integrated package of modular software that ensures data from shop floor can contribute directly to the effective planning and management of the production facilities. Once you’ve gained this greater level of insight into your manufacturing performance, and used factual knowledge to make positive changes, you’ll never want to go back to relying on guesswork and assumptions.

Integrate.

Seiki SFDC

The Seiki SFDC electronic work queue module delivers a prioritised work-to-list to the operator on the shop floor. From the work queue, the operator is able to advise when jobs are being started or completed either manually or via barcode scanner. This data is then fed back directly to the Scheduler, so any overrunning jobs will automatically be pushed back on the planning board within the defined scheduling rules. The work queues have bi-directional synchronisation with Seiki Core Scheduler and consequently any changes made to the schedule are visible on the work queue.

Seiki Monitoring

Seiki Monitoring records operating conditions and status changes for detailed analysis of the productivity of each machine and/or resource, together with non-productive reasons. If you’ve assumed an 80% efficiency across your resources but the machine utilisation data collected via Seiki Monitoring has shown that it’s only 60% then you’ve effectively generated plans that are at best overly optimistic and at worst unrealistic. Using this data to refine your capacity model builds a greater level of integrity into your planning and scheduling and as a result your On-Time Delivery to Commit performance will improve.
Seiki Systems Ltd
Olivier House
18 Marine Parade
Brighton
East Sussex
BN2 1TL

Tel: 01273 666999
Email: sales@seikisystems.co.uk

About Seiki Systems

Seiki has been specialising in digital manufacturing solutions since 1992. Today our portfolio comprises of a suite of integrated software modules that deliver a live, visual and dynamic picture of the production process. Our production control and manufacturing execution solutions maximise the productivity of production equipment and plant resources by monitoring and managing the complete works order lifecycle.

We provide a complete service that includes planning, installation, implementation, customisation, training and after sales support. Our aim is to work with you as your strategic industry 4.0 (4IR) operational manufacturing management solution partner to secure your return on investment and support your business as it grows.

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