SeikiSOFTWARE

Seiki AIR Monitoring & OEE

Manufacturing Productivity Solution

Machine status monitoring, utilisation performance analytics and overall equipment effectiveness for tackling productivity losses

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Live and Accurate Resource Performance Data

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When you've got production targets to meet and the challenge of keeping costs under control, it's essential to have a true and accurate picture of your manufacturing resource activity.

Manually collecting manufacturing data often leads to silos of information, in incompatible formats and it is frequently out of date as soon as it's captured. Seiki AIR Monitoring helps build greater integrity into the measurement of your manufacturing equipment performance. It enables you to quickly identify, evaluate and minimise downtime, thus helping to improve equipment availability and work throughput – your ROI.

Machine monitoring is often a quick win entry point onto your factory digitalisation journey. As soon as your resources are connected, you can start to gather effective utilisation data that can help you tackle productivity losses.

Connect, collect and continuously improve

We have over 30 years experience developing methods to connect to all types of manufacturing equipment. This is so that you can automatically collect essential machine data that will give you the live status visibility, control and performance analytics, from your entire shopfloor.

Seiki AIR supports a direct Ethernet data connection to many machine controls, with most modern equipment equipped with network components that allow them to be connected to the network.

If your machine supports MTConnect, OPC UA or other proprietary machine protocols, and the data is available, Seiki AIR will also record non-optimal running states such as spindle speed and rapid feed override, and non-critical alarm conditions.

Visibility of your entire shopfloor

Where an Ethernet connection is not available, typically for legacy equipment, we have digital I/O hardware devices and current sensors that will still allow you to automatically identify if a machine is in a productive or alarm state.

If you're looking for real insights into the performance of your critical manufacturing resources, you need a solution that is scalable, future-proofed and has the potential to deliver richer data.

Machine Status Monitoring

The system captures productive and non-productive events through a combination of automatic data collection and a simple user interface that enables the operators to feedback the reasons for downtime.

- Automated data capture, e.g. running or alarm conditions detected via signals received from the machine tool, provides continuous recording of production time.
- Operators enrich the data by entering other status changes and reasons for the machine being in a non-productive state, for a fuller picture of your resource utilisation and true insight into your utilisation performance.

All activities are recorded in the audit trail, which captures the date, time, event description and user ID.

Customisable Status Grid

With Seiki AIR you get a cost-effective solution that enables you to evolve your system as your requirements change. To help you get started, we provide a pre-defined status matrix that is fully customisable. Once you're ready to start delving into the specific reasons for machine stoppages, it's as easy as adding the statuses that you wish to analyse. It's common to update and refine the matrix as you gain a clearer picture of your resource activity, and/or need to understand the impact of introducing new processes, products or resources.

Seiki AIR Monitoring can deliver benefits such as:

- Real time visibility of all events occurring on your machines/resources. Supports 24/7 machining and gives you confidence that unmanned production is monitored
- Enable people to identify potential problems and take a proactive approach to maximising throughput
- Simplify and streamline the data capture process to reduce data entry errors
- Maximise the utilisation of your resources and base decisions for investment on real data
- Improve operational efficiency by understanding performance down to the individual resource

Watch this video:
Accelerate your path to data-driven manufacturing

Defining your own downtime codes allows you to more closely align them with your specific environment, resulting in more meaningful and useful data.

- Involve your shopfloor team to help improve buy-in and to make sure you have the right options.
- Share your definitions with all stakeholders and agree their roles in capturing and reporting data - clarity and transparency are the keys to success.
- Agree how the information will be used for improvement actions, both at a tactical and strategic level.
- Schedule regular reviews of the data to set and track performance targets

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Connecting Your Shopfloor

Operator Dashboard

We've enhanced the traditional Operator screen into a more information rich view of the currently selected resource. As well as making it easier to input downtime reasons, shopfloor users can:

- Add comments such as shift handover notes
- View and monitor the performance of each resource they have been assigned
- Manage notifications
- View and search audit trails

Having a shared view of the information available to supervisory and management teams helps to empower your shopfloor team to make a direct contribution to improvement initiatives, take corrective actions, and apply their experience and knowledge to prevent or limit unnecessary non-value adding activities.

Accurate and Consistent Data Entry

There's no good substitute for correct data entry at point of event. The system uses monitoring logic, configurable notifications and on-screen prompts to encourage accurate and consistent resource activity data entry on the shopfloor.

- Monitoring logic ensures that users are presented with appropriate status selection options and that notifications are trigged.
- The system prompts and then reminds users to resolve unknown stoppages by entering the correct downtime reason.
- Time in status thresholds can be defined for any state, so that users are notified when they are exceeded. This is to help improve responsiveness to downtime causes and start to minimise them.
- The data captured is instantly available for analysis.

No limitations to the number of users in AIR means you can put live information and analysis in the hands of your entire team.

The system can be used on almost any device with a browser, resulting in lighter IT infrastructure demands at point of use and greater mobility.

Being role-based, it will fully support your team in their responsibilities and goals by giving them the tools they need to complete daily work activities.

Utilisation Performance Analysis and Reporting

Live Status

The system provides your supervisory and management teams with four Live Status screens. Each provides a fast visual overview of the current status of every connected resource as it's updated on the shopfloor. Instantly see, at a glance:

- Resources that are in a non-productive or alarm condition
- The utilisation performance of each resource in the current period
- Resources that are under-performing against your utilisation target
- The user that last interacted with the resource

Having this information at your fingertips helps shape the daily activity of your factory. It minimises the need for unnecessary walkabouts or a reliance upon reporting of problems to know what's actually happening on the shopfloor, which means people can react quickly to current events. Keeping everyone informed of what's happening at any given moment, makes it easier to make decisions and better manage limited resources.

Resource Utilisation

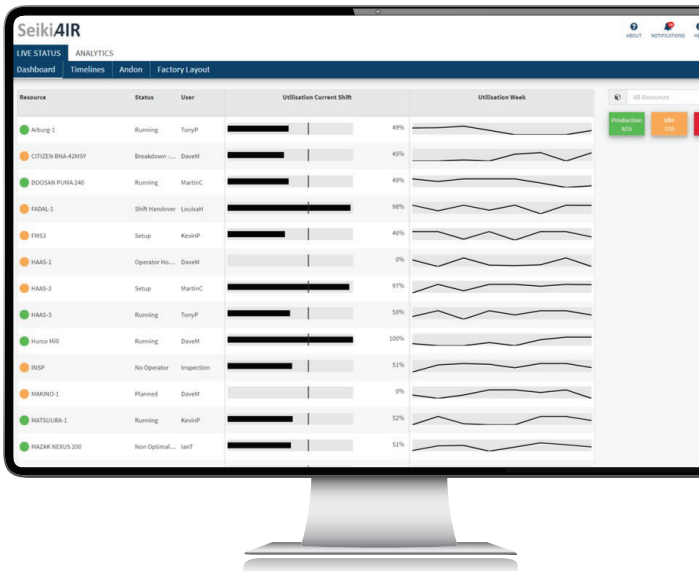
The utilisation analysis screens in Seiki AIR provide detailed insight into the productivity of each machine, together with non-productive reasons. With multiple ways of viewing your performance data, you can quickly identify the larger quick win improvement opportunities, as well as uncover previously hidden, or unaccounted for, productivity losses.

- Interactive charts enable you to instantly filter, compare and analyse machine utilisation data
- Drill down into each Status Category for a more detailed look at all the events occurring on your resources

You'll always be working with the very latest information collected live from the shopfloor, which means you can make timely and informed decisions, based on facts. The Analytics should therefore be used daily by supervisors to respond to sudden changes or unexpected events, to take short term, tactical remedial actions. The data should also be reviewed regularly at a management level to identify strategic improvement initiatives.

Additional features:

- Non-critical machine generated alarm codes can be captured automatically (where available) to provide insight into micro stoppages
- Configure resource reporting groups for users and manage shifts
- User permission enabled editing of resource status events
- Export data as .csv, .xlsx, .dat, .doc, HTML and PDF
- Configure states to ignore automatic running and alarm signals from machines to improve data accuracy



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Supercharge Your Analytics With OEE

Requires OEE license to be purchased

Uncover all the time that is lost through the manufacturing process

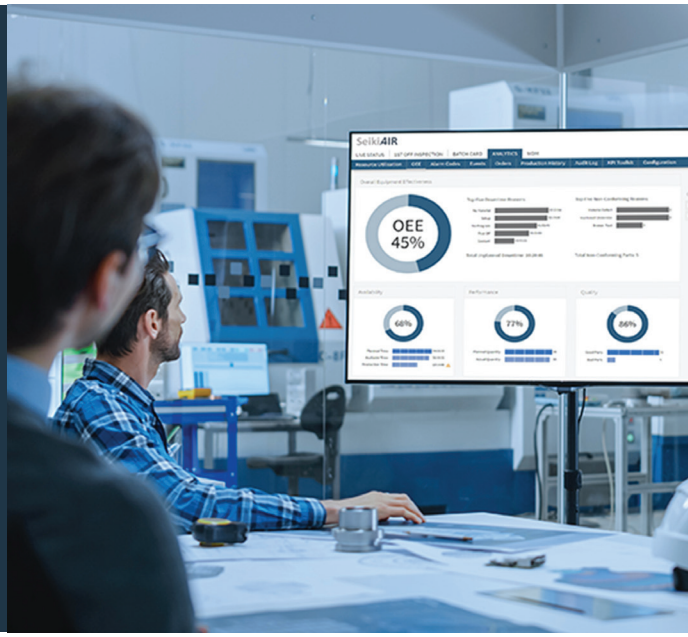
Overall Equipment Effectiveness is a powerful KPI metric that builds upon the insights provided by machine utilisation analysis, and allows you to find and start to address even smaller, often more chronic, productivity losses. It can help you identify and tackle waste and losses across your entire manufacturing process so that you can improve the ratio between what your customers pay for and the actual total time (cost) to manufacture parts, i.e. your margin.

OEE is made up of three factors that essentially identify where you are losing time to unplanned machine/resource downtime, by not making parts within their standard times and by booking non-conformances.

OEE for Discrete Manufacturing

Whilst fully servicing the needs of process manufacturing, we've designed our OEE with the challenges of discrete manufacturing specifically in mind, i.e. when batch sizes are small, have long cycle times or you're running diverse products with differing cycle times.

To accommodate this level of flexibility and complexity, and still achieve an accurate measure of your OEE, you need to have all the underlying data for each factor, part and resource. This is where the power of Seiki AIR comes into play.



The Factors

Availability

The ratio of time resources are in a running state to the planned production time.

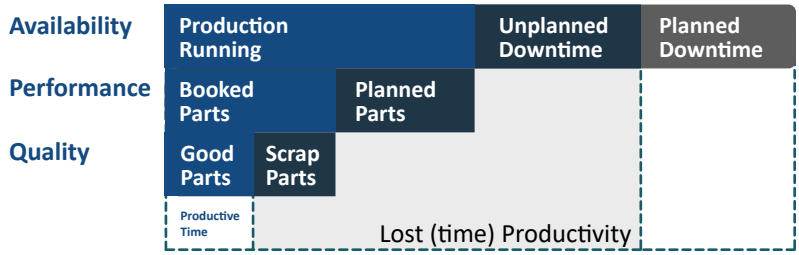
"Availability" refines the Utilisation calculation by subtracting planned downtime from the planned hours, i.e. time that you were never going to be productive.

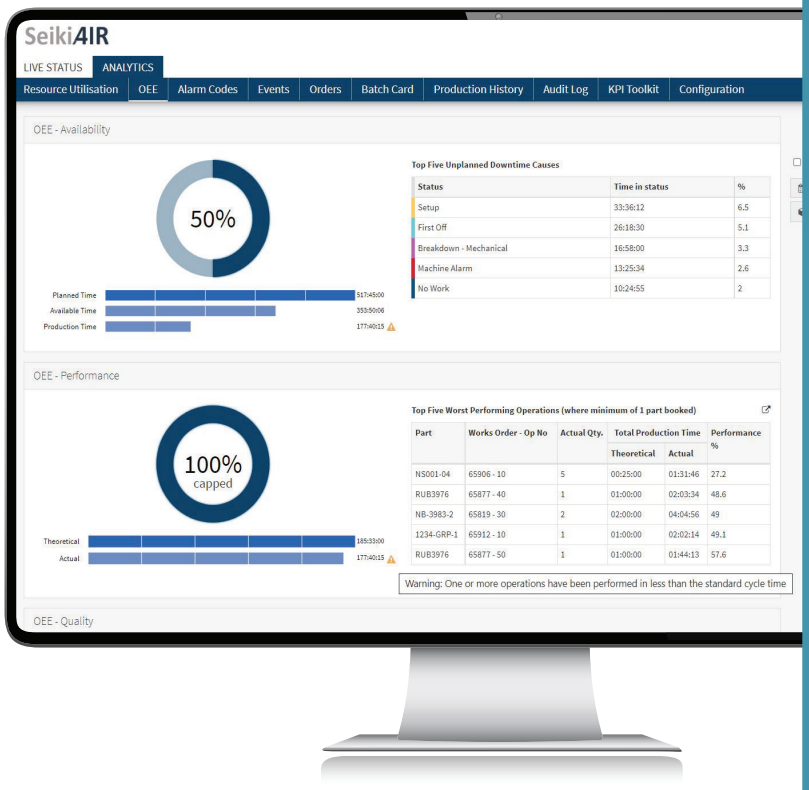
Performance

The ratio of parts booked within the running time to the fastest theoretical total time to manufacture the parts, based on their standard cycle times.

Quality

The ratio of fully productive time, i.e. when good parts are being made, to the total number of parts booked within the running time.





In addition to all the features and benefits of Seiki AIR Monitoring, the OEE module offers:

- Enriched performance information that allows you to focus on what matters to your business
- A single solution. Operators only have to know how to use one system and enter the information once
- A recognised, industry standard KPI that you can use to benchmark progress and use to communicate your successes
- The data you need to improve the accuracy of your production planning by identifying if your standard cycle times are either too high or low
- Insights that can help you to maximise the true potential of your manufacturing operations
- Competitive advantage by finding opportunities for improvement and creativity in areas others may have missed

Flexible Solution

Seiki AIR Monitoring is a pre-requisite to OEE as, once you start to factor in Planned downtime events, you have all the resource status data needed to calculate (and see) your Availability factor. To calculate the Performance and Quality factors of OEE, data related to Parts is required, and we've made it easy for you to get started with two solution options. In either configuration you will benefit from exactly the same, rich OEE analytics dashboards.

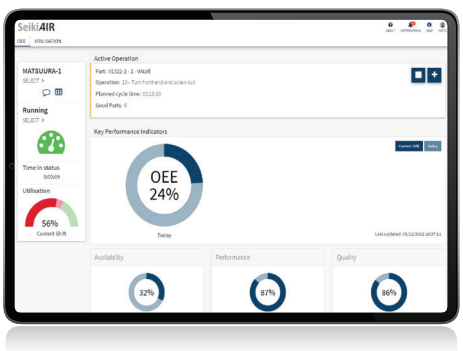
Watch this video:
Understanding OEE and how to use it effectively

Option One

Monitoring Only OEE

By adding an OEE license to a Seiki AIR Monitoring system:

- Your team can administer Part and Operation records in AIR to define standard cycle times.
- Operators search for operations from the Shopfloor OEE dashboard. They then confirm the start and completion, book part quantities and reasons for non-conformances.



Option Two

Monitoring & WIP Booking with OEE

By adding an OEE license to a Seiki AIR Monitoring and WIP Booking system:

- All the Part information required for OEE is inherent in the Works Orders released from the Seiki Scheduler or your existing APS/ERP system.
- Operators are presented with a prioritised digital Work Queue for each resource. All WIP bookings are carried out directly on the panel of the active operation.
- You will have access to additional Production History data that will allow you to drill deeper into planned vs actual performance, down to the individual operation level.

Tackling Productivity Losses

A Process of Continuous Improvement

Monitoring the status and utilisation performance of your manufacturing resources is an essential element of any efforts to improve productivity.

- It will help you uncover previously hidden or unaccounted for downtime causes - even the small stoppages that may be seen as negligible but cumulatively can have a major impact on your performance.
- You'll be able to use the insight into your actual machine utilisation performance to refine the capacity model in your advanced planning system and build greater accuracy into your production schedules.

How do you know if you've had a productive day, week or month? Lack of available data and insights is the biggest challenge facing decision-makers. The decisions that you're making, that impact the manufacturing process and/or business activities, should be based on facts, not estimates or personal opinions. Seiki AIR Monitoring can help you move beyond guesswork and know precisely what is happening at all times on your shopfloor.

Read this article:
Tackling Productivity Losses

Seiki AIR WIP Booking Module

Our live shop floor data capture module supports transparent, frictionless works order processing. It allows you to track the live progress of each operation so you can monitor shopfloor adherence to plan, helping to improve your on-time delivery performance. When purchased and combined with Seiki AIR Monitoring, you'll be able to:

- Report on planned vs actual Setup and Run times, building greater integrity into your standard cycle times.
- Take a 360º view of the production activity associated to Parts and Works Orders, down to the individual operation level.
- Use the insights to understand where you are consistently under-performing or could be making improvements in the production process to increase the margin on jobs.

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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