How to balance your tooling inventory to increase productivity and profits

A guide for manufacturers and machine shops on how to optimise their stocks of tooling

CRIBWISE

When it comes to managing their inventories of tools, manufacturers and machine shops must walk something of a tightrope. On the one hand, they need to be sure that tools will be available to them when they are needed to carry-out critical jobs. On the other hand, the overstocking of tools can create a host of other problems. With cloud-based inventory management software, manufacturers and machine shops can strike a harmonious balance with their stocks of tools. Read on to find out how.

Following the disruption to global supply chains caused first by the human coronavirus (Covid-19) pandemic and then the conflict in Ukraine, owners and managers of machine shops might find it tempting to keep larger stocks of tools than they might otherwise need. After all, they rely on their tools and equipment to get their jobs done and when these tools are not available, it can have a significant impact on their businesses. This move from just-in-time stocking to just-in-case stocking, however, can have significant impacts on the efficiency and profitability of their operations.

The cost of stockouts

A tooling stockout occurs when a machine shop or manufacturing plant runs out of a particular tool that it needs to produce parts. Such stockouts can happen for a variety of reasons, such as the aforementioned disruptions to the supply chain, an unexpected surge in demand and/or poor inventory-management practices. Whatever the cause, tooling stockouts can be disastrous.

Firstly, such stockouts can cause production to grind to a halt until the necessary tool is restocked. This can lead to significant delays to manufacturing operations, missed deadlines, lost revenue and frustration for customers.

If a machine shop or manufacturing plant needs to source a replacement tool from a different supplier, or pay for expedited shipping, tooling stockouts can also increase costs. Even if the necessary tool is eventually restocked, the added costs can have a negative impact on the bottom line.

When a tool is not available, operatives might have to make-do and use a suboptimal tool for the task at hand, or might try to work around the missing tool, reducing the precision of their output. As such, scrap rates and the amount of post-processing work required might increase, which can further delay production and increase costs.

Finally, tooling stockouts can be damaging to the morale of operatives. When dedicated people are unable to do their jobs properly due to factors outside of their control, such as missing tools, they can get frustrated. As a result, their productivity and the quality of their work can decrease. In extreme cases, this damage to morale can be so significant that operatives start to skip work or look for other jobs.

Safety in numbers

As such, it might tempting for owners and managers to err on the side of safety when it comes to managing their stocks of tools, holding more of each item than they actually need at any given time. If they are not careful, however, they can easily find themselves with another problem; inventories that are out of control. This can create a whole host of issues that can be just as damaging to the running of a machine shop as stockouts.

Counting the costs

Firstly, and most obviously, the overstocking of tooling can increase costs. When a machine shop has too many tools, it means that more money has been invested into purchasing and maintaining those tools than is required. Money tied-up in unnecessary assets is money that could be spent elsewhere on profitable endeavours.

Secondly, huge amounts of time can be spent maintaining and managing a tooling inventory. Tools need to be ordered, stored, picked, counted and relocated. The larger the inventory, the greater the number of transactions and tasks that need to be undertaken, and the greater the number of people involved. If this administrative work is not carried out efficiently, it can create chaos.

Indeed, a disorganised tooling inventory can breed disorganised working practices. Tool stock might be uncontrolled and simply stacked by machines, getting in the way of work, forcing operatives to make detours and sometimes even posing safety risks. A large tooling inventory can make it harder for operatives to find what is needed and can cause orders to be delayed, and un-necessary re-orders of tools and costly mistakes to be made.

Formulas for success

These costs can be difficult to quantify accurately, but in order to get serious about tooling inventory management, that big picture is needed. This can be achieved using two widely accepted metrics.

The first is inventory turnover (also known as Stockturn), which is calculated using the following formula:

$$\text{Inventory turnover} = \frac{\text{cost of goods sold}}{\text{average cost of inventory}}$$

Another widely used ratio, called inventory holding period, uses similar data to show how many days, on average, inventory is held. The formula is:

$$\text{Inventory holding period} = \left(\frac{\text{cost of inventory}}{\text{cost of goods sold}}\right) \times 365$$

Making changes

To get on top of their inventories of tools, owners and managers of machine shops will have to evaluate all of the processes they have in place for the ordering, organisation and dispensing of these items.

When it comes to the ordering of tools, some shops employ people solely for this purpose, while in other shops it might be a shared responsibility. Regardless, these professionals will need know the shop's inventory inside out, will need to keep track of the use – and any changes in the use – of these items, and will have to anticipate and evaluate any events that might impact production. They must do all this while taking the two objectives – maintaining low stock levels while ensuring that items never actually go out of stock – into account.

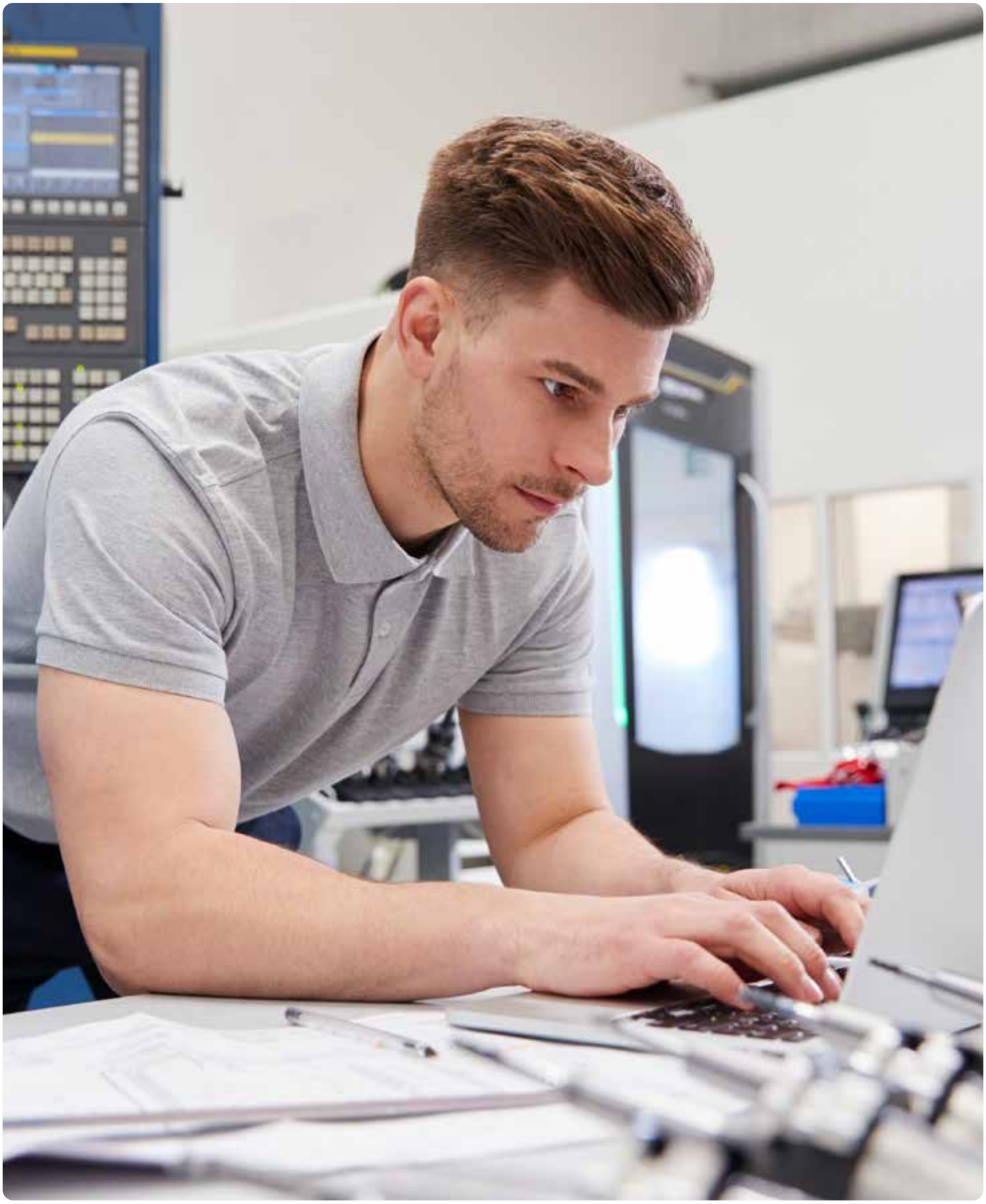
For a small shop producing a limited number of parts, these tasks might be relatively straightforward to carry out. For larger shops producing a wide variety of items, however, the complexity of the decisions that must be made increases substantially. It is unsurprising then that even the most experienced of staff can misjudge stock-levels from time to time, and as we have seen, such mistakes can prove costly if they cause jobs to be delayed.

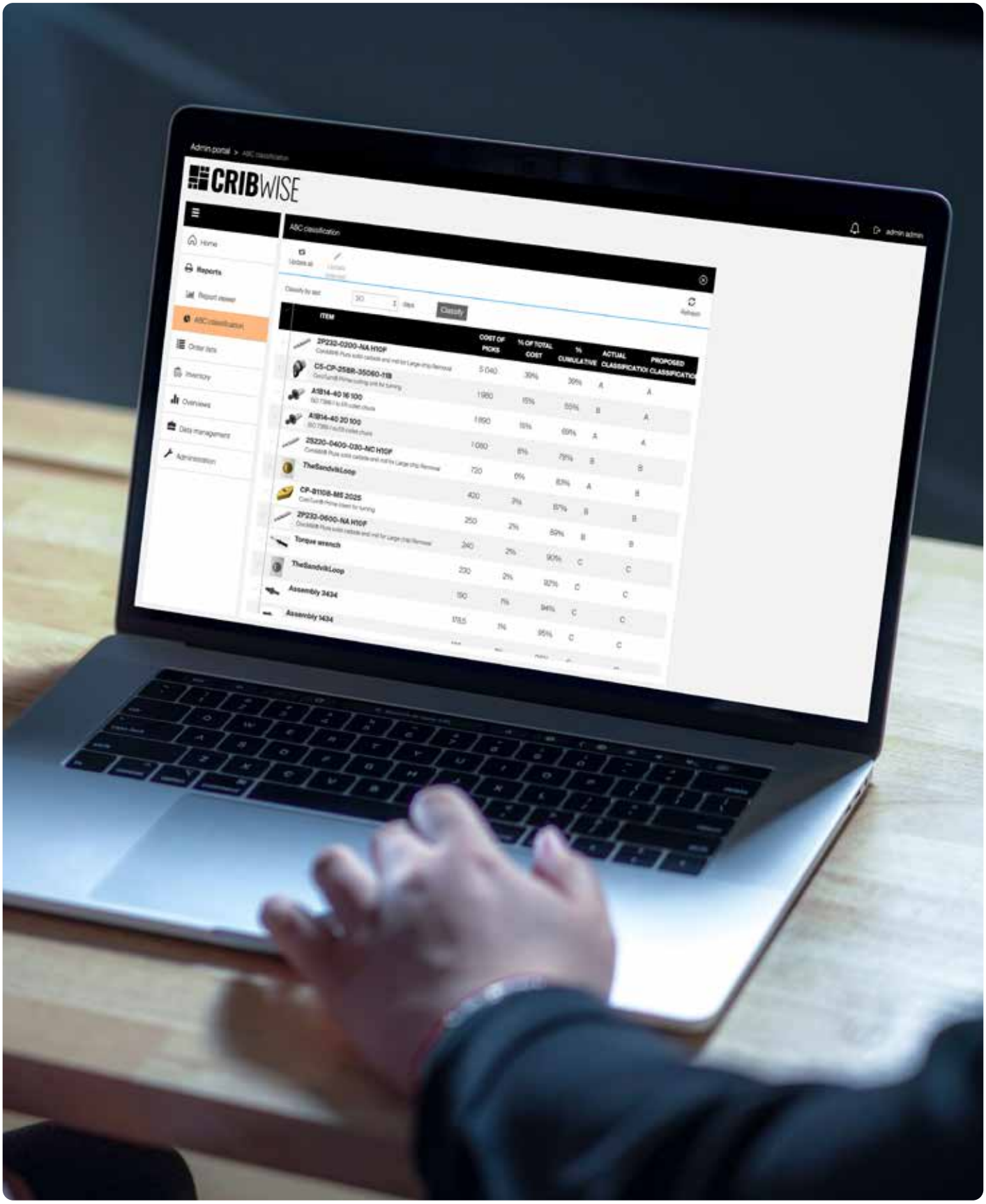
Cloud-based solutions

As such, machine shops are increasingly turning to cloud-based software for the management of their inventories of tools, as well as their equipment, assets and personal protective equipment (PPE). These intuitive and proven solutions are affordable for even the smallest and specialised of machine shops.

The benefits associated with the use of inventory-management software are numerous. It tracks tools from their point of delivery to their destination on the shop floor—slashing administration costs. It grants machine shops better control over their expenditure. Critically, it guarantees that the right tool for a given job will be in stock when it is needed—making production delays a thing of the past.

> **We had a tool inventory of $700k, about 10% of our annual turnover. CRIBWISE reduced our stock levels and automated all orders. This allows me to lead the company forward.**
>
> **Roger Berggren**
> CEO
> Fårbo Mekaniska




Admin portal
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Reports
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ABC classification
Order lists
Inventory
Overviews
Data management
Administration
Update all
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CS-CP-25SR-35060-7B
A1B14-40 16 100
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2S220-0400-030-NC H10F
TheSandvikLoop
CP-B110B-MS 2025
2P232-0600-NA H10F
Torque wrench
TheSandvikLoop
Assembly 3434
Assembly 1434

Smarter by the day

Further, by exploiting the latest developments in artificial intelligence (AI), these software solutions are getting smarter. At CRIBWISE, for instance, we have created a new feature within our software called Stock Optimization. As the name suggests, this AI-driven function optimises a shop's stocks of consumable items—ensuring that production operations can go ahead as planned and dramatically reducing time needed for purchasing. CRIBWISE Stock Optimization ensures an equal or better degree of optimisation than even the most experienced of users doing it manually.

Stock Optimization uses advanced algorithms to track and analyse data on input values and four key criteria:

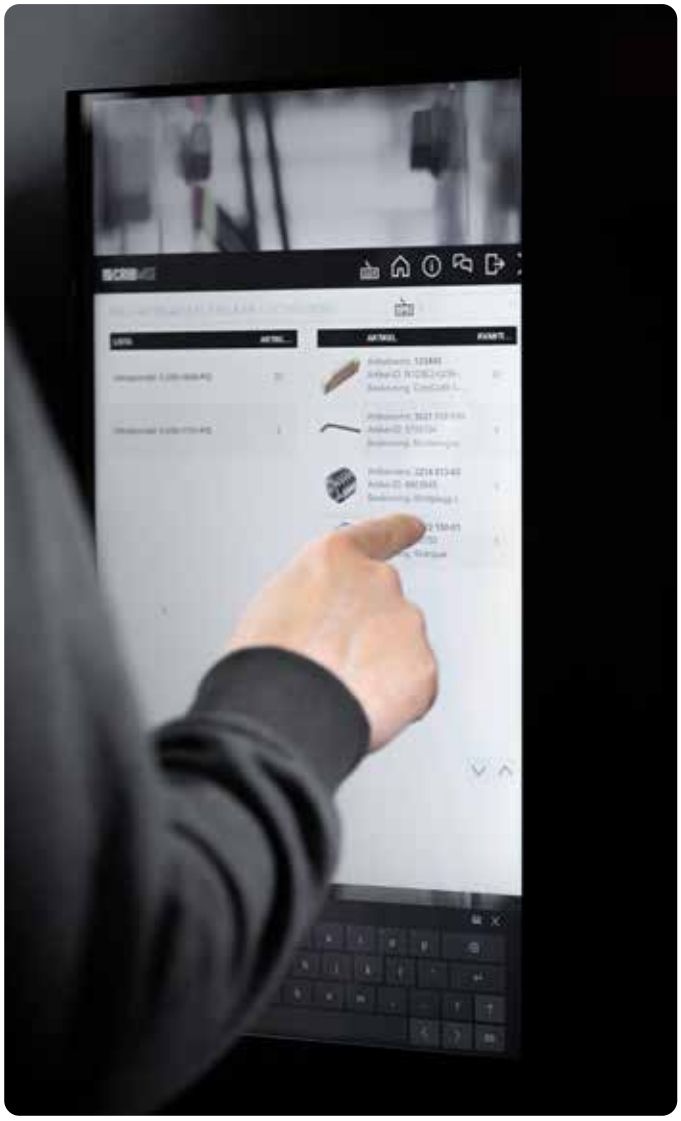
- Training Period – an initial step needed to teach the system;
- Service Level – which is expressed as a percentage of stock availability at any time;
- Safety Stock – additional items kept on-hand to bridge any gaps created by inconsistencies in delivery; and:
- Order Frequency – as in 'how often' and the timing in between orders.

> **CRIBWISE secures the uptime of our machine tools. It is easy to use for operators. You have a clear transparency of your tool consumption. And we have been able to reduce the stock levels for some of the items. CRIBWISE is a perfect match to our needs.**
>
> **Jani Savinainen**
> Supply Chain Manager
> Sandvik Mining & Rock Solutions

Based on the lead times for historical purchases and consumption patterns, Stock Optimizer can then optimise the order point and maximum order levels for tools and consumable items.

Stock levels, and their relation to consumption, can be monitored continuously in reports and the CRIBWISE dashboards. Indeed, the reports on slow-moving items can be used to "cut the tail" of non-used items in stock.

The Stock Optimization feature is available to all CRIBWISE users as an add-on feature to the core software. For more information on how to get started, get in touch.



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