WORK CELL OPERATIONS

SOLUTION FOR PROACTIVE & TRANSPARENT PRODUCTION PLANNING & EXECUTION

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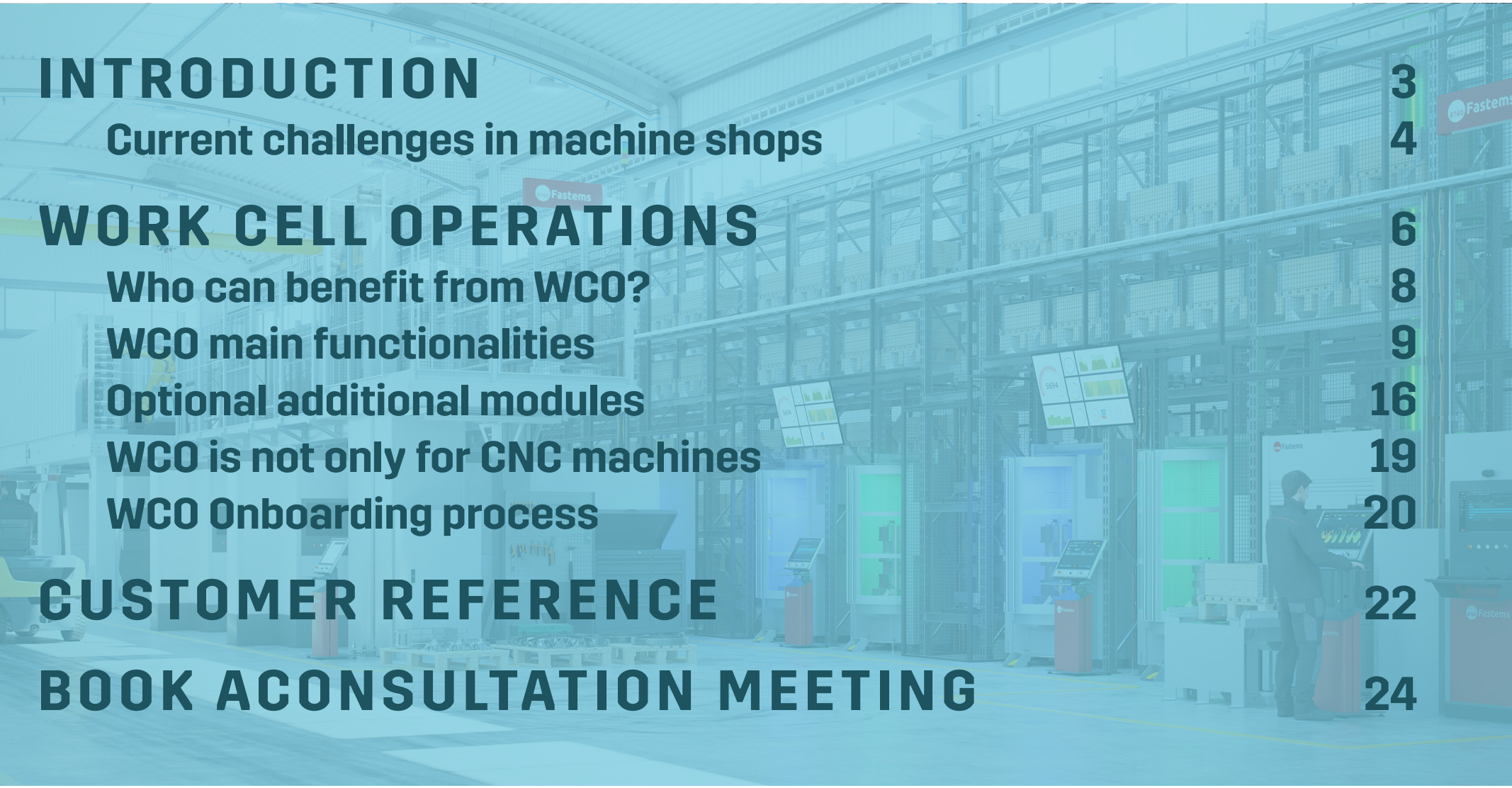


INTRODUCTION

The current landscape

In the modern manufacturing, effective production processes no longer only require-physical extensions and development, but also benefit from cloud and digitization. Manufacturers are under constant pressure to streamline their operations, maximize resource utilization, and respond swiftly to changing market demands. Understanding the demand, Fastems has developed Work Cell Operations (WCO), a Manufacturing Execution System (MES) software solution designed to empower businesses with the tools they need to revolutionize production planning and scheduling. In this intro-duction, we will guide you through the fundamentals of WCO and how it could digitize the way manufacturers manage their production, enabling paperless production and seamless material management to its users!

CURRENT CHALLENGES IN MACHINE SHOPS

01. A lot of Exels & papers around

The reliance of manual methods such as Excel spreadsheets and paper documents for production management is a common challenge for current machine shops, **especially for non-automated operations and stand-alone machine tools.** Even in an automated production process, there could be steps and operations that remain manual, thus creating extra documents to handle. This dated approached causes inefficiencies and errors for the operations

02. Lack of production awareness

In non-automated environments, the lack of integrated information and automated data transfer from stand-alone machines leaves not only operators, but also managers in the dark regarding real-time machine performance, job progress, and material inventory. This information gap can lead to production delays, resource wastage, and sub-optimal decision-making

03. Inefficient work & material flow management

Each component's journey, from raw material intake to the final product, demands meticulous record-keeping, often is recorded on paper or spreadsheets.This process of documenting and tracking materials and parts introduces a heightened risk of human error, making it challenging to ensure efficient inventory and material flow management.

04. Communication problems between shifts

The transition between shifts often involves important information handovers, such as machine settings, job progress, and any unexpected/ possible issues. However, without a proper documenting tool, the communication between operators across shifts can be a significant challenge and may result in loss or miscommunication of critical instructions

05. Ineffective planning & scheduling work orders

In the context of part manufacturing it is highly important that the machine shop can manage and streamline the scheduling for operations needed to complete an order, especially for non-automated operations, so that they can ensure their orders are completed on time. However, it is a common struggle in machine shops nowadays to effectively schedule work orders and guarantee timely completion of the order without a proper digital tool. This lack of visibility results in miscommunications and scheduling conflicts for operators, complicating and delaying the process.

WORK CELL OPERATIONS

AUTOMATION BEYOND MACHINE TENDING

Combining key functions of MES and APS, Work Cell Operations (WCO) is abringing benefits of paperless production, decreased order-to-production time and transparent data at your fingertip!

As part of Fastems' Digital Manufacturing portfolio, WCO provides automation beyond machine tending and physical systems; the software connects and integrates various dfferent non-automated equipment, either as an independent solution or under the same control of Fastems' FMS. With WCO, stand alone machine tools and non-automated operations are now part of an aumation system, without any physical integration.

This, in fact, really helps solve the challenges posed above. No manual records of operations means more convenient records of material flows and transparent

WHO CAN BENEFIT FROM WCO?

MANAGEMENT

In a modern shop-floor, WCO revolutionizes the mangement's operations. The system allows the management personnel to effectively orchestrate production planning, accurately estimate on-time order delivery capacity, and forecast order deliveries well into the future. They can seamlessly allocate resources accross various machining centers, maintain full transparency regarding production from past to future events, and preceicely track production KPIs in real-time at a system level, empowering data-driven decision making.

OPERATORS

In a complex shop-floor, WCO transforms operators' daily routines by providing organized work-related instructions and orders, making them easily accessible and reducing confusion. WCO helps operators identify high-priority tasks and have a clear understanding on what needs to be done next, streamlining their daily workload. Addittionally, WCO ensures efficient resource allocation, allowing operators to easily access materials and tools needed for their work. It also excels in material inventory management and logistic coordination, keeping operations running smoothly.

WCO MAIN FUNCTIONALITIES

The target of a modern shop floor is to **enhance the efficiency and productivity**. A manufacturing execution plays the role of a digital nervous system for manufacturing operations, by connection various elements of the production process, from machines and equipment to personnel and inventory. It offers **real-time monitoring and control**, allowing for **data-driven decision making** and **process optimization.**

The following pages describe how main features help streamline shop floor operations.

ORDER TO PRODUCTION IN NO TIME

Easy-to-use order management, together with **fast and flexible order input**, create **clear views for the end operators** of the upcoming tasks in their job lists. If there is ERP in place, the **orders can also be imported from ERP automatically** to WCO, allowing for seamless order transferring between systems.

ENHANCED PRODUCTION PLANNING & SCHEDULING

WCO allows for **real-time production optimization** based on orders & resources, through **highlighted resources deficit views** and **automatic scheduling of manufacturing operations** (including setup requirements). In addition, users can also **monitor the progress of the orders** through (WCO view) and **estimate the on-time delivery capacity** with (WCO view).

INTELLIGENT RESOURCE MANAGEMENT

MMS WCO can **inform the operator** about the **needed and missing resources**. This includes information on **work setup, raw materials, cutting tool and NC programs** (if interface is available for these views).

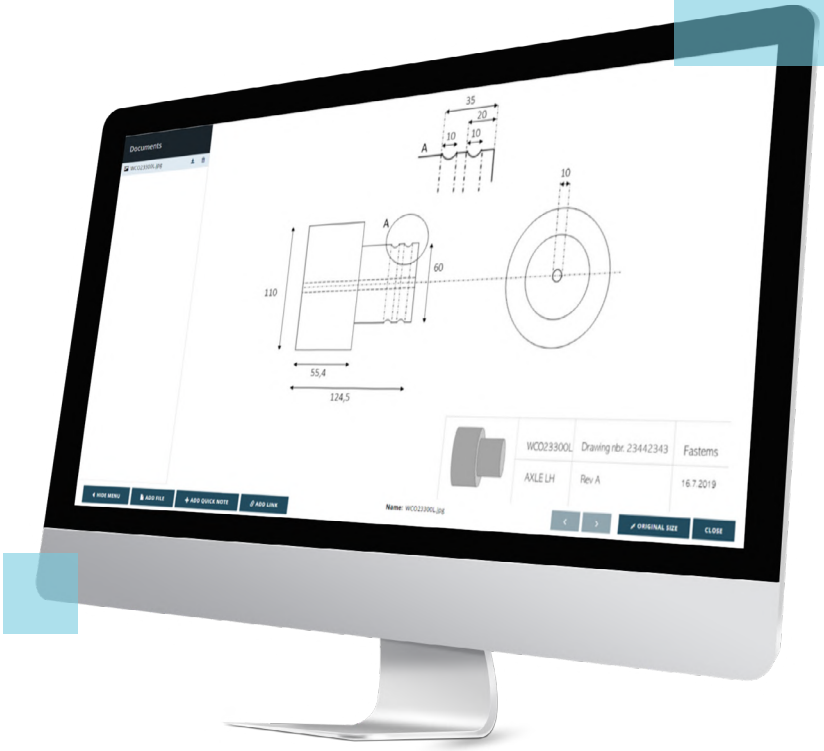
MATERIAL LOGISTICS MANAGEMENT

This view provides users, especially operators, the **automatic transfer task lists** that show clear tasks **for both internal and external logistics**, from which they can see easily which parts should be moved, when and where. This helps **oprimize inventory levels, minimizing** carrying costs.

PAPERLESS OPERATIONS

WCO reduces paperwork by **digitalizing all the processes and documents**. Through WCO, all the production documents would be attached to part master data & production orders, **allowing operators to access up-to-date documents whenever needed.**

Use case example: part setup instructions, quality assurance and measurement instructions, notes or comments for the next process phases.



REAL-TIME DASHBOARDS

Customizable dashboards with extensive widget library that provide real-time **insights into production performance,** enabling q**uick decision-making and monitoring of key-metrics.**

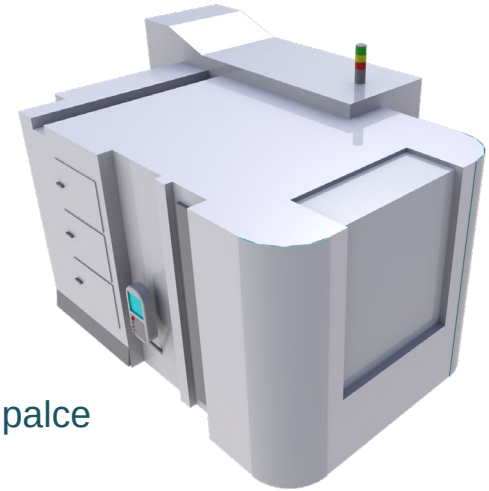
OPTIONAL ADDITIONAL MODULES

Machine Monitoring & OEE

Track and visualize machine KPIs

NC Program Management

Manage all NC programs in one palce



Tool Magazine Reading

Know which tools are needed, where and when

Tool Data Management

Eliminate human errors by automatically transferring the right tool data

MACHINE MONITORING & OEE

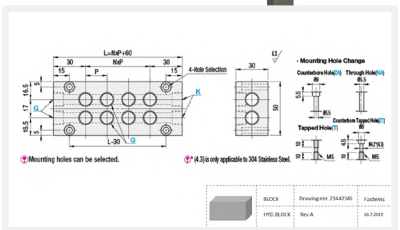
This view allows for **real time tracking & data-analysis** related to the performance and status of the machine. These metrics include machine status, utilization, availability, and OEE (Overall Equipment Effectiveness).

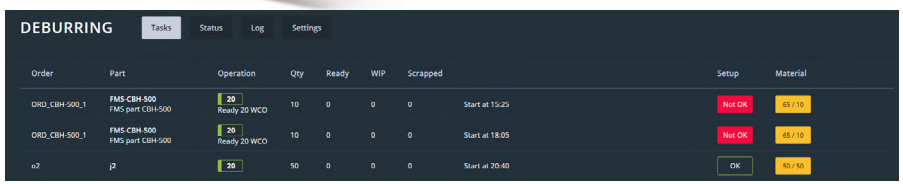
NC PROGRAM & TOOL MANAGEMENT

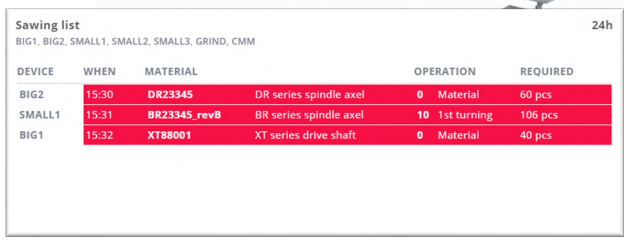
This interface allows you to manage all NC programs in one place, making it convenient for operators to know which tools are needed and by when. WCO in this use case can also help eliminate human errors by transferring the correct tool data to the machine.

WCO IS NOT ONLY FOR CNC MACHINES

WCO generate a list of needed materials for other machines/stations as well, such as saw cell or de-burring operations.







WCO ONBOARDING PROCESS

1

Identify bottlenecks

Before taking any solution into use, it is important that you know where your issues lie. Do you have papers all around that you cannot keep track of properly? Is it difficult to track order progress, and WIP inventory at each stage for your stand alone machine? Are these creating unnecessary hassles for production management? Finding answers to these problems will help create a foundation for choosing the right solution for your needs. And if you're not sure, we are always ready to help you find out and give you suitable recommendations.

Consultation Meeting

2

To validate the needs for your production, we will hold a demo meeting during which our professional maps your production's needs and challenges, and see how WCO could be utilized for your own production. At this stage, we would bring people and machines into the working loop: defining the user groups and identifying success criteria. Even though WCO is a standard solution, the way each user utilizes it would be different depending on different needs and factors, such as how many machines to be connected, who will be the main users, and what processes are integrated into the software. This meeting is about us getting to understand more deeply your factory floor equipment and resources, and about you understanding ways of using the software, so that you can make the most out of your invesment!

3

Implementation & Training

After we have come to agreement on how WCO will be used for your production, the implementation process starts. Thanks to our 40+ years of expertise from the field of factory automation, we have the ability to carry these onboarding processes out with minimum production disturbances – it usually takes no more than a day to get things rolling and most of the work can be done remotely without having to bother your personnel. Where we do have to ask for your active participation, though, is the training part: the customized training delivered by our expert is to ensure that everyone knows how take the most out of your very own WCO for your production needs.

User Testing

4

During this trial period, you get to put your hands in the mud yourself to see how the benefits of the WCO can be put into practice on your shopfloor. Even though this period is mainly carried out by yourself, we are not going anywhere – if any questions, problems or feedback comes up, you are always free to contact your designated professional from our end. We will also conduct a result analysis of this period and benchmark it against the predefined success criteria, so that you understand the effects of WCO on your production execution. Then, the decision is yours!

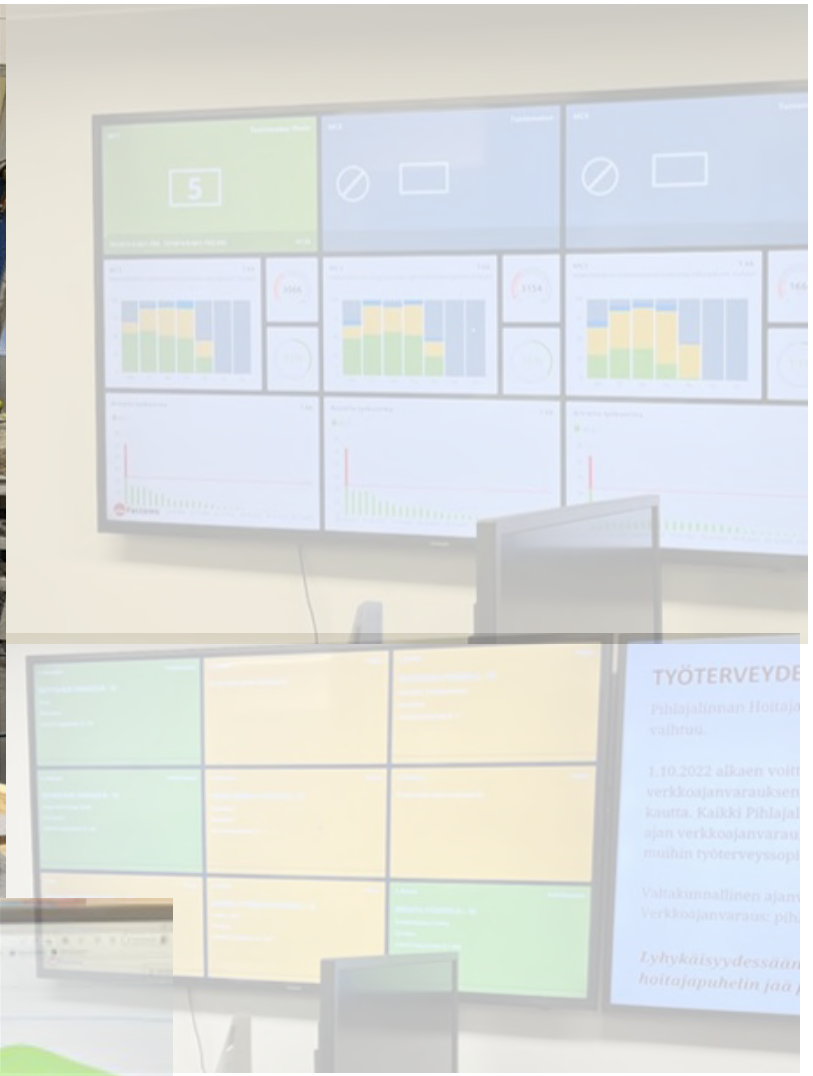
CUSTOMER REFERENCE

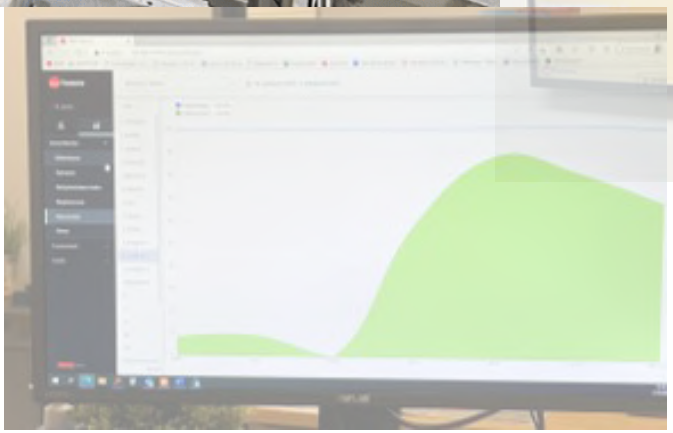
JOENSUU CNC-MACHINING

Joensuu CNC-Machining Oy is a subcontracting company in Finland that is taking their first steps into digitization with WCO. Ever since adoption, the company has utilized perfectly the use cases of the software: they got rid of the majority of paper documents, automatically generate work lists to each operation cell, allowing operators to have visibility over where products are. In addition, insead of using paper, excel, or other manual tools, operators can now pick an order and start/finish through just a few clicks. They also manage to reduce significantly the time used for production planning and scheduling as well as time foe gathering order progress infomation.

In addition to these fundamentaluse cases of WCO, Joensuu CNC has also leveraged the software thoroughly for different purposes, including:

- **Support daily/weekly production meetings**: using WCO Dashboards. The dashboards are always visible at the production office for transparency.
- **Product pricing caluction**: using the collected data from WCO
- **Set up management:** operators can see from the work lists which order can be produced with the active set up
- **Logistics tasks:** Operators know where the finished materials can be transferred to. Transfer times are also calculated with WCO.
- **Board meetings**: the collected data are shown as visual reports in board meetings.





Fastems’ visit to Joensuu CNC Machining

BOOK A CONSULTATION MEETING

We would explore the most effective methods for enhancing the production of your stand-alone machines and manual operations using WCO. Let's work together to demonstrate the value it can bring.

Learn more at: www.fastems.com/work-cell-operations

CONTACT US

Bulza Krajkova
Product Manager, MMS

Email: bulza.kraikova@fastems.com
Mobile: +358504756040