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REPORT: MANUFACTURING IN THE COVID-19 ERA.

The top 3 challenges and how to overcome them

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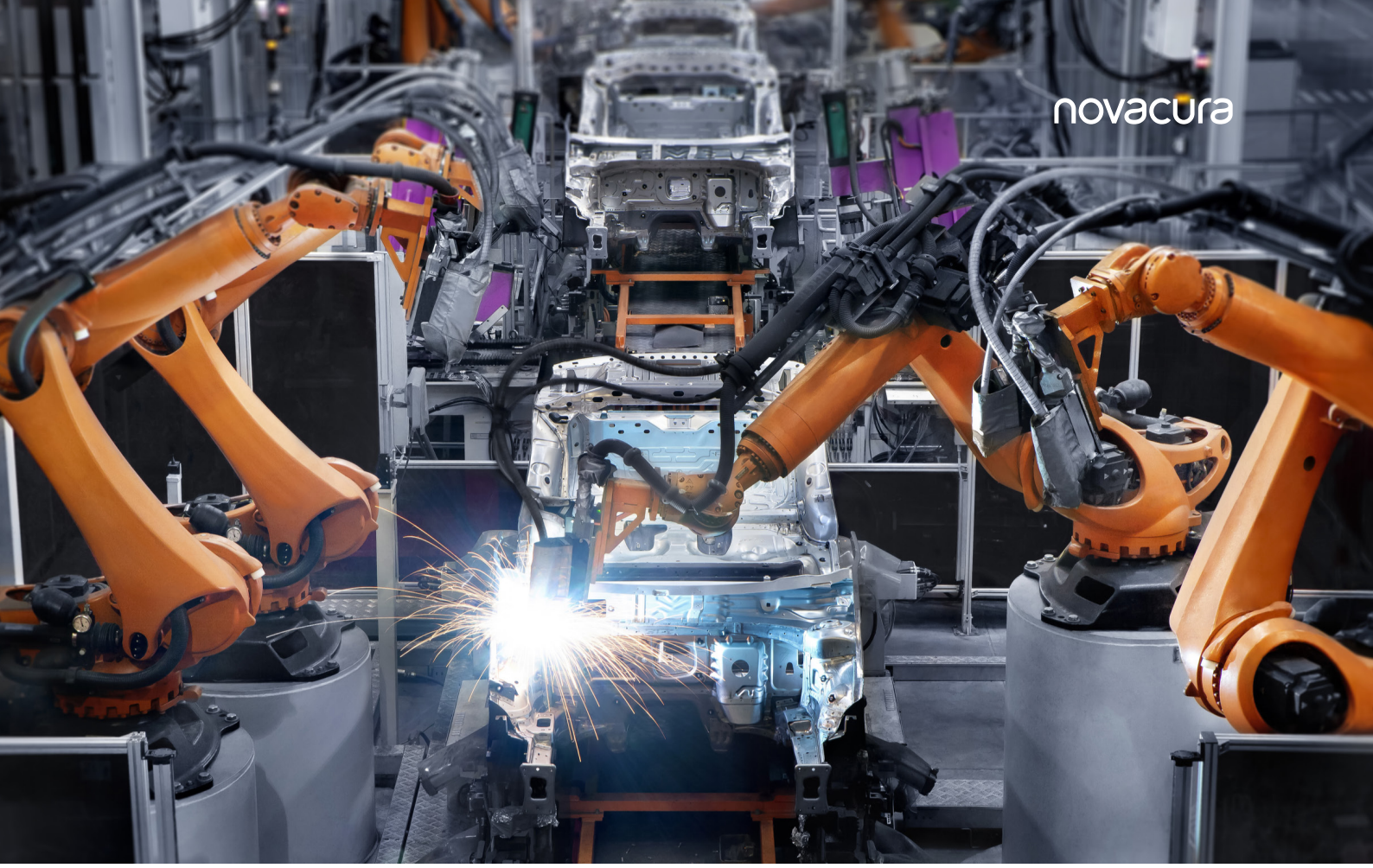

INTRODUCTION

COVID-19 has had a detrimental effect on Manufacturers, especially when it comes to production planning and increased downtime.

This article breaks down just how big of an impact the pandemic has had on the average manufacturer and helps to address the top three challenges faced during the pandemic.

Find out how to improve production efficiency (OEE) and decrease downtime by effectively managing production processes and limiting non-value-added (NVA) activities.

We also present our view and some of our solutions that can help to increase production efficiency and alleviate the challenges we´ve listed here. Enjoy!

1. TOP 3 CHALLENGES MANUFACTURERS FACE IN THE COVID-19 ERA.

The timing of this article isn't random. There is no question that COVID-19 has had asignificant impact on how all businesses operate, but some industries, like manufacturing, were hit especially hard. Thanks to the close relationship with our customers, we learned that COVID-19 presented manufacturers with an entirely new set of challenges and an increased pressure to improve overall effectiveness.

To investigate the challenges more deeply, we performed interviews with several of our manufacturing customers. As a result, we identified three key production efficiency challenges during the pandemic that consistently stood out amongst the rest.

Knowing the challenges that exist - along with the root causes - is the first step in identifying solutions to improve productivity, so let's take a closer look at the top three challenges that we identified.

1.1 PROBLEMS IN THE SUPPLY CHAIN.

- **Delayed deliveries disrupted production plans.** Production plans were often disrupted due to material and component delivery delays, resulting in production-line reconfiguration and downtime.

- **Limited availability of resources required Manufacturers to shift production lines more often.**Materials like paper and fabric became so scarce that factories were forced to either overstock resources or produce smaller batches. As a result, manufacturers had to limit the production of goods and switch production lines more often, resulting in more downtime due to increased product line configurations.

- **Supplier diversification was a necessity to avoid order fulfillment issues.** A lot of suppliers had challenges with order fulfillment and delivery during the pandemic. Due to this, manufacturers had to implement a suppliers diversification strategy to overcome the pitfalls of delivery incapacity from previous providers. Unfortunately, more suppliers also meant more quality controls (since the same materials often had different product specs) on the goods delivered, resulting in even more downtime.

1.2 MORE COMPETITIVE MARKET.

- **Focus shifted from offline to online, puttingmore pressure on delivery time.** As sales moved from offline to online, manufacturers had to overcome an entirely new set of challenges. While online sales opened up the door to expand globally, it also brought more competitors and higher expectations around delivery time.

- **Manufacturers had to improve their Just in Time (JIT) strategies.** To be cost-effective, manufacturers minimized their stock inventory. As a consequence, any delayed deliveries depleted already lean stocks and impacted the production schedule. The production line then had to shift production to other goods, and any reconfiguration needed caused downtime.

- **The more competitive the online global market, the higher the need for product configurations.** The economy drove the need for manufacturers to carry more product configurations to support the market preferences. As more configurations were needed to meet the demand, so was the need for additional downtime.

1.3 INTERNAL PROBLEMS.

- **Lack of personnel due to illness andquarantine measures.** Production was affected due to the lack of reliable personnel during the pandemic. Staff availability became unpredictable and required production plans to be corrected, resulting in production line reconfiguration and downtime.

- **Supply chain limitations and unstable demand impacted production capacity, requiring dynamic staff leveling.** Dynamic changes in production capacity meant that there was an influx of temporary workers during production peaks. Employees' competencies were hard to maintain, and inexperienced individuals needed to be trained, directly impacting maintenance and reconfiguration downtime.

- **Enhanced Hygienic procedures had a direct impact on production efficiency.** Cleaning and social distancing measures implemented due to COVID-19 caused more downtime, especially in the fastmoving consumer goods (FMCG) market and food industry.

The conclusion is clear. COVID-19 has had a detrimental effect on Manufacturers and increased downtime.

Fredrik Rosendahl
Sales Director at Novacura

"Before we started interviews with our customers, we were assuming that COVID-19 brought a lot of problems in terms of production efficiency. But we never assumed that the word "downtime" would be used so many times by our customers!

2. WHAT ARE THE ROOT CAUSES OF THE CHALLENGES?

Now that we have identified the top challenges, we must dig deeper into the root causes to better understand why the impact on downtime is so high. The root causes provide additional insight into why companies can't dynamically adapt to the new situation to lower the adverse effects of COVID-19 and overall downtime.

Here are some of the root causes that we have identified based on the information we gathered.

- **Companies have a fundamental problem where they can't easily measure the causes of downtime.** Downtime is often measured by data points on "what caused the problem" rather than the "behavior relevant to the problem." If the behavior is not measured, clevel managers can't focus their attention on it and react appropriately.

- **Companies have problems in production planning.** Even if companies have the best production planning tools(APS systems), they often lack accurate and actionable data. Without accurate data, even the best planners can't react appropriately when the information about actual performance (i.e., missing material, delayed delivery, sick employees, etc.) is unavailable or delayed by a day.

- **Companies struggle with communication with suppliers.** Delays happen, but some could be preventable if the planner had the information accessible to them. For example, if a supplier sends a fax, it might not get relayed to the planner right away (sometimes it be days), so the daily plans are not based on the most up-to-date information.

- **An analogous situation exists in the communication with B2B customers.** Confirmed demand comes from customers via different channels and it takes time to consolidate and include in production plans.

- **Workers lack the competencies needed to reconfigure the machines.** Temporary workers hired during peak production often lack the competencies ne cessary to increase the overall maintenance and reconfiguration time. For example, if a CNC drill was not mounted properly, it can sometimes cause delays or severe problems with the tools and machines later.

- **Manual processes and administrative work cause delays in processing time.** Any manual processes in the maintenance area can make the processes more complicated and cause delays. In addition, if there aren't any digital solutions to stan dardize the functions, such as ordering new tools and requesting maintenance staff, the processes become harder to measure and supervise.

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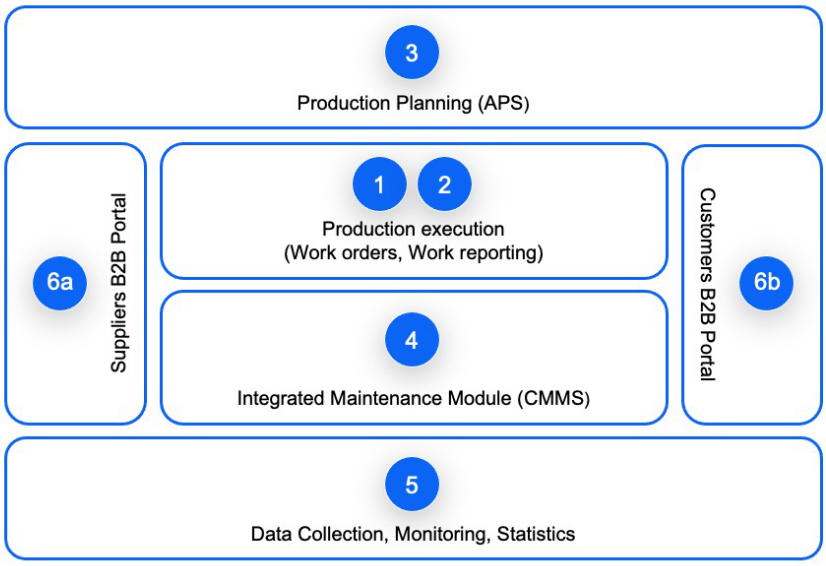
Fortunately, Novacura has several solutions that can help to increase production efficiency and alleviate the challenges listed above.

3. PROPOSED SOLUTION.

If you can relate to the challenges we´ve listed, there are solutions available to help solve them. Over the last 15 years, we have worked closely with our customers to develop a complete suite of manufacturing solutions - using our universal low-code platform, Novacura Flow - to alleviate these challenges.



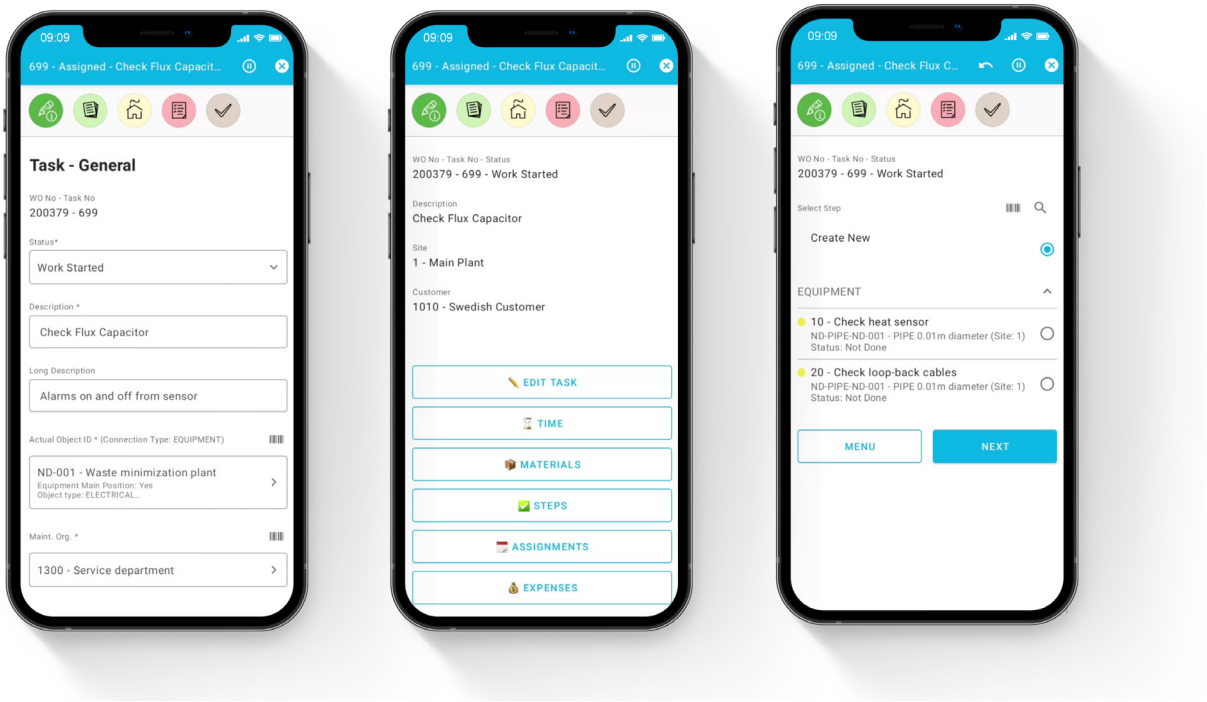
It is hard to solve the identified problems separately Operational, daily planning is only as good as the execution information available to the planners. For example, reducing the downtime caused by scheduled maintenance activities is possible only when connected to the overall production plans.

That's why Novacura provides a complete solution to solve the problems comprehensively. The illustration above presents an overview of key modules that are a part of the overall solution.

3.1 MOBILE WORK ORDERS APP HELPS WITH DOWNTIME REPORTING.

Let´s take a closer look at some of the key modules – all integrated with each other:

Novacura provides a Mobile Work Order application that is used by production staff on the **shop floor.** The application enables the production team to check tasks priorities – in real-time - according to the latest production plan. In addition, they can also check task details such as technical documentation, report operations (time, status) and used material.

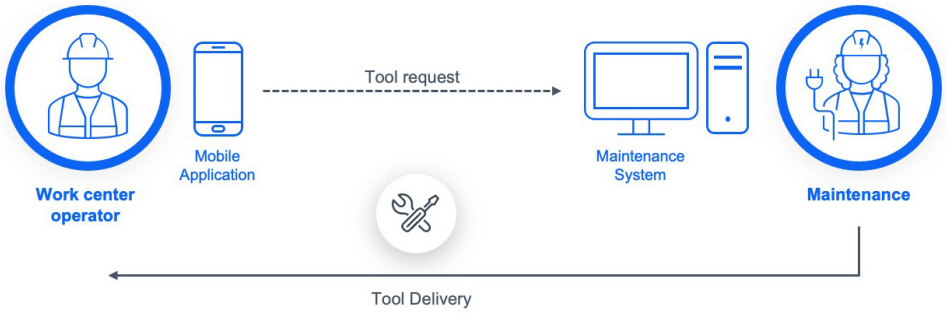


Another feature that is especially important to optimize downtime is the ability to report and track it easily. With the mobile work orders application, users can select **downtime types** like tools calibration, tools replacement/reconfiguration, waiting for material, waiting for staff, damage, etc. This application can also help companies **measure real-time** spending on downtime activities (including idle time). These two features have **fundamental importance in helping to minimize downtime by providing better downtime analysis** and improved decision-making.

3.2 MOBILE WORK ORDERS APP IMPROVES DOWNTIME ACTIVITIES.

Work center operators can also benefit from having a Mobile Work Orders application while performing downtime activities like machine reconfiguration, tools replacement, calibration, etc.

In the integrated environment provided by Novacura, the operator can **request new tools or spare parts directly from the mobile app** at his work center. The request is then immediately sent to the maintenance division (using the same system). This feature allows operators to order tools Directly from the work center, enabling internal logistics to deliver the tools on time and the progress to be observed in the application.



The solution provided by Novacura can also standardize maintenance performed by work center operators (such as tools replacement/reconfiguration). For instance, the application helps reduce downtime by displaying **guidelines for operators** to perform operations faster and avoid mistakes during reconfiguration tasks. Additionally, the application can prompt the user to complete a checklist for each type of maintenance task. This approach can drastically **limit the scale of damages** caused by inexperienced workers (i.e., inappropriate tool replacement) and, as a result, help to **avoid future downtimes**.

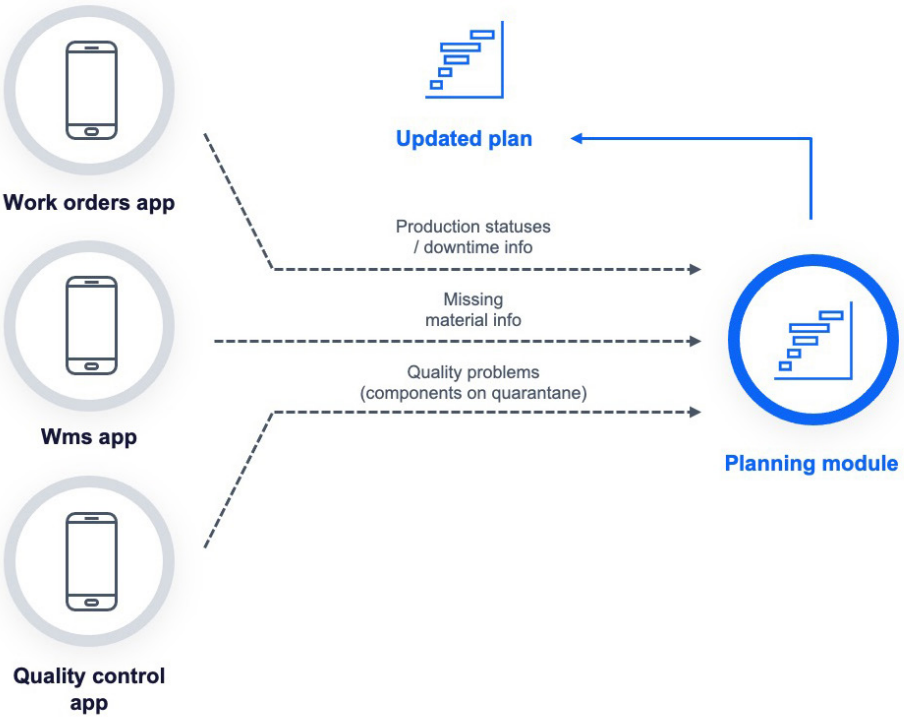
This capability is essential for companies that hire temporary employees or who have high employee turnover.

3.3 REAL-TIME PLANNING BASED ON INFORMATION FROM THE SHOP FLOOR AND WAREHOUSE.

In addition to being a dedicated work center for shop floor operators, warehouse and quality control crews can also use the mobile application.

Furthermore, all of the departments can report their activities using the Novacura mobile app. For instance, the warehouseman can use our warehouse manag ment system (WMS) module to pick materials and confirm delivery.

The app can also report deliveries from suppliers so that stock levels (and missing materials) are updated in real-time and can be viewed by daily planners.



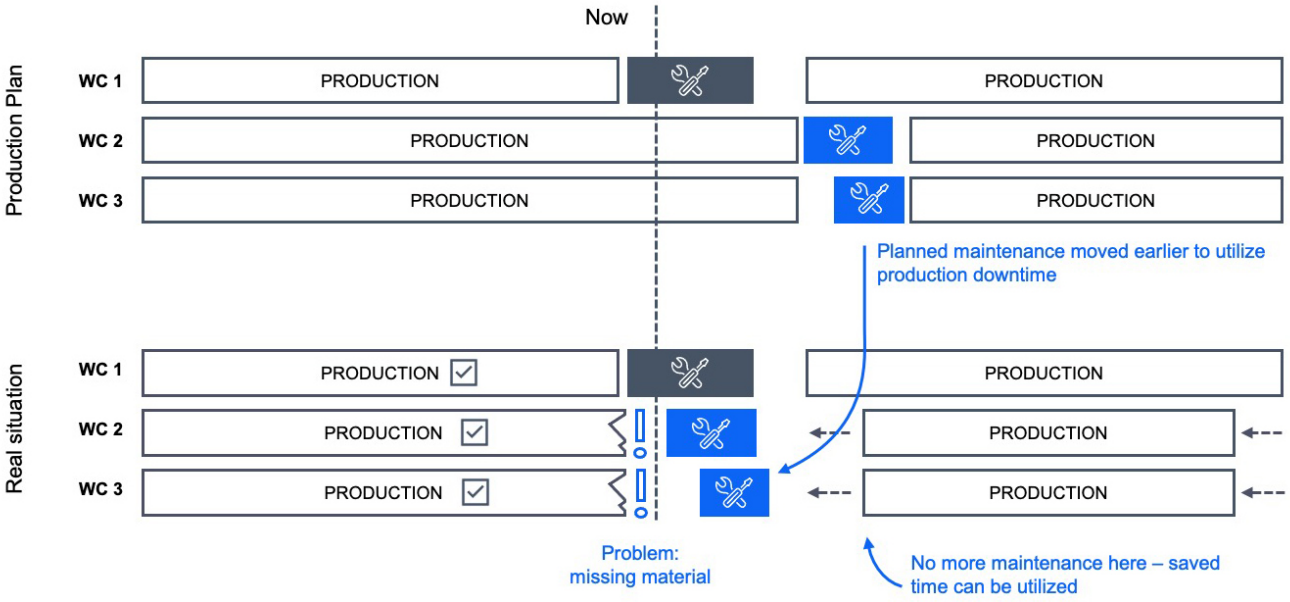
Another good example is the **Quality Inspection App** used by quality control. As soon as quality issues arise, planners will automatically be notified of any problems, including unavailable parts for production.

Thanks to real-time feeds, planners will have an accurate view of the factory's situation and can react more quickly to update production plans. Updated plans will then be instantly available for the production workers in their Mobile work order application.

3.4 INTEGRATED CMMS ECO-SYSTEM.

A **maintenance management (CMMS)** solution is also provided by Novacura to ensure that production plans include planned maintenance activities. One of the key benefits of using our maintenance application is its integration into our production apps, like the execution apps and production planning modules. This integration ensures that planned maintenance is naturally included in production plans and can influence maintenance plans.

For instance, let's imagine the situation where scheduled maintenance is planned for a particular work center for the next day. Unfortunately, due to unforeseen circumstances (like a lack of material or an employee on sick leave), today's production must be frozen. When maintenance management is integrated with production planning, a planning specialist can shift planned maintenance from tomorrow to today to utilize a natural downtime. The initially planned maintenance slot can then be used for regular production on the next day when production is possible again.

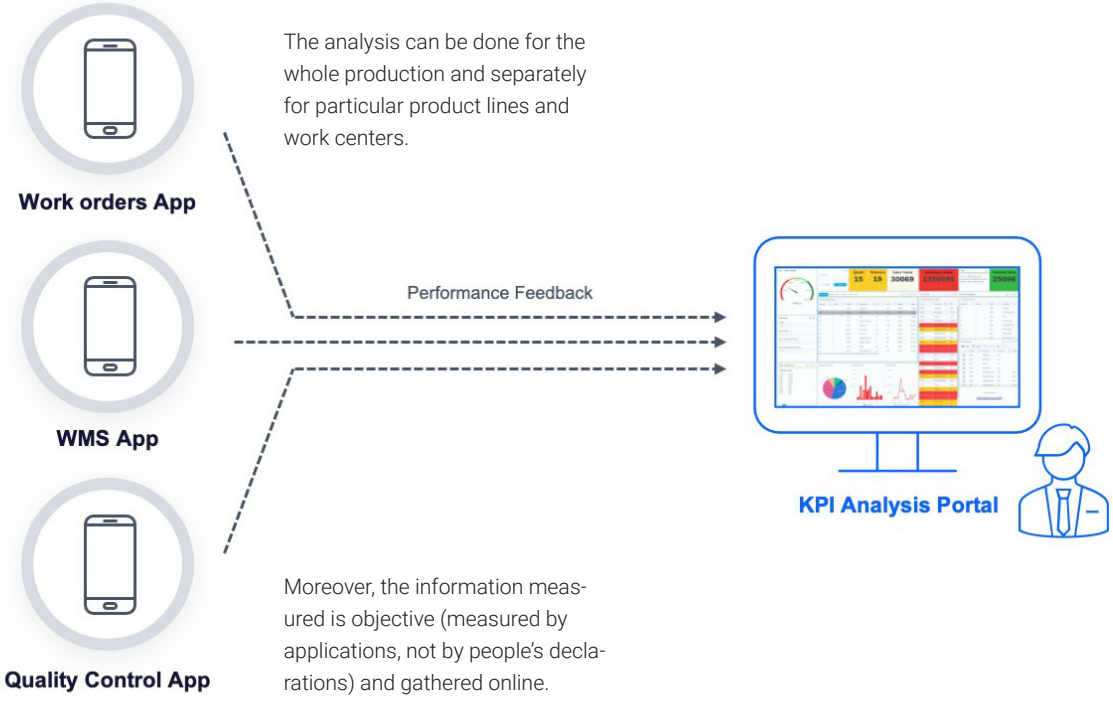


Another example that highlights the benefits of integrating the CMMS module with the overall production management ecosystem is the ability to plan scheduled maintenances in connection with the production plans.

As a result, maintenance managers can limit disruptions driven by maintenance and adjust maintenance tasks as needed.

3.5. A MEASURE SUPERVISION.

The key to manage is to measure. Novacura can precisely measure production efficiency by using the data gathered from our different modules, such as WMS, Mobile Work Orders, Quality Inspection Apps, Maintenance apps, and many others. This real-time insight allows managers to **measure the scale of the downtime** and identify the root cause by **analyzing** the contextual information (like the reason for the downtime) - all in one place.



The analysis can be done for the whole production and separately for particular product lines and work centers.

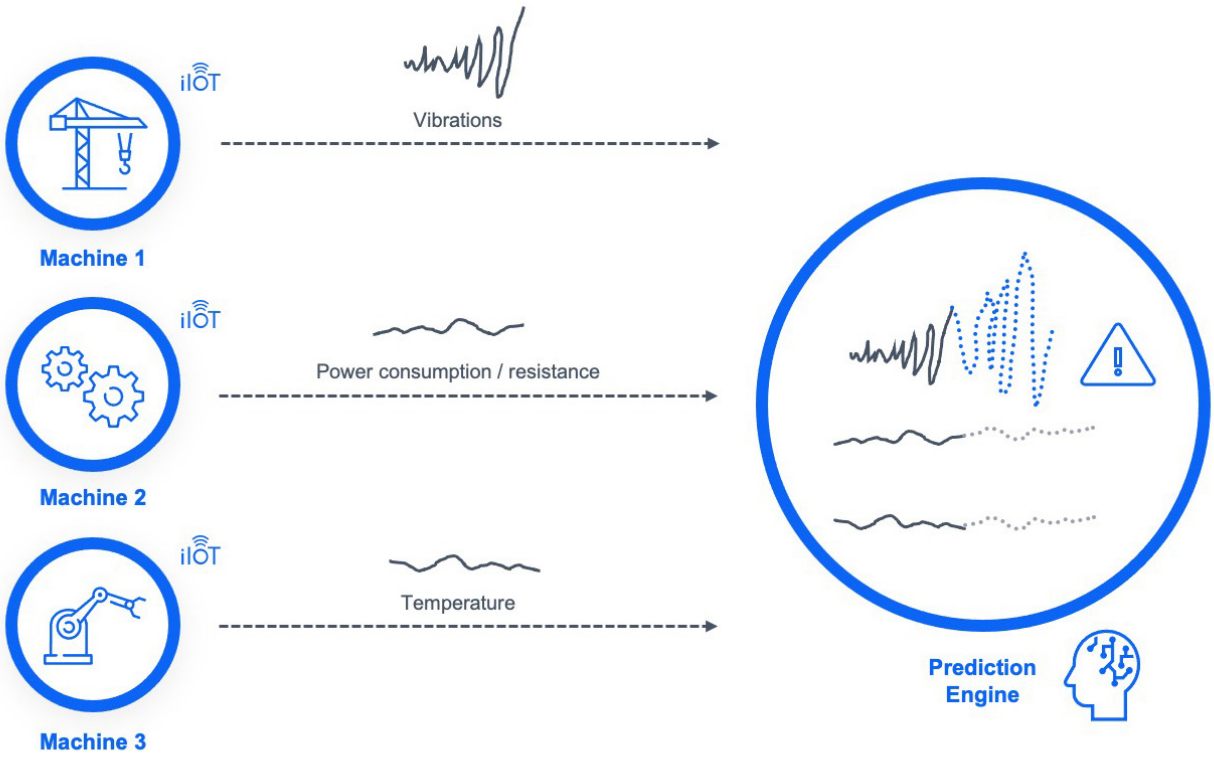
Moreover, the information measured is objective (measured by applications, not by people's declarations) and gathered online.

> *"There is no need to do routine maintenance on a machine that is never used as it leads to unnecessary costs and lost time.*
>
> **Fredrik Rosendahl**
> Sales Director at Novacura

3.5. B DAMAGE PREDICTION.

Thanks to the **IoT connectors**, Novacura solutions can be connected to machines - or any other equipment - and constantly measure key parameters (like power consumption, vibrations, temperature, noise, etc.). Information can then be gathered automatically in real-time when in the online mode. This ability doesn't only provide historical data (for further analysis), but also feeds the "predictive engine" (supported by AI – Artificial Intelligence).

This predictive engine can continuously analyze different variables and escalate when there is some disquieting trend (by extrapolating historical data). As a result, it can **protect the company from future machinery damages and unexpected downtimes.**



"With a digital solution that detects errors in production, there is a much bigger chance to fix the problem before the impact grows into a critical problem

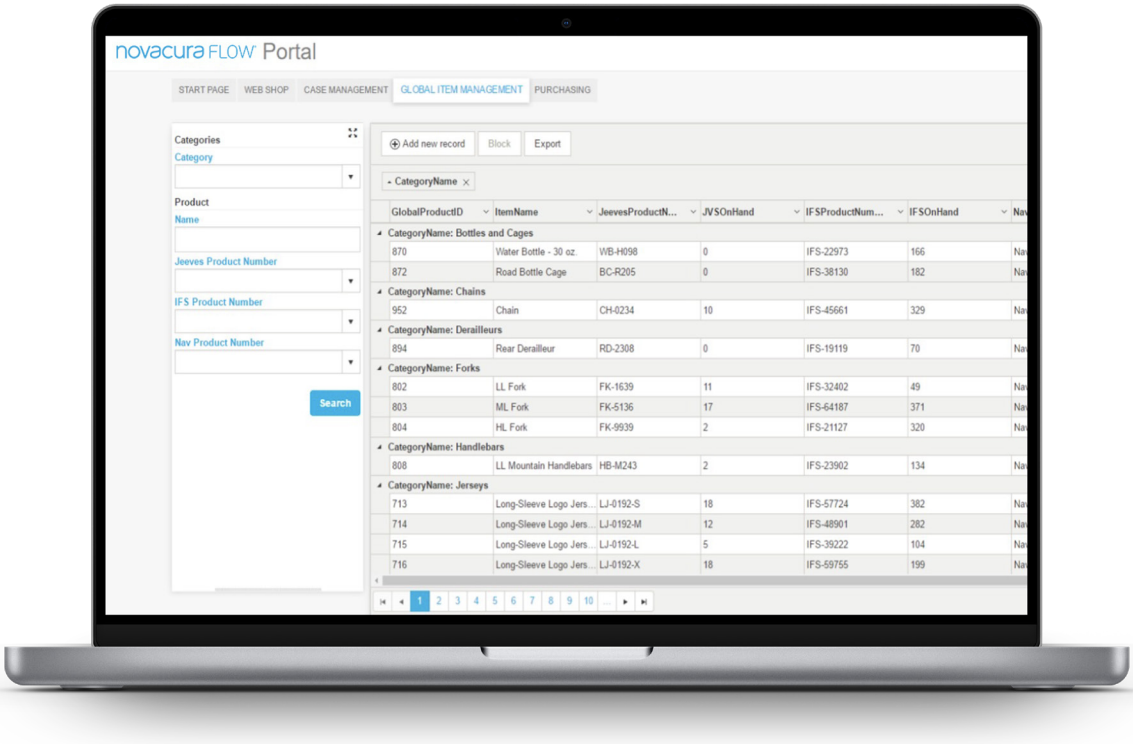
Fredrik Rosendahl
Sales Director at Novacura

3.6 B2B PORTALS FOR SUPPLIERS AND CUSTOMERS.

Direct, instant and precise communications are also key to improving production planning and overall production efficiency. In addition to our applications, Novacura can provide B2B portals for both suppliers and customers. Portal offers the following benefits to help optimize downtime:

- **On the Supplier side** – Suppliers can confirm purchase plans and deliveries. They can also instantly update all delivery changes (i.e. lack of some components in the upcoming delivery or delivery delay). This information can then be immediately transferred to the Planning module (APS) and planners can adjust their plans (making them realistic again) and release them.

- **On the Customer side** – B2B customers can predict and report their demand in advance. The purchasing department can then issue their purchases in advance, preserving appropriate time for the whole supply chain.



4. HOW TO IMPLEMENT IT.

The more functionality and capabilities the Novacura FLOW solution offers, the more complicated it might look, especially when it comes to the implementation project. But it´s not as challenging as it might look, because:

A.

We have a **mature implementation methodology** divided into stages (like initial requirements workshop, feasibility study, etc.) – that way the whole project is predictable and can be fully controlled and coordinated by us.

B.

We have **15+ years of experience** in manufacturing. There is a library of ready-toreuse applications that can be presented to the customer and customized according to his needs. And the library is available on the **Novacura Flow Marketplace**.

C.

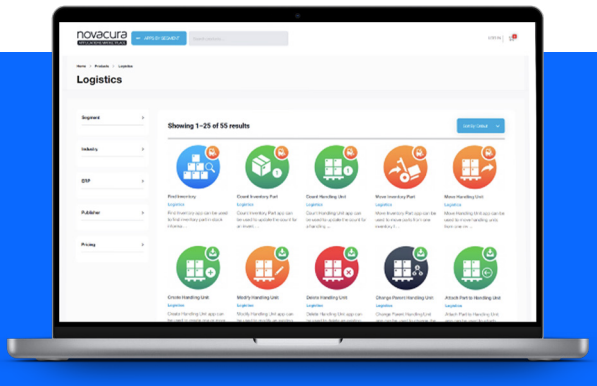
Novacura FLOW is a low-code platform – so we can implement everything our customer wants, and every element can be adjusted to specific customer's needs.

D.

We have a solid **base of industrial connectors** – the technology is no longer a problem.

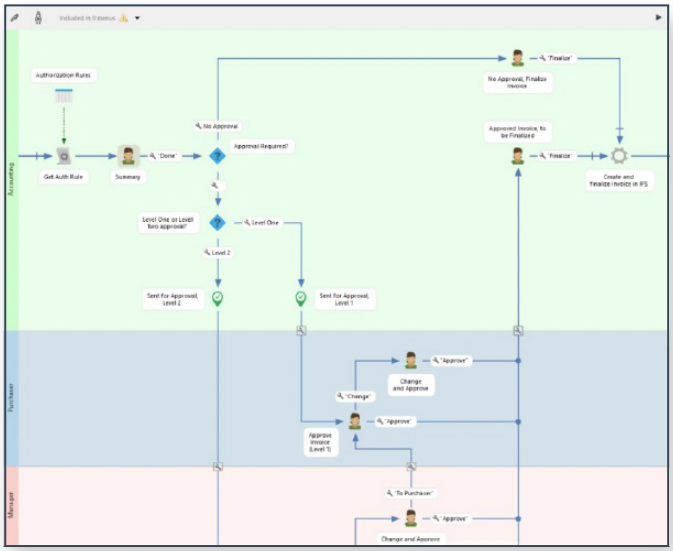
VISIT NOVACURA MARKETPLACE.

Find dozens of ready-to-use applications for your manufacturing and logistics processes.



5. SUMMARY.

In this article, we've showcased our comprehensive solution, developed thanks to Novacura FLOW technology, to help manufacturers improve overall production efficiency and minimize downtime.



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Novacura FLOW is a low-code platform that allows us (and our customers) to create various applications without programming skills. Instead of using programming languages, we develop applications by drawing them and can customize every application to meet the specific needs of our customers. Our platform also makes it easy to integrate with various systems.

READ MORE

6. IT´S A CHALLENGE BUT IT´S WORTH THE EFFORT!

We are aware, that the whole implementation of the presented solutions is an organizational challenge for our customers. But we also believe that it is the right strategy.

To make the whole implementation process easier, **our solutions can be implemented partially**, module by module. That way, the whole implementation process can be divided into years and is much more affordable to perform.

TALK TO OUR EXPERTS.

If this sparks your interest, please contact us. We will help you shape a suitable solution and can take care of the whole implementation plan.

Fredrik Rosendahl
Sales Director at Novacura

Experienced Sales & Business Development Director with a demonstrated history of working in the information technology and automotive industry.
Skilled in

- Business Development
- Sales Management
- Project Management and
- Software as a Service (SaaS)

Strong business development professional with a Business Administration from Stockholm School of Economics IFL Executive Education and a BSc in Engineering.

GET IN TOUCH

ABOUT NOVACURA

www.novacura.com

Novacura is a human-centric IT-company using services and software to streamline and simplify our customers' business-critical processes and ERP platforms.

Novacura Flow, our signature software, is a low-code platform that helps businesses optimize their mining processes using custom mobile applications. Flow works as a layer on top of your existing business systems, helping you connect data from multiple sources into easy-to-follow workflows and apps.

The Novacura Flow low-code platform helps mining companies lower operating costs, improve facility uptime and drive up profits by putting the control of all your processes at your fingertips. It's fast, collaborative and flexible: all the things you want your mining operation to be.

To read more about what we do for Mining companies go to novacura.com/by-industry/mining

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THANK YOU.

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