Novotek

White Paper

Safeguarding Against Downtime

State of the Art in IT and OT

Collaborating Between Divisions for a Successful Production Process

octoplant

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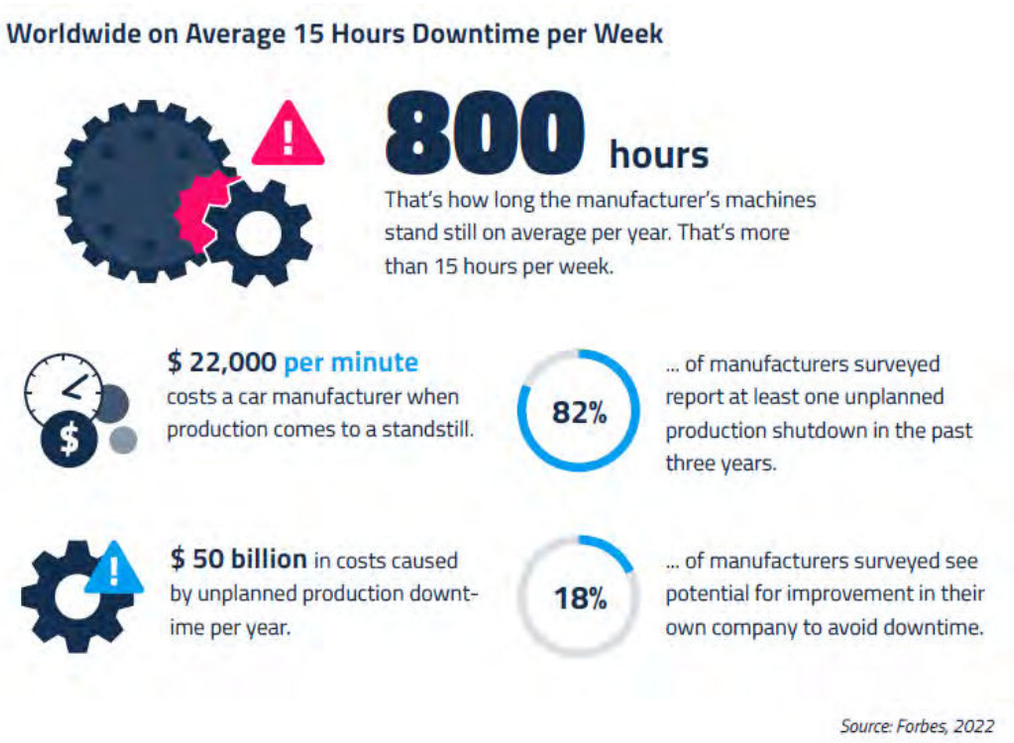
Editorial

The world of automated production is evolving rapidly in a process characterized by fast technological progress. Combining IT and OT produces numerous new possibilities, such as artificial intelligence, robotics, and machines that 'talk to each other'. There is potential for limitless increases in efficiency, productivity, and quality in OT. IT is especially effective when it comes to minimizing the risk of downtime in OT.

And downtime is a major topic. The average cost of an outage was around $1.5 million in 2021. The graphic below illustrates some figures from Forbes that show just how important this is.

Various actions can cause downtime. We've put together some of the most common causes, along with potential solutions that can help you keep your production up and running.



Tip: To ensure that your production processes keep running smoothly and your data is protected, we'll then invite you to take our OT data management and resilience check.

IT & OT Convergence

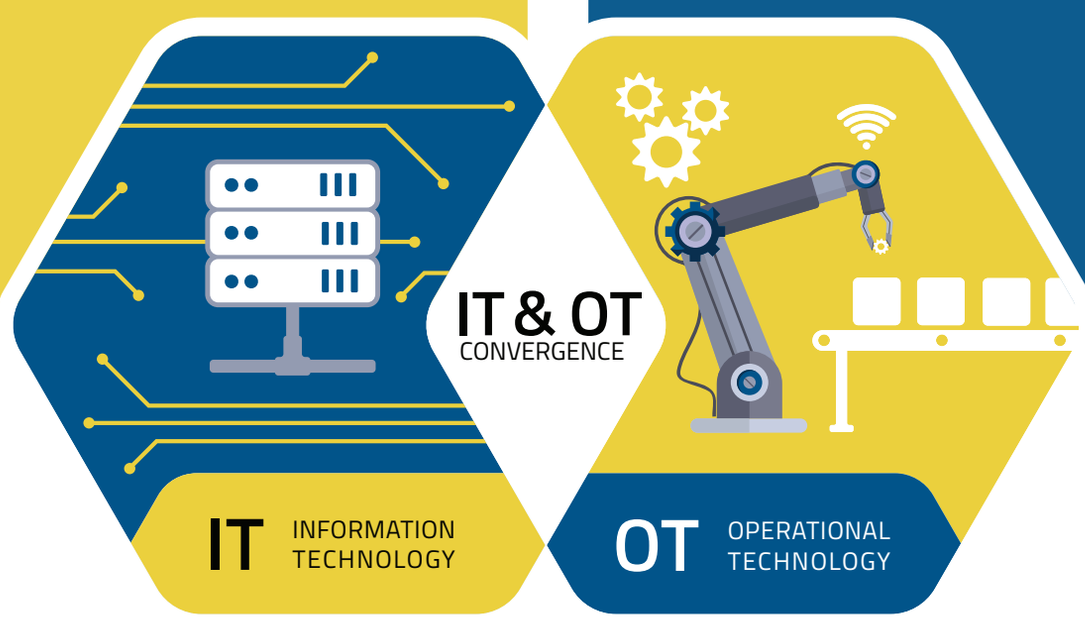
"The thing is, IT and OT involve different technologies, rules, and security requirements. That means we must plan and implement really well so that there are no problems. Our critical infrastructure must be secure and stable. And now there's IoT and industrial automation to think about, which brings new possibilities but also new security and data protection risks.

As the head of IT, my job is to identify these hurdles and find solutions. We play a key role at manufacturing companies, such as in the management and maintenance of their network infrastructure.

This includes ensuring that different systems and devices are seamlessly connected, performing regular updates, and continuously monitoring network performance to avoid downtime and operating efficiency. But we can't ignore new risks involving cybersecurity either. IT and OT both need protecting and we must work closely together as a team."

"We used to do mainly mechanical repairs, but nowadays we're dealing with new things like connecting IoT equipment with automated systems so that our plants run better. This means some good opportunities for smart maintenance and greater efficiency, but we also must get to grips with the new technologies and IT systems. Our teams must pull together and work closely with our IT department to ensure that data from our sensors and machines are collected and analyzed properly. At the same time, we must deal with cybersecurity risks and protect our systems against potential threats.

As the maintenance manager, it's my responsibility to make sure my people are ready for these changes, to train them, and – most importantly – to make sure my systems are always running safely and reliably. If something goes wrong and production stops, it's expensive. We can't afford that at all."



These two worlds are increasingly merging, which we call IT & OT convergence.
What benefits does IT & OT convergence bring to manufacturing companies?

1. **Greater efficiency:** By integrating IT and OT systems, data can be exchanged seamlessly between the two areas. This provides a whole view of the production process and allows resources to be utilized more efficiently. Real-time data from OT, for instance, can be sent to IT to analyze production performance and identify bottlenecks and inefficient areas.
2. **Real-time monitoring and control:** Convergence allows IT systems to monitor and control OT systems in real time. This in turn enables the proactive monitoring of operating parameters and the rapid detection of aberrations and potential faults. Instant notifications can be sent to maintenance staff so that they can respond quickly and minimize downtime.
3. **Predictive maintenance:** Integrating IT and OT data enables the predictive maintenance of automation equipment. Analyzing operational data enables you to identify patterns and anomalies that indicate potential problems or failures. Timely action can prevent potential downtime because maintenance can then be planned and optimized.
4. **Improved decision-making:** Converging IT and OT data delivers comprehensive information about the production process and enables better decision-making. By analyzing data from both areas, you can identify bottlenecks and spot potential for improvement. This helps improve overall productivity and profitability.
5. **Security and cybersecurity:** Convergence requires a birds-eye view of the security aspects of IT as well as OT systems. Integration enables security measures and policies to be applied consistently so that you can detect and defend against threats and attacks. Collaboration between IT and OT teams enables more effective monitoring and better responses to security incidents.

All in all, converging IT and OT systems offer the opportunity to optimize production processes, minimize downtime, increase efficiency, and improve decision-making. It enables businesses to take full advantage of the benefits of digital transformation and remain competitive.

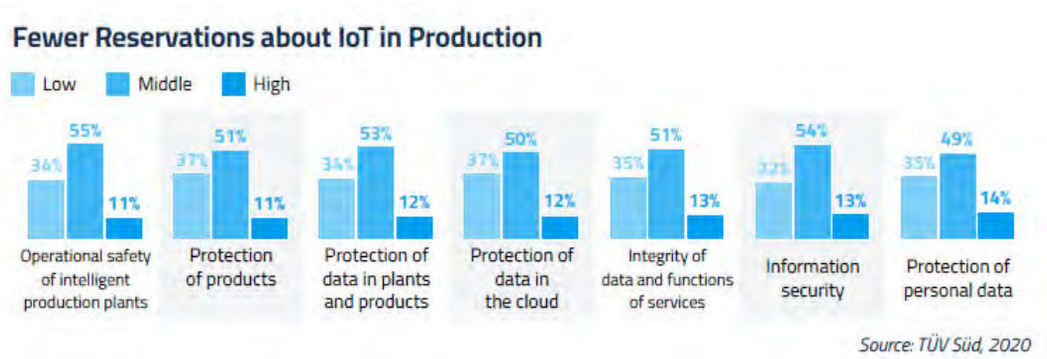
Challenges in IT & OT

Nobody, therefore, disputes that IT & OT convergence has advantages for businesses. But these days especially, both worlds face different challenges to which they need to find answers.

How IoT is Responding to the Global Crisis

In the world of OT, the latest political and economic crises combined with rising production costs have led to a shortage of raw materials, fewer production resources, and supply chain bottlenecks. At the same time, the benefits gained by using IT in production and thereby increasing the level of digitalization are more obvious than anywhere else.

This means that things that cause problems in IT and are therefore prioritized there, such as data protection (in the cloud), information and data security and data integrity are not so pressing in OT, as the following diagram shows.



Source: TÜV Süd, 2020

IT and OT take different approaches to avoiding production downtime.

- IT focuses on the availability and integrity of data, networks, and information systems and strives to implement security measures that prevent data loss, system failures, and cyberattacks.
- OT, on the other hand, focuses on monitoring operating parameters, maintaining machines, and detecting faults in time, thus enabling preventative actions.

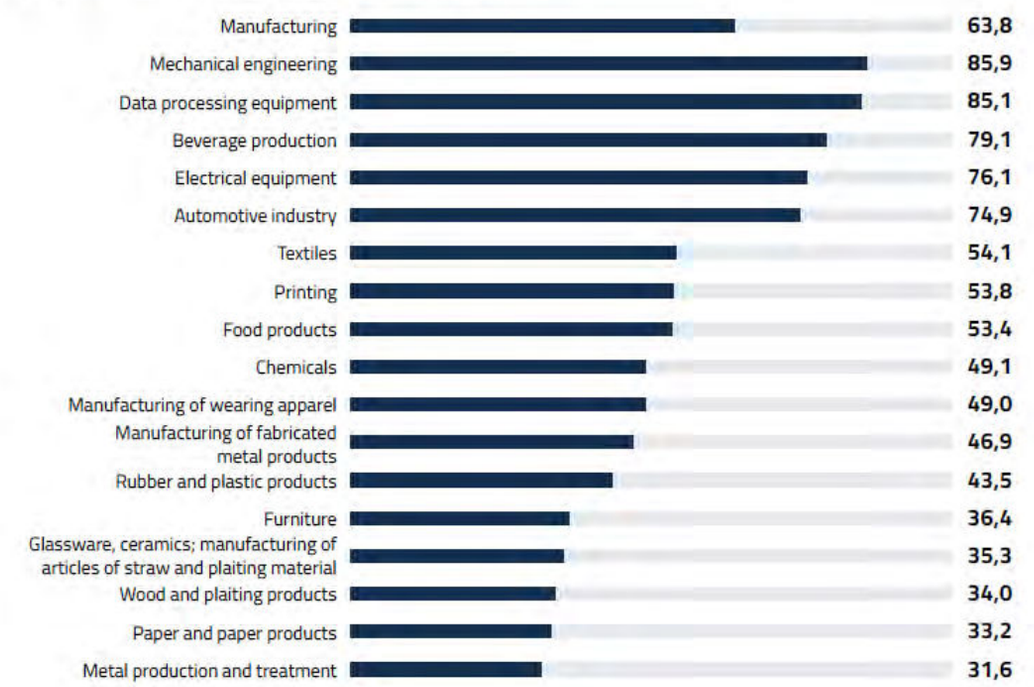
So, just because the manufacturing industry has fewer reservations about conventional IT issues, it doesn't mean they are failing to see the risks. Theirs is an experience-based attitude towards important and necessary digital progress.

Machines Don’t Run Without Business Intelligence

The shortage of materials impacting so many areas today has become a major obstacle to production.

Materials Scarcer Than Ever

ifo Scarcity Indicator October 2022 by economic sector



Source: Ifo, 2022

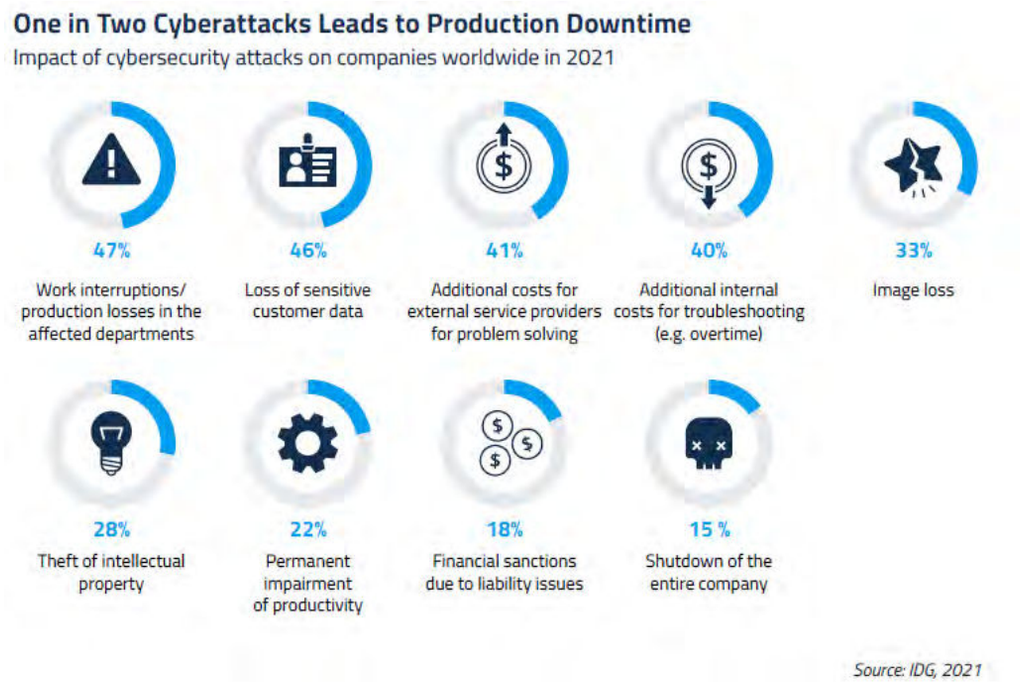
Even if processes are perfectly coordinated, nothing can be produced without materials. Or to put it another way: if nothing goes in, nothing comes out.

Even highly tuned industries like automotive have been heavily affected and can’t resolve situations simply by improving their supply chain management. By the time trends like the partial re-regionalization of supply chains have taken effect, it may be too late for some businesses.

Without business intelligence – a classic IT theme – and without a well-planned increase in operational efficiency (such as by utilizing scarce materials more sustainably), it’s difficult to counteract this tendency across a whole business.

Cyberattacks

Cyberattacks aren't just something that happens to others. According to Claroty's 2021 ICS Risk and Vulnerability Report, a third of all businesses had by then fallen prey to cyberattacks.The following graphic shows clearly what happens when a company suffers a cyberattack.



47% of businesses have experienced actual production outages in the departments affected by cyberattacks.

Cyberattacks incur internal as well as external expenses:

- 41% of businesses had to carry extra costs for external service providers to solve problems. That means additional outlay just to get back to where they already were.
- 40% were hit by additional internal costs for troubleshooting (such as staff overtime)

The following two figures are especially revealing of just how vulnerable manufacturing companies are to cyberattacks:

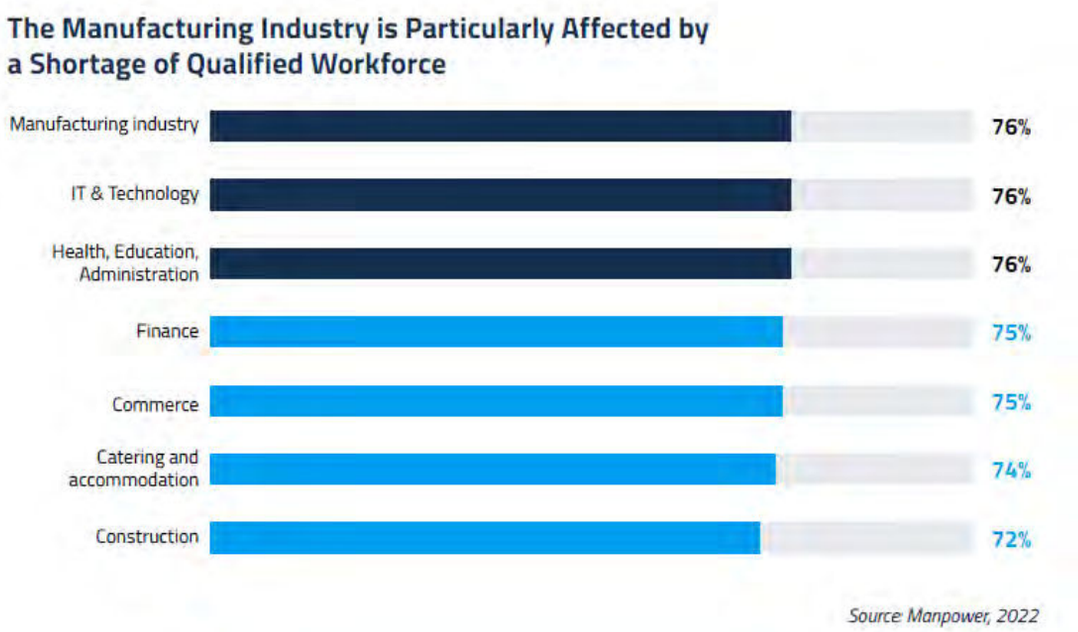
- In 22% of cases, production quality suffered in the long term.
- For 15%, attacks meant closing the whole company.

Premiums for insuring manufacturing companies against cyberattacks have risen enormously – yet another indicator of the importance of cybersecurity in OT. This is forcing companies to invest considerably in active OT and IT security to obtain more favorable insurance prices. As well as pure OT factors such as lists of critical systems, more and more IT factors are coming to the fore, like anti-malware solutions and patch management. But backing up critical systems and having a plan for emergency recovery are always key points.

Staff Shortages

Skilled labor shortages in the Western world are a widespread challenge to which there is no single solution. Demographic changes have been ignored for far too long. Changing life and career expectations are making it more difficult for manufacturing businesses to find suitably motivated and qualified staff.

The situation is extremely serious: there are far more vacancies than workers, even in periods of inflation and recession.



The risks such a situation poses for automated production are very clear:
There aren't enough people able to maintain systems and restore them to operation after an outage. It is essential to pass on knowledge, such as the latest software versions and settings. Trends such as the use of more robots can only ever be a partial help in this respect because robots themselves are dependent on updates and a certain amount of maintenance.

Potential Solutions

A look at the examples shown reveals that there are primarily three factors that keep production running:

- Identifying and managing the equipment available at the business
- Automatically backing up equipment at regular intervals
- A way of quickly restoring equipment configurations

Identifying and Managing the Equipment Available at a Business

The first step towards IT & OT is always to gain an overview of the equipment at the company, the status of its firmware, and any changes that have been made to equipment configurations.

Businesses often don't know:

- What automation equipment they have.
- Whether their devices are configured according to the latest releases, and whether changes have been made to them.
- If changes have been made, what they are, and why they were done.

Efficient asset management is crucial to any manufacturing company that wishes to optimize its processes and protect against outages. It's also essential to keep a history of modifications to each project so that you can track who made which changes to a project and when – especially unauthorized changes.

Automatic Equipment Backups

What are backups?

In OT, a backup is a copy of important data stored on OT devices and industrial systems and kept in a single storage system, either a data center or the cloud.

In this context, important data means:

- Configuration data belonging to equipment and control systems.
- Data relevant to production.

Backups can be created at different time intervals and using different strategies.

Advantages of Backups

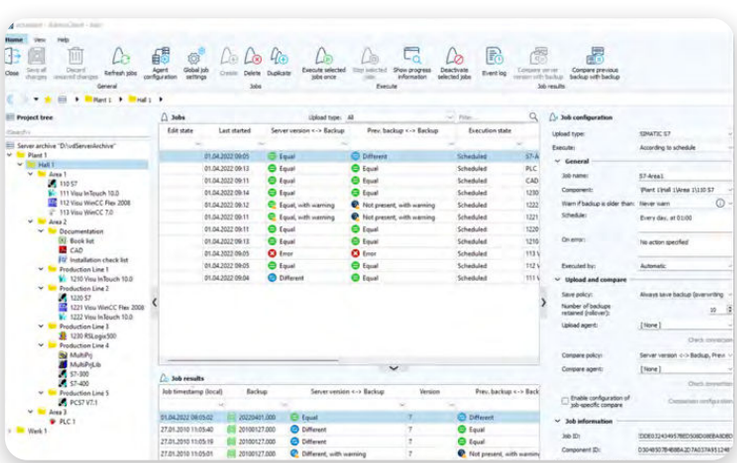
Reliability
In OT, automated backups are generally more reliable than manual ones. They eliminate the risks of human error, such as forgetting to back up or overlooking important data.

Data Security
Automatic backups in OT help to protect your data. If your original data is damaged, deleted, or threatened by a cyberattack, you can draw on your latest backup.

Emergency Recovery
If you lose data or your system fails, automatic backups in OT enable a quick, easy recovery process. You can quickly recover your data and continue your operations with minimal disruption.

Planned Execution
Automated backups can be planned regularly (daily, weekly, or monthly, for example), or set off by a trigger. This ensures that your data is regularly backed up without the need for manual intervention.

Saves Time
Automated backups in OT eliminate the need for manual inputs and monitoring. Once set up, you can forget about the whole thing, save time, and focus on other tasks.



Job configuration / Job setup: With octoplant, you have a uniform backup strategy for networked and non-networked plants. Machines and plants can be monitored, and program statuses can be compared manually or on a rule-based planned basis. This guarantees maximum data security and time savings.

Quickly Recovering Equipment Configurations

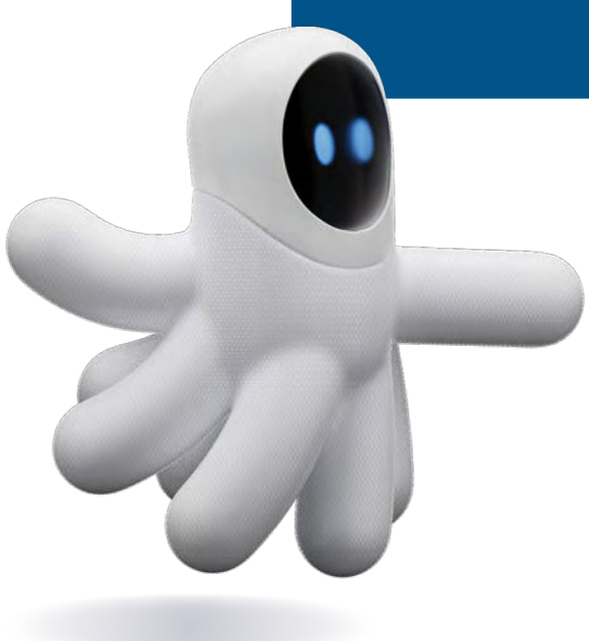
When you recover a system, it's important that all the programs, data, and settings made when a machine was automated are available and running correctly.

Quickly recovering the right system configuration is especially important for reducing downtime in production.

- Manage all backups.
- Organizing your backups in a simple way allows you to see immediately what the latest, correct versions are.
- Select the backup you require and restore it.
- Restore the automation equipment in the version you require, choosing from a list of available backups.
- Ensure that access rights correspond with the rules set out in the organization.

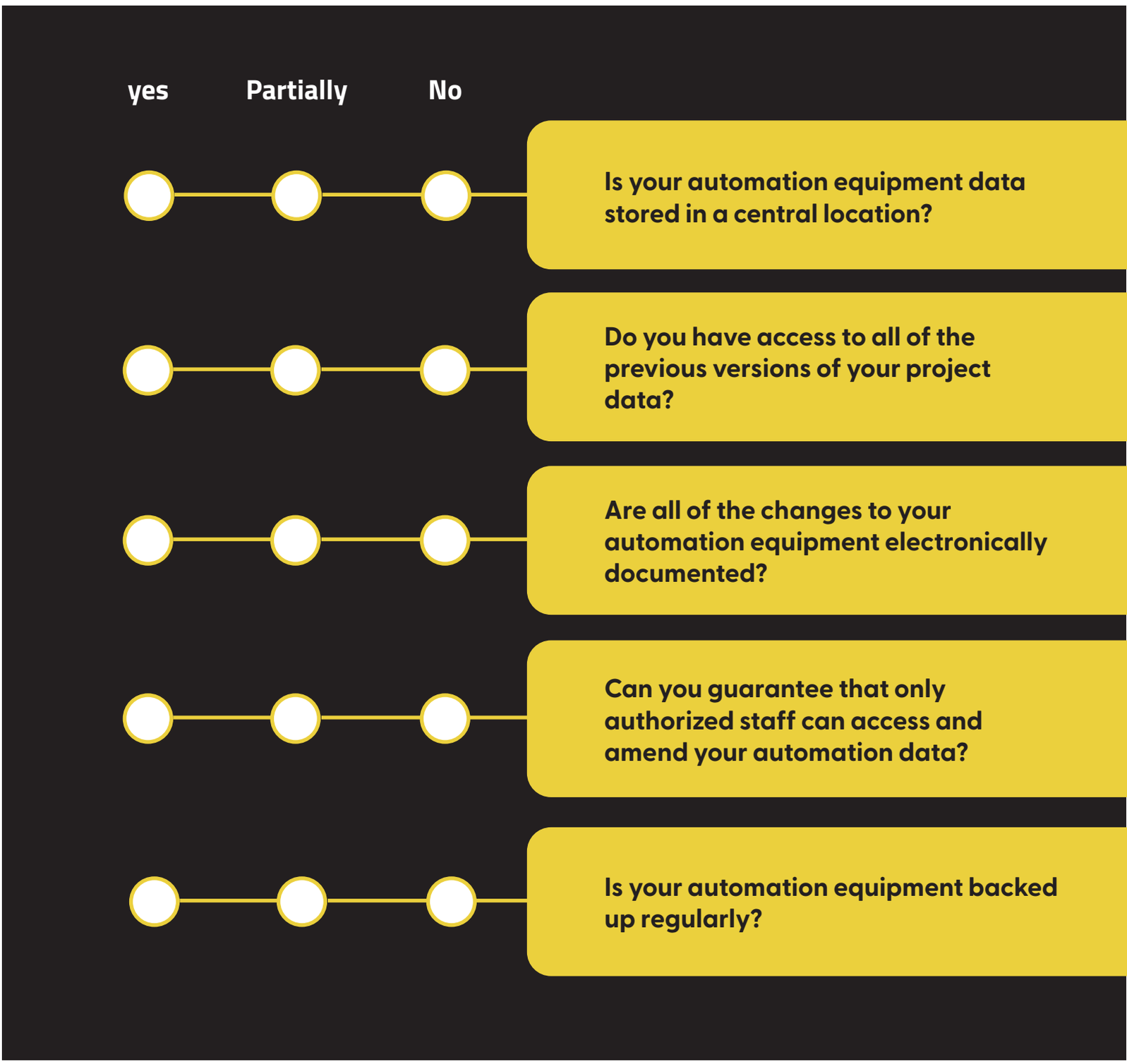
OVER 3,000 COMPANIES WORLDWIDE TRUST OCTOPLANT!

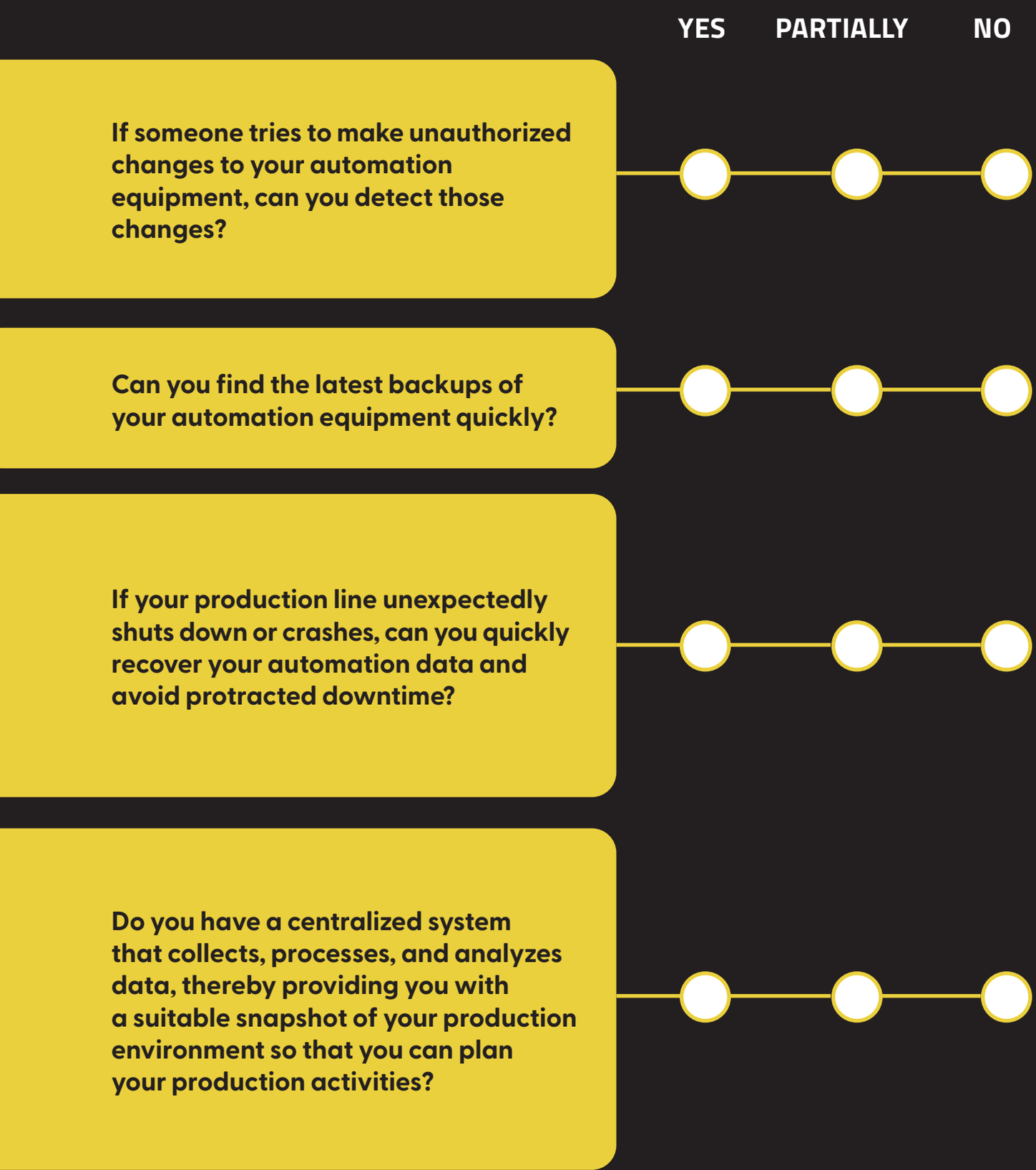
Find out now if your current practices are enough to secure your production with our OT Data Management and Resilience Check!



OT Data Management and Resilience Check

Do you want to ensure that your production processes run smoothly, and your data is protected? This test helps you evaluate the status of your automation equipment, identify potential weak points, and pinpoint potential for improvement. Take a moment to find out whether your current practices are enough to prevent production downtime and ensure data security.




YES
PARTIALLY
NO
If someone tries to make unauthorized changes to your automation equipment, can you detect those changes?
Can you find the latest backups of your automation equipment quickly?
If your production line unexpectedly shuts down or crashes, can you quickly recover your automation data and avoid protracted downtime?
Do you have a centralized system that collects, processes, and analyzes data, thereby providing you with a suitable snapshot of your production environment so that you can plan your production activities?

YES PARTIALLY NO

Can you enforce configurations and standards for your automation equipment in every production area?

If your automation equipment were to change, could you set up an electronic approval process that complies with the two-person rule?

Do you always have an updated overview of the weak points and loads in all your automation equipment?

YES
1 Points

PARTIALLY
2 Points

NO
3 Points

YOUR SCORE:
Award points for each answer and enter the total here:

12 to 17 points – YOU'RE IN GREAT SHAPE – LESS IS MORE

You answered 'yes' to most or all the questions. Congratulations! It seems you're in a very good place and well-prepared for the latest challenges.

Expert recommendation:
You need to stay on the ball to secure your competitive advantages long-term because knowledge pays off. The octoplant pro hub provides detailed dashboards and KPIs. One of the things this tool allows you to do is identify and compare patterns and aberrations between different areas, thereby gaining new insights from multiple, independent production facilities.

18 to 25 points – YOU'RE ON THE WAY TO AUTOMATION

You answered 'partially' to most or all the questions. That's great because you already have a lot of things in place, and you've obviously identified a lot of the key challenges.

Expert recommendation:
Whatever you do, don't let up. Make sure you close any gaps identified with efficient solutions. Think about cost-to-benefit criteria, feasibility factors, and what it will cost you to introduce new technologies. Consider using automated backups, one-click asset inventories, and vulnerability detection. Stay on the road you're on and implement solutions that reduce manual work on the shop floor, increase transparency, and reduce downtime and risks – for you yourself and for your business.

26 to 36 points – YOU'RE A BEGINNER

You answered 'no' to most or all the questions. You're commendably honest and this is a real opportunity for you because you're at the very beginning of your automation journey in the most relevant areas. That means everything is possible. Everything, that is, except doing nothing. This is about your company's ability to act, after all.

Expert recommendation:
Get in touch with AMDT right away and join forces with our experts to discover what effect improvements could have on the efficiency and productivity of your organization across all departments. Our experts can assist you in drawing up a tailored plan for your automation journey and help you identify the best solutions for your requirements. Use this opportunity to make a successful fresh start and ensure that your business is in a position to act effectively.

Summary

The development of automated production is characterized by rapid technological advancements which, through the convergence of IT and OT, open numerous new possibilities, such as artificial intelligence, robotics, and networked machines. IT & OT convergence offers numerous benefits to manufacturing companies, including greater efficiency, real-time monitoring and control, predictive maintenance, improved decision-making, and enhanced security and cybersecurity.

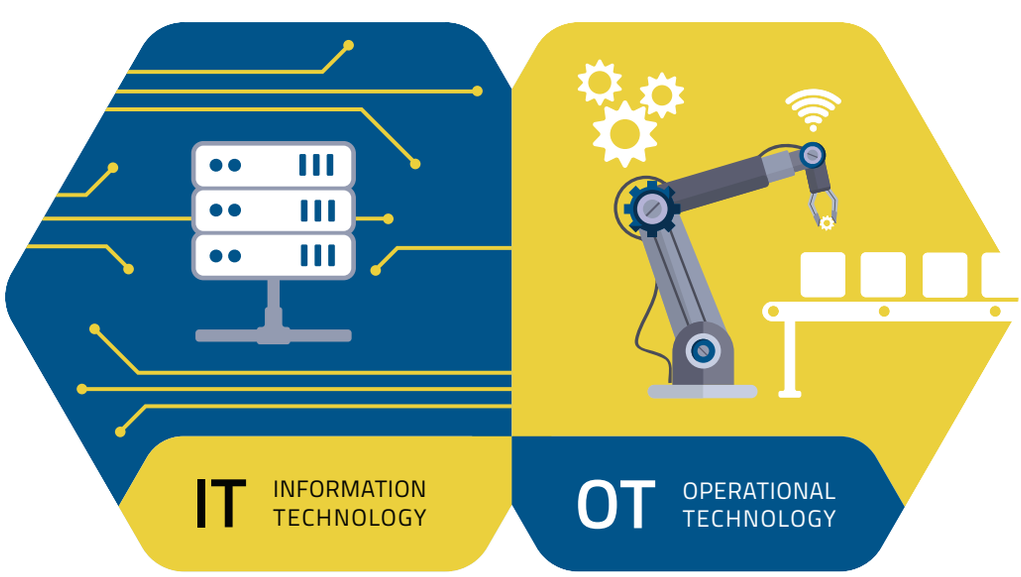
Despite these positive developments, IT and OT also face challenges that need to be overcome. Global crises, shortages of materials, cyberattacks, and a general lack of skilled workers present businesses with very particular conundrums. Solutions such as asset management, automatic backups, and rapid configuration recovery are needed to keep production running smoothly. Practices that have established themselves in IT are now also state-of-the-art in OT and are the key factor in guaranteeing smooth operation and reliability in today's industry.

Benefits and advantages of IT:

- Access to new technologies such as artificial intelligence, robotics, and networked machines for innovative solutions.
- Improved data processing and analysis enables informed decision-making and efficient resource management.
- Taking more responsibility for security strengthens your ability to detect and defend against cyber threats and protect the integrity of your systems.

Benefits and advantages of OT:

- More efficient production through real-time monitoring and control, resulting in optimized processes and greater productivity.
- Predictive maintenance reduces downtime and maintenance costs.
- Centralized data management enables you to restore your configurations more quickly and precisely to minimize operational interruptions.



HOW CAN INDUSTRIAL COMPANIES COMBAT DOWNTIMES?

Anyone facing long downtimes in production today has already lost the race for new business opportunities. Any company that does not have a complete overview of the program versions of its devices in **automated industrial production** risks not only business continuity but also blocks capacities for innovation and optimization.

So what do industrial companies need?

A strong partner who ensures the smooth operation of automated production with versioning and backup solutions. AMDT is that partner, true to their motto:

PRODUCTION RESILIENCE DELIVERED

How does it work?

The software solution octoplant achieves vendor-independent integration of various automation technologies, from PLC and HMI to CNC, SCADA systems, and robots. It **enables traceability of changes,** compliance adherence, and transparency of security vulnerabilities.

In this way, industrial companies gain a comprehensive overview of all automation backups and the current status of the system. Management teams have a better decision-making basis to increase the **reliability of production facilities**, avoid or at least minimize production downtime, and significantly enhance manufacturing efficiency and cybersecurity.

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Novotek is a preferred partner of octoplant, providing local support to help you manage your OT environment with confidence.

Contact your local Novotek team:

SWEDEN:
info@novotek.se
www.novotek.com/
se

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