



# Novotek Solutions

Digital transformation powered by  
leading solutions and decades of  
experience and expertise



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# Time to make a change?

With smart manufacturing solutions, our customers significantly improve their operations by leveraging data provided by connected devices, people and processes. Wherever you are on your digital transformation journey, Novotek can deliver a step-change in operations through analysis and optimisation.

The commercial and economic impact of Industrial Internet of Things (IIoT) technologies continues to grow.

From UK-based SMEs to global corporations, leading business are securing their future success by capitalising on the benefits of bridging physical and digital environments. Advanced data and analytics solutions provide essential operational insight for enhancing performance and profitability.

Our innovative software solutions deliver a competitive advantage for industrial organisations by providing invaluable operational insight, increased capacity, quality improvements and reduced operating costs.

We work closely with our clients to understand their needs and business priorities before identifying opportunities to maximise investment.

Our expert team are genuinely passionate about exceeding expectations and works diligently to provide exceptional customer service.

## Maintenance

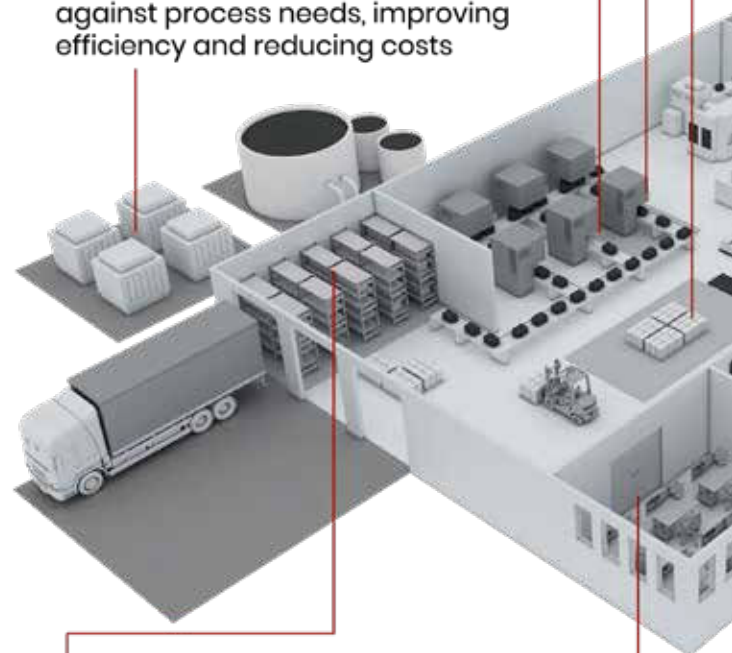
Drive down costs through preventative maintenance leveraging predictive analytics and augmented reality

## Digital Transformation

Leverage Industrial IoT and cloud-based platforms to support your digital roadmap

## Energy Management

Optimise utility infrastructure against process needs, improving efficiency and reducing costs



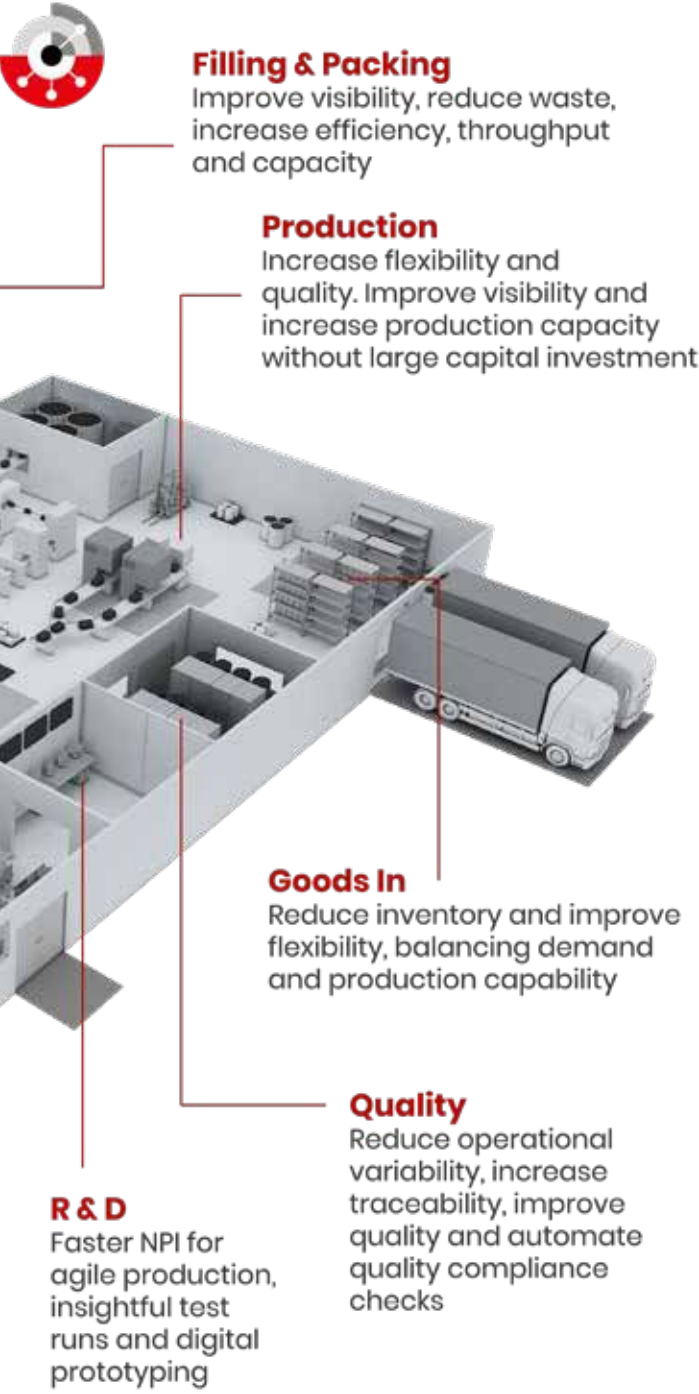
## Goods Out

Reliable, predictable production capacity improves management of finished goods buffers

## Planning

Increase capacity and enable dynamic production schedules for optimised resources

# Solutions for a Sustainable Future



### Take your operations to the next level with smart manufacturing solutions from Novotek

- Tangible roadmap to leverage the Industrial Internet
- Achieve greater flexibility, improve quality, visibility and reporting
- Real-time analytics for machine availability and reliability
- Greater connectivity
- Performance optimisation
- Regulatory compliance
- Traceability
- Support services
- Virtualisation and resilient architectures



# Industrial IoT



Balancing increased yield with reduced maintenance costs while achieving zero-incident operations and maximising return has long been a goal for manufacturers. The opportunity presented by digitisation takes companies to new levels of competitiveness.

But where to start? Put some funding aside for some IoT-ready hardware? Hire a digital specialist? Perhaps you already incorporate advanced automation and analytics into your operations and you are looking at progressing further.

## **But where do you invest next?**

To answer this question and create a coherent roadmap toward digital transformation requires a particular methodology. Novotek offers independent expertise and a holistic view of your organisation, from management and business systems to operational systems, networks and processes. You can be confident in your transformation strategy wherever you are on your digital journey.



### Analytics & Machine Learning

Explanatory analytics discover useful patterns and correlations within data, so predictive scoring can be used to make outcome-based predictions. Predictions around time to failure, and errors per hour, for example, can then be incorporated into IoT solutions.

By using digital twins, the behaviour of physical assets is replicated in the digital world to quickly generate intelligence and insights that can impact service, operations and product improvement.

Machine Learning (ML) enables the rapid creation of collaborative applications, User Interfaces, analytics and dashboards using rule-based process orchestrations. The additional connectivity to sensors, devices, and equipment is secure, embeddable and easily deployable, resulting in high efficiency and reuse levels.

### Augmented Reality

Augmented reality (AR) provides some of the most exciting and ground-breaking possibilities in manufacturing today. With AR, organisations can improve service efficiency with step-by-step maintenance instructions, customer service with more accessible self-help guides, sales with virtual product demos and factory efficiency with augmented inspection processes.



# Manufacturing Execution Systems (MES)

Manufacturing is more competitive than ever. Businesses are looking at technology to help them deliver faster, more efficiently, and cost-effectively to meet growing demand.

As regulations become increasingly stringent, and with the cost of raw materials continually rising, the only way for manufacturers to maintain margins is to work smarter.

Manufacturing Execution Systems control the flow of information between people and assets to deliver high-quality, efficient and effective manufacturing.

Recipes can be downloaded automatically for a consistent, standards-based approach which ensures the optimum use of raw materials and equipment.

Real-time quality monitoring prevents any out-of-spec product from entering the supply chain, and continuous performance monitoring supports maximum throughput and availability. Through fully digitising processes, manufacturers can use production data to drive continuous improvement initiatives and identify the root cause of issues on and around the production line.



## Efficiency

For over a decade, OEE (Overall Equipment Effectiveness) has been the cornerstone of continuous improvement for manufacturing. It is more critical now than ever to maximise productivity to stay ahead of the competition, and contemporary challenges demand a proactive approach to operational improvement.

Our team collaborates with you to identify and address the specific challenges that affect your business, providing fully supportable and scalable solutions with maximum security and resilience. Our deep domain knowledge in manufacturing translates into a broad toolkit of integrated solutions to reduce equipment bottlenecks, unscheduled downtime, and material or resource shortages.

With accessible and intuitive OEE displays, operators will be empowered to manage and respond effectively to process issues with highly visible, fast and accurate data. You can expect training and flexible support services on your terms to achieve the outcomes you need. As your operations become more efficient and streamlined, you can have greater confidence in your digital strategy and future competitiveness.

## Production Management

Production Management supervises operations, including functions that control product flow between equipment, develop genealogy reports and adapt schedules to reduce excess inventory. It supports production schedule execution and product tracking by monitoring scheduled completion times and adjusting for optimum efficiency.

## Quality

To enhance your quality standards, you need to digitise your processes. And if you have started doing this already, you'll need to build on it to keep ahead of the competition. Smart Manufacturing Solutions from Novotek will address quality issues from within your system infrastructure so you can easily access and interpret data.

*Our deep domain knowledge in industrial and process manufacturing translates into a broad toolkit of integrated solutions*

## Production Scheduling

Our production scheduling solutions provide an interactive, visual tool that helps manufacturers make the most of their production capacity. Supplementing corporate planning and supply chain systems, individual sites gain the ability to quickly turn summarised order and forecast information into specific, constrained production schedules. The schedules take into account available material, personnel and capacity- as well as unique local factors.

Production planners can create and maintain dynamic and highly accurate production schedules based on resource availability and asset capacity for rapid and informed decision-making.

This allows users to optimise and balance the impact of schedule changes on resources and delivery times, so cost and customer service can be managed more effectively.

Smart Manufacturing Solutions from Novotek will address quality issues from within your system infrastructure so you can easily access and interpret data.



# Proficiency Plant Applications

Proficiency Plant Applications from GE Digital is a powerful Manufacturing Operations Management (MOM) solution for process, discrete, and diverse / mixed manufacturers. Our manufacturing execution system (MES) software collects and analyzes data, and helps manage highly automated, fast-moving processes as well as slower moving, labor-intensive jobs.



- Recognized as a Leader in MES by Gartner and ABI Research
- Gartner Peer Review Insights: 100% would recommend GE Digital\*
- Faster time to value: dozens of out-of-the-box screens for process, discrete, and mixed manufacturing
- Rich visualisation: easily customize MES screens without writing code
- Manage large enterprises including mixed/diverse manufacturing, multi-sites, and global
- Run in private or public cloud and/or on-prem
- Proven MES, expert support, and real results





# Solution Spotlight

## Efficiency Management

The Efficiency Management module tracks and monitors overall equipment effectiveness (OEE) and other critical key performance indicators, downtime, waste, and production counts, MTBF, MTR, and more.

- **Automatically or manually associate events with causes and then analyze to identify root causes**
- **Summarize and analyze data by context**
- **Correlate events and reasons to actual production parameters. Utilize standard & ad-hoc reports, and dashboards for real-time decisions**

## Cloud OEE

Cloud OEE from GE Digital is a powerful operations management solution that reduces costs to improve overall equipment effectiveness (OEE) and accelerate results.

This cloud-based solution collects and analyses data, and helps manage highly automated, fast-moving processes as well as slower moving, labor-intensive jobs.

Proven and developed for 25+ years with thousands of implementations around the world, GE's leading Proficiency manufacturing solutions are now available as a managed service, hosted in the cloud. Choose cloud only or mix cloud and on-prem MES to meet your enterprise needs.



## Production Management & Tracking

Define and revision control the route and operations required to make a specific product on a specific line. The Production Management module oversees production operations, including functions to control product flow between equipment, develop product genealogy reports and make schedule changes to reduce excess inventory. It supports production schedule execution and product tracking against scheduled completion times with adjustments to optimize efficiencies.

Production management supports full traceability of individual products through every step of the manufacturing process allowing for auditable genealogy and production reporting.

## Quality Management

The Quality Management module ensures consistent quality in your products, providing real-time trends, statistics, SPC, and notifications to control quality levels. It integrates process, inspection, and test data from both manual and automated sources and houses this information in one, integrated place – including support for 21 CFR Part II.

Quality Management also attaches operator comments, specifications, recipes, and procedure documents to this information.

## Batch Analysis

With our unique layered applications approach and interface to standards-based commercially available batch execution systems, the Batch Analysis module is a great fit for both new and existing systems. It supports ISA-88 recipe analysis for products as formulation, procedures and equipment.

Batch Analysis also provides analysis of scheduled and completed recipes and generates electronic batch records (EBR) to help increase the overall quality and consistency of products.

# Automation & Control



We combine our deep technical knowledge and significant vertical market experience to develop process control and SCADA solutions that significantly streamline operations.

We are specialists in implementing software systems that manage and control manufacturing processes to improve operational effectiveness, increase compliance and reduce waste and variation.

By maintaining a standards-based approach and implementing automation systems which maximise the functionality available within best-in-class PLC hardware and SCADA packages, our goal is to minimise project risk while delivering the highest value, ensuring every project we deliver is on time and on budget.

Delivered systems utilise relevant COTS software packages, which cover subjects such as time-series data logging, reporting, analytical tools, workflow and mobile data access to maximise functionality and return on investment.



# Actionable information to optimise your operation

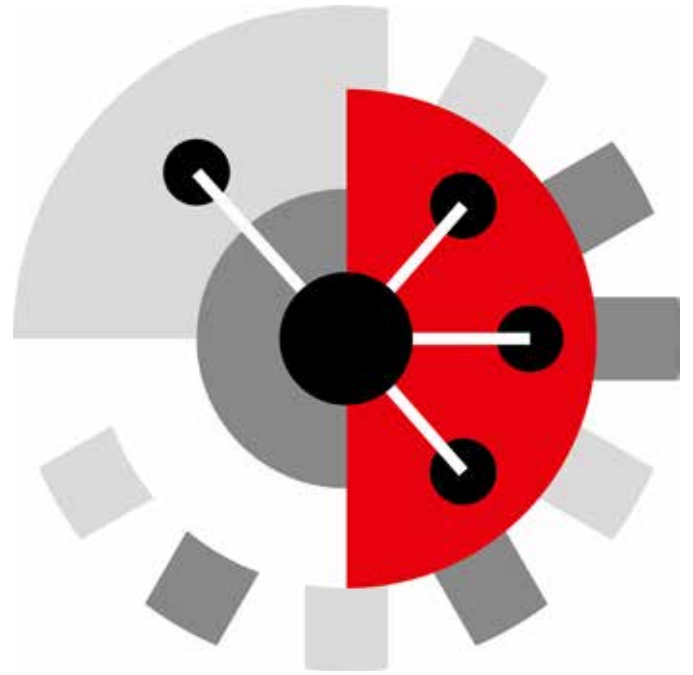
We recognise the importance of having accurate data and how that data can be used to drive business decisions. This is why our automation and control solutions focus on providing real-time visibility of the condition and status of every asset via a single, consolidated user interface. This enables you to see an accurate summary of the status of your entire operation from anywhere.

With access to the right data, our solutions can track the lifecycle performance of an asset and predict abnormal behaviour before a failure or disruption occurs, often avoiding significant negative operational or financial outcomes. From small self-contained systems to the largest, distributed and geographically diverse operations, our solutions offer:

- Real-time control and monitoring of all assets
- Continuous data capture and analysis to enable proactive maintenance of assets
- Remote diagnostics and troubleshooting
- Reduced equipment downtime
- Lower maintenance, service and repair costs



# Batch Execution



With increasing customer demand for ever-changing, low-cost, high-quality products set against tight regulations, batch production techniques should enable effective just-in-time, lean manufacturing.

The reality of non-standard or complex automation systems, custom code and poor scheduling/campaign planning results in unnecessarily long cycle times and increased downtime, reducing profit margins.

Novotek has many years of experience successfully implementing batch execution systems and can offer services from initial consultancy to complete project implementation and commissioning.

Adhering to industry standards such as S88 and S95, a batch control system from Novotek will provide a highly supportable and extensible batch execution system to help your manufacturing organisation remain adaptable and profitable.

Novotek Solutions can work with your existing, preferred PLC vendor to provide the underlying control system. All PLC software adheres to well-documented standards to implement structured equipment control modules and phases.

Novotek recommends the Proficy Batch Execution product from GE Digital.



Through the powerful yet easy-to-use Batch Execution application, you'll be able to:

### **Improve Production Efficiencies**

Batch Execution helps to maximise equipment utilisation and minimises changeover time, and helps to reduce batch cycle time, resulting in increased capacity and throughput.

### **Simplify Enterprise Connectivity**

Batch Execution enables information sharing across the entire business, empowering you to download recipe and formula information from enterprise-level systems and upload electronic batch records and production actuals.

### **Accelerate New Product Introduction (NPI)**

Using Batch Execution, companies can market new products faster than ever by providing reusable recipe components, a common equipment model and process simulation capabilities.

### **Address Regulatory Concerns**

Explicitly designed to address regulators' complex yet critical demands, the robust reporting, recording and security features inherent to Batch Execution and Electronic Work Instructions play a crucial role in developing your compliance strategy.

### **Reduce Costs & Boost ROI**

Because Batch Execution delivers diverse development tools, communication options and compliance-enabling functionality, you can reduce lifecycle engineering and system maintenance costs. Your company can make better, more informed business decisions based on real-time information through the enhanced connectivity options for business-level systems.



### **Batch Reporting**

Novotek has developed a comprehensive reporting system to work in conjunction with Proficy Batch Execution. The range of reports, developed using Microsoft SQL Server Reporting Services and delivered to the user via their browser, provides production managers with a detailed, unified view of the batching operation to facilitate continuous improvement regimes.

# Connectivity



In the current era, Industrial communications are primarily based on Ethernet networks and enterprise-level IT equipment, such as switches, routers, and firewalls. The proliferation of TCP/IP as the backbone of all communications has largely supplanted legacy protocols. TCP/IP variants have largely replaced serial comms and custom data buses.

Novotek Solutions have significant experience in both IT and OT environments, a unique position which enables the implementation of data connectivity with the most modern and most vintage systems or equipment.

## OPC

Over the last 20 years, OPC has become the standard for sharing data between industrial machines and software systems. In tandem, Novotek Solutions has driven the adoption of OPC, continuing to remain at the forefront of the adoption of OPC for system and equipment interoperability.

## Legacy Protocols

Many manufacturing facilities operate with equipment that has happily done its job, in some cases, for decades. However, the demand for data from these systems often requires creating bespoke interfaces to enable data acquisition.

Novotek has developed numerous drivers for legacy equipment, extending the lifetime of these systems and enabling connectivity with more modern platforms.



# HighByte

## Solution Spotlight

**HighByte Intelligence Hub is an Industrial DataOps software solution designed specifically for industrial data modeling, delivery, and governance.**

### **Built for Industrial Data**

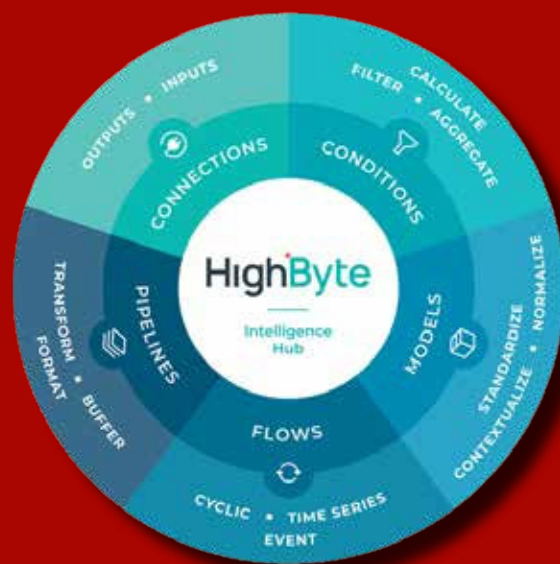
HighByte Intelligence Hub was built for the unique qualities of industrial data. The software securely connects devices, files, databases, and systems via open standards and native connections. Use the interface to model streaming data in real time, normalise and standardise data points and data models inherent to diverse machinery, and add context to data payloads that otherwise lack descriptions. Tap into real-time and asset model data from a variety of edge data sources, including machine data, transactional data, and time series (historical) data.

### **Designed for Scale**

HighByte Intelligence Hub was designed for scale. Simplify and accelerate the modeling of tens of thousands of datapoints from PLCs and machine controllers with reusable models that transform raw data into complex, useful information. Import and export template definitions to quickly replicate common datasets across assets. Efficiently deliver contextualised and correlated information to the applications that require it.

### **Ideal for Operations**

HighByte Intelligence Hub is an ideal solution for manufacturers and other industrial companies because the software was designed for Operational Technology (OT) teams. The platform-agnostic solution runs on-premises at the Edge, scales from embedded to server-grade computing platforms, and offers a code-free user interface. Administrators can network distributed Intelligence Hubs through a single management portal.



**Accelerate analytics and other Industry 4.0 use cases with a digital infrastructure solution built for scale.**

- Reduce system integration time from months to hours
- Improve data curation and preparation for AI and ML applications
- Scale operations metrics and analytics across the enterprise
- Reduce information wait time for business functions
- Eliminate time spent troubleshooting broken integrations
- Empower operators with insights from the Cloud
- Improve system-wide security and data governance
- Meet system integrity and regulatory traceability requirements
- Reduce Cloud ingest, processing, storage costs, and complexity
- Optimise data payloads for specific target applications and use cases

# IT Compliant OT



*Cutting-edge system architecture design underpins the quality of Novotek Solutions' implementations. Our deep domain and product expertise is the difference between a middle-of-the-road solution and an extraordinary one.*

It is generally recognised as a good business practice to regularly maintain IT infrastructure, invest in quality, modern hardware and frequently update operating systems and applications as new versions are released.

Conversely, it is common for Operational Technology (OT) used for production to be left for years, becoming outdated, unsupported and obsolete. Often, this can be attributed to fears over disrupted production and compromised security, leaving the business vulnerable to the ever-changing demands of IT and even cyber-attacks.





As the digital revolution progresses, aligning operational technologies with IT standards is fundamental to digital transformation strategies. For many years, Novotek has led the way in IT-centric software engineering for the complete production lifecycle, from delivery of raw materials, scheduling and supply chain to packaging and distribution.

## **The higher return on investment from virtualisation is driving the migration of operational technologies to virtual platforms.**

Novotek Solutions has championed the virtualisation of manufacturing systems for over a decade, using established platforms such as VMware and Hyper-V to deliver secure, resilient and robust solutions.

Ubiquitous in IT system architecture, virtualisation is a mature technology that reduces risk and improves return on investment. The virtual platform can be leveraged to protect against security threats and recover quickly from disruption while eliminating the need to run multiple costly physical servers.

Fewer physical servers reduces energy overheads and a flexible architecture makes resource reallocation straightforward when requirements change.

## **Increase your bottom line**

- Reduce scheduled and unscheduled downtime
- Save space and associated costs
- Reduce energy/carbon footprint
- Reduced engineering costs from simplified system deployment, maintenance and testing

## **Layered Defence**

- Virtual machines are isolated to contain failures
- Secure network using firewalls
- Restricted user access to hosts provides an additional layer of security
- Up-to-date antivirus software on hypervisor and security patches installed whenever necessary
- Separation of the corporate network to protect production

# Support & Maintenance

*Access to subject matter experts who are familiar with your systems can mean the difference between restoring production quickly and experiencing costly extended downtime.*

The Novotek Solutions team is on hand to support your operation with a wealth of experience and system knowledge.

In the face of the unexpected, getting back up and running is often the top priority. Help is close at hand. Our team provide viable workarounds to rapidly resume operations and in-depth root cause analysis to resolve long-term issues.

With your support contract, we provide a variety of SLAs set against key performance objectives and robust case management procedures coupled with regular reporting for ultimate peace of mind.

## **Why get support from Novotek Solutions?**

When the unexpected occurs, the mounting costs of lost production are the first thing that comes to mind. By undertaking a support contract with Novotek Solutions, help is always close at hand.



## **How to get in touch**

### **Support Portal**

*Raise a case with the details of the issues, and our team will respond*

### **Email**

*Send an email to our dedicated support email, and our system will automatically ingest your details and create a case, notifying our team of your issue*

### **Phone**

*Call and speak to our team directly*

### **Out of Hours**

*Use our Support Portal or contact our dedicated out-of-hours phoneline*

# Business Continuity



## Backups

Protect critical data and ensure continuity for your operation in the face of the unexpected. Novotek's fully managed service is provided by a team of experts with a wealth of experience in handling critical data. Should you experience data loss due to hardware failure, operator error or the malicious actions of third parties, our Backup Management Service provides robust contingencies to bring your operation back online as fast as possible.

With appropriate provisions for restoring full operational capacity, your business is protected against internal and external threats with Novotek Solutions.

With properly managed and secured backups, you can mitigate the growing threat of ransomware, malware and viruses.

The consequences of informal backup routines are dire:

- Ransomware attacks happen once every 1.9 seconds
- Average system downtime as the result of a ransomware attack is 21 days
- The average fee demanded by attackers is £422k
- Cost to recover from an attack averages in excess of £1.37m

## Flexible, trusted and robust

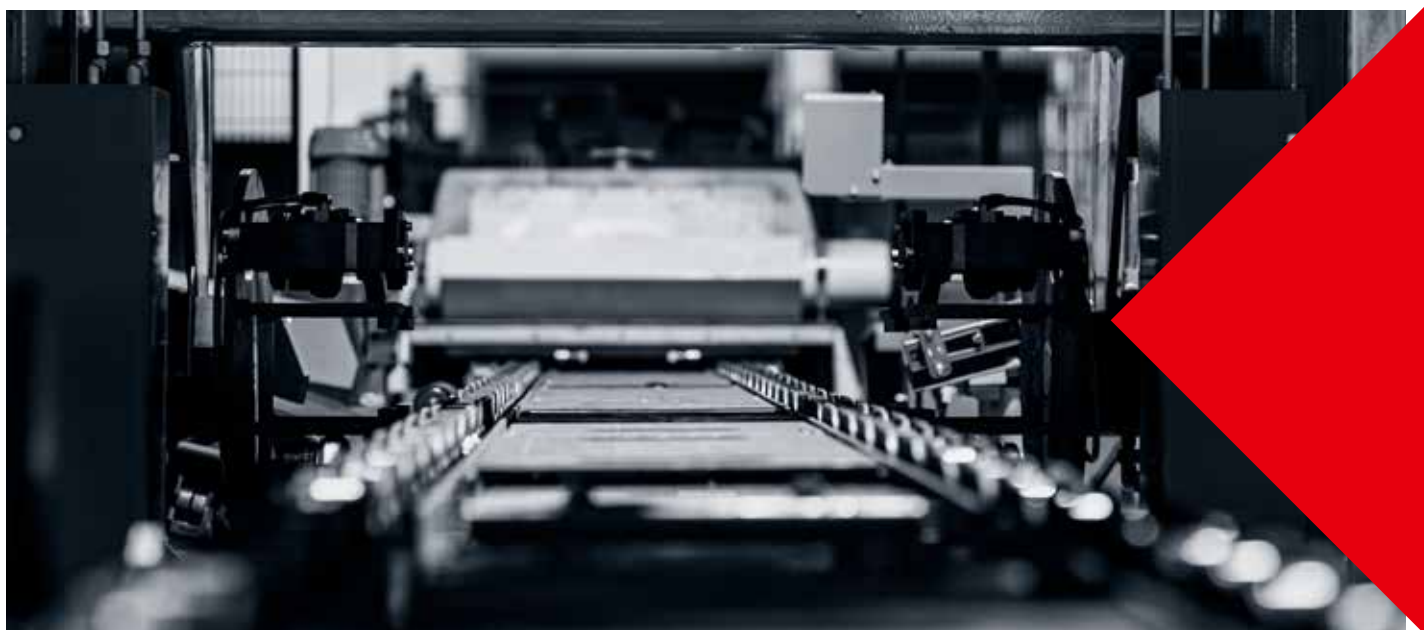
All valuable data held by your business is secured with our Backup Management Service. Multiple destination drives and off-site storage is recommended to mitigate a range of threats, from cyber-security to the possibility of physical damage. Flexible scheduling allows for your backups to be created at an optimal time for your operation.

Should the unexpected occur, our team is ready to initiate a tested and trusted disaster recovery plan. Fast and complete restoration of your operation's capabilities and data is available on demand to minimise disruption.

## Regulatory Data

A Backup Management Service is vital should your business be required to hold regulatory data. Our expert team specialises in appropriately establishing and configuring backup scheduling to mitigate the threat of data loss. The damage caused by such a breach is not solely financial, there is a risk of both loss of reputation and of operational proficiency.

Gain peace of mind in the knowledge your backup process is fully managed and automated, reducing workload for your on-site teams. With our experience and expertise, your valuable data will be located and identified to enable a robust backup process.



## Patching

Patch Management ensures the software systems critical to your business operations remain protected against internal and external threats.

Provided by experts and tailored to your needs with flexible options in frequency, our team identify, test and schedule patches for seamless deployment.

Fully managed from end to end, a Patch Partnership with Novotek Solutions means peace of mind.

Over half of organisations run on legacy systems. These aging platforms are often no longer supported with official patches. Partnering with Novotek for Patch Management fills this gap, removing the short term need for costly overhauls.

Our team review available patches to identify security-critical elements and functional upgrades.

Many threats to security and productivity can be eliminated in a timely manner by installing the latest recommended patches, thus ensuring your systems are working to their full potential.

Should a patch cause unexpected issues, a rollback plan is in place for all upgrades to enable a swift return to the most recent stable system state. To further protect against issues that may be introduced by patching, a full system backup is completed for each upgrade.

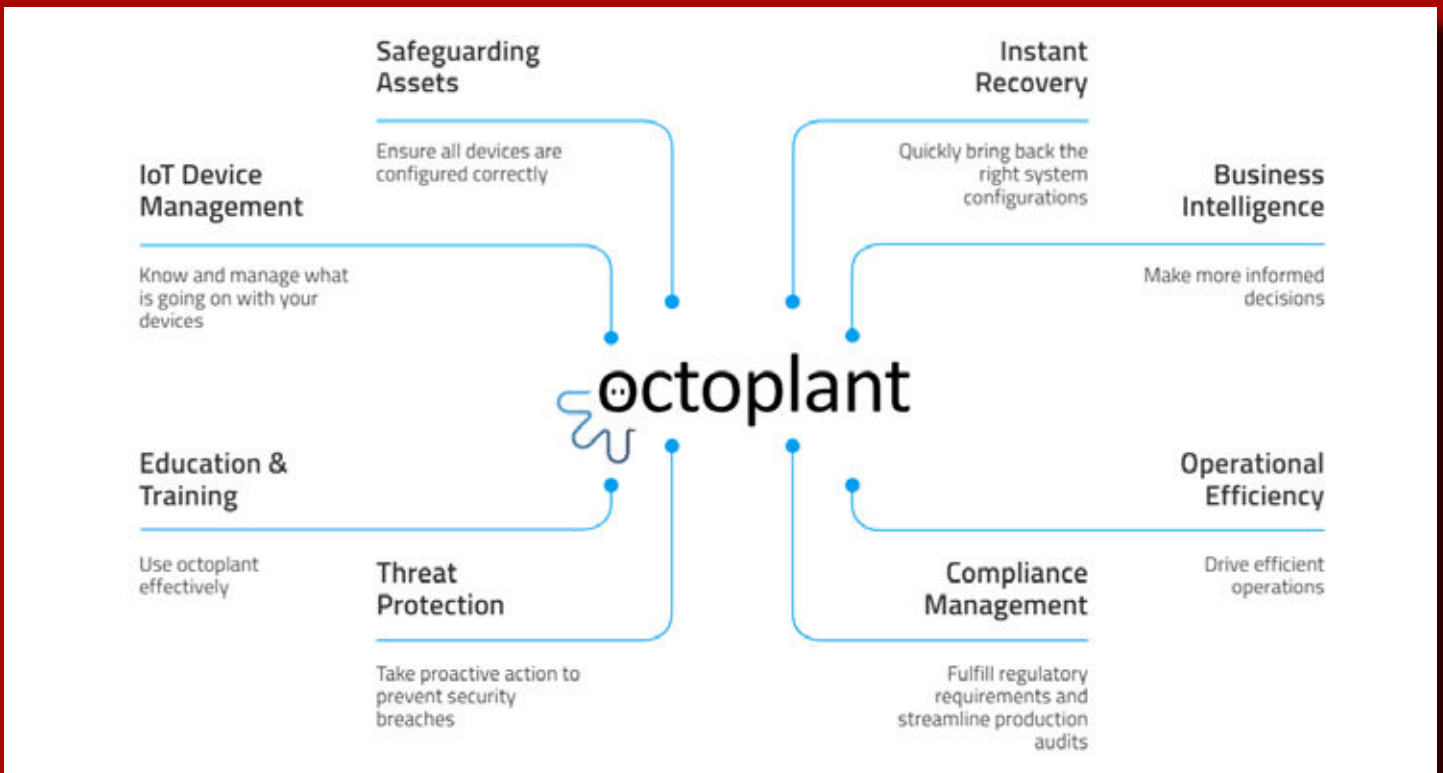
## Key Outcomes

- Ensure systems are working at their optimum level
- Mitigate cybersecurity threats
- Benefit from software improvements and bug fixes released by software vendors
- Frequent review of systems and threats
- Robust testing process to enable seamless deployment
- Rollback plan in place should patches need to be removed
- System backup to provide additional confidence

# octoplant

**AUVESY-MDT provides a modular solution that helps customers meet their asset and device management requirements and offers a solution to common manufacturing challenges. The octoplant platform provides customers with a holistic summary of their plant and shows them the information they need – when they need it – thanks to dashboards, which can be customised to suit the role of the user.**

**The octoplant platform is comprised of eight solution sets which offer features, tailored to specific industrial needs, to help prevent downtime, errors and security issues.**



## 1. IoT Device Management

octoplant is vendor-independent and can connect to all commonly found automated production and IoT devices. As a central data management platform, it manages programs and configuration settings data in a standardised manner. By doing so, the solution ensures transparent management of complex information in a way that is both manufacturer-independent and solution-neutral across all common industry standards. It's robust change history shows who changed what, where, when, and why, at a glance.

## 2. Safeguarding Assets

By backing up assets, users can sleep soundly at night because octoplant helps safeguard automated production and ensures that the correct authorised version is always running. With complete version management, plant operators across the board always have access to the latest version and can see whether changes are required. The process of creating backups is automated – saving time and labor, reducing errors, and ensuring a reliable data snapshot of the entire production environment.

# Solution Spotlight

## 3. Instant Recovery

octoplant's capacity for instant recovery ensures that all necessary programs, data and settings within the scope of machine automation are available and are running correctly. It also allows for production to be restored at any time. In the event of an emergency, octoplant enables production environments and devices to be restored quickly as it eliminates the need to search for the last previously functioning version.

## 4. Business Intelligence

octoplant consolidates the data of complex, fragmented production environments in one easy-to-use data management platform. It helps ensure that data is easy to analyse and thus guarantees better, safer, and faster decision making. Data can also be exported at any time. This solution provides valuable insights, allowing the user to compare different production locations and devices, and helps aid reliable predictive maintenance.

## 5. Operational Efficiency

The solutions provided by octoplant enable companies to increase overall equipment effectiveness (OEE) by digitally connecting information taken from field, control, supervisory, and enterprise levels. octoplant adapts to existing workflows and (by comparing servers) provides information on how efficiently these components are being used, and how frequently changes to specific components are being made. Guidelines and best practices for assets and configuration settings data can lead to an increased level of standardisation and efficiency.

## 6. Compliance Management

Integrated documentation and regulatory workflows, such as those for the release process, help ensure reliable and seamless compliance management in which risks are reduced resulting in a rule-compliant, traceable, and auditable production process. Octoplant supports compliance with legal standards such as the KRITIS IT security law, the FDA 21 CFR Part 11 regulation, and GxP rules to ensure process quality, production documentation and proof of compliance.

## 7. Threat Protection

Thanks to its proactive vulnerability, change, and risk detection features, octoplant's holistic security architecture is able to protect production environments from attack, prevent damage, and avoid downtime. It breaks down the automatically assigned, regularly updated asset risk score for each inventory asset. Therefore, AUVESYMDT's solution can be used to prevent/reduce damage and shorten/avoid downtimes thanks to its vulnerability, change, and risk detection features.

## 8. Education & Training

Finally, due to effective knowledge transfer, companies can help preserve their own production-specific knowledge and pass it on to new employees. The comprehensive e-learning platform enables employees to continue learning about octoplant anytime and anywhere. Best practices in the form of videos and webcasts can help improve job skills for everyone involved and ensure rapid onboarding when it comes to new equipment or production lines.



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