SMART FACTORIES ARE THE SMART MOVE FOR SUSTAINABILITY

Smart factories are leading the way when it comes to leveraging data to improve operations having a positive impact on machine efficiency, reducing costs, and environmental sustainability.

As the fourth industrial revolution – AKA industry 4.0 – continues apace, we look at the positive impact automation can have on tackling cybersecurity, efficiency, safety, and sustainability in smart factories:

Improving efficiency

Outdated equipment can spend between **40% and 70%** of it's **operation time idling.**

However, studies have shown that adopting technological solutions like AI, IoT sensors, and robotics can **boost the productivity** of their systems **by 17–20%.**

Using IIoT (industrial internet of things) to monitor machines and directing information to relevant employees has been shown to **increase productivity by 24%.**

Share of tasks performed by machines in manufacturing by 2024

59.9% Information and data processing

48.7% Performing physical and manual work activities

48.6% Administering

48% Identifying and evaluating job-relevant information

Mitigating security risks, minimizing downtime

Automated systems leveraging IIoT can aid in identifying and responding to system failures and inefficiencies quickly.

43% of all companies say that in 2023 they will use automation to **identify risks and improve security.**

40% of smart factories in all industries have been a victim of **cybersecurity attacks** in the past year, and over half of 'heavy industry' have faced cybersecurity attacks.

82% of companies have experienced **unplanned downtime and system errors**, which impacts security and safety and costs manufacturers time and money.

Top motivations to pursue automation

69% Automate repetitive tasks to increase staff focus on high value tasks

67% Increase productivity of existing staff to avoid increasing headcount

59% Reduce errors made by people

Machine longevity

Data from real-time sensors measure machine performance. This data, which measures factors such as timing, vibration, pressure, and sound, is processed and made into information, where it can be deployed for real-time operational changes.

Deploying IoT devices can yield a **40% reduction** in equipment maintenance costs.

It is estimated that the cost savings resulting from IoT-driven maintenance will **add $630 billion** to the global economy by 2025.

Efficiency gains that go beyond output

Globally, as of 2022, energy-related emissions from the manufacturing industry are estimated to be 24%. However, smart factories that utilize advanced technologies and tools can potentially reduce emissions and energy wastage:

Energy savings as high as **70%** can be achieved by using **IoT energy management solutions** that harness sensors, controls and analytics.

Efficiency gains when digital tools are applied at older facilities*

78% CO_2 emissions reduction (Including carbon credits)

26% Energy savings

20% Water savings

*Example drawn from report on 60-year old Schneider Electric facility that was converted to a smart factory.

Manufacturing has embraced Industry 4.0

Smart factory initiatives could see US manufacturers triple the labor productivity growth rate from 2019 to 2030 compared to the last decade.

By 2024, **half of all key tasks** in advanced manufacturing industries are projected to be **performed by machines.**

74% of manufacturing executives say their IT budgets are **focused on advanced AI technologies** to aid manufacturing processes.

Technology adoption in manufacturing

Cloud computing	92%
IoT and connected devices	84%
Big data analytics	81%
Robots, non-humanoid	79%
Encryption and cyber security	72%
Artificial intelligence	71%
Power storage and generation	62%

Sources: Deloitte, McKinsey, WEF, Capgemini, CGI, GE, Green Biz, Bosch, Imaginovation Insider, Schneider Electric, Science Direct, GSMA, NIST.