
SIEMENS
YESTERDAY VS. TODAY
Digitalization and IoT's role in
revolutionizing industrial
machinery
siemens.com/InsightsHub

Major priority shifts are happening right now for OEMs in industrial machinery

There's an unprecedented urgency to speed up the digitalization journey and get equipment connected to the industrial IoT in order to remain competitive.

The shift to the IoT enables companies to be agile and able to pivot and meet changing market and customer demands, economic fluctuations and unexpected disruptions – and even innovate along the way. The power of the industrial IoT lies in its ability to help enterprises be prepared for whatever the future holds – and prevent them from ever being caught off guard.

How does the industrial IoT lead original equipment manufacturers (OEMs) to a more future-proof state?

In this E-book, you'll learn:

- Why industrial machinery OEMs need to accelerate their digitalization journey
- The core benefits experienced with digitalization and the IoT
- What to consider when deciding to make or buy an IoT solution

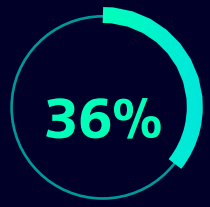
Why digitalize now?

Yesterday: inflexible processes

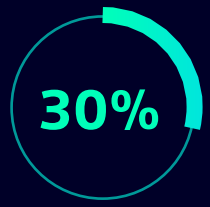
Before the COVID-19 pandemic shook the globe in 2020, many OEMs were just beginning their digitalization journey and exploring how the IoT and connectivity could fit into their business model. Gartner reported that 87 percent of senior business leaders indicated that digitalization would be a company priority for 2020, but only a fraction of those companies had brought digital initiatives to scale up to that point.[1]

OEMs face many challenges when trying to implement a new digitalization strategy. While cost is a huge factor to consider, so is the major change that comes with new, innovative solutions. In a recent study from research firm Tech Clarity, 36 percent of surveyed OEMS said that "resistance to change" was inhibiting their digitalization adoption. Another reason for slow adoption was legacy equipment: 30 percent of OEMs said their equipment is too old to be digitalized with today's standards.[2]

While manufacturers were previously looking at ways to strategically introduce digital components and connectivity into their products, there was no urgency. The pandemic has changed that not just for 2020 and 2021, but for forever. The ability to connect plants, machines, and systems in a global, complex environment will be the key to success for any future disruption OEMs may face.



of surveyed OEMs said that **"resistance to change" was inhibiting their digitalization adoption**



of OEMs said **their equipment is too old to be digitalized** with today's standards

Today: a need for speed

When the pandemic unfolded, blindsiding the industrialized world, a fire was lit.

Tech Clarity found that while 1 percent of manufacturers put their digitalization plans on pause, it led to an acceleration in plans for 33 percent of manufacturers.[3] Companies worldwide began realizing how imperative it is to run operations leanly and with the ability to quickly, and oftentimes proactively, react.

OEMs that were equipped with industrial IoT solutions and digitalization have been able to quickly pivot their shop and plant floors to continue doing business efficiently and meet evolving customer demands. Prior to the pandemic, 86 percent of companies with industrial IoT connectivity saw an increase in profits just by monitoring and optimizing their machines, and 35 percent indicated profits increased significantly.[4] These savings, along with the ability to quickly adjust to pandemic challenges likely gave, and continue to give, them a competitive advantage.

To remain successful today and in the future, these quick pivots will be the expectation – not the exception. With adaptable, automated factories and products, ramping production down and back up can be done efficiently, fewer workers must be present, machines remain healthier and have higher production rates, and less unexpected maintenance and downtime is faced.

In fact, McKinsey found that companies that take this "digital factory" approach can also expect to:[5]

- Bring products to market faster (in as soon as six months)
- Do more with existing resources (to complete as many as eight product launches per year)
- Reduce tech development costs by a third (by employing fewer managers per engineer)
- Attract the talent required to compete in a digital world

The imperative to start the industrial IoT digitalization journey has never been greater. As the world begins to face more unpredictable challenges – pandemics, weather events, or changing economic conditions – the need for smart factories exponentially increases. Being nimble and prepared will be the difference between your success and decline.

What digitalization and IoT can do for you

Digitalization must happen. However, the benefits you get from it will depend on your needs.

Here are some key use cases that you should be pursuing to boost operations and revenue, as well as enable your business to remain future-proof.

Data transparency and remote condition monitoring

Benefit shop floor operations

The industrial IoT allows full transparency into how your machines are running on your shop floor and in the field at customer locations. This transparency can help you take a pro-active approach to machine optimization and maintenance within your production lines. In addition, data transparency helps allow your employees to design and engineer better equipment:

Optimize your shop floor machines on a global scale

Know when machines are running below capacity or producing too much scrap. When equipment operates out of the norm, get alerts and perform root-cause analysis to determine the issue.

Inform future updates and versions

Immediately share data insights with your engineers so any possible issues can be addressed in the next software update for the equipment, or with your R&D team so they don't have to start from scratch designing the next version of equipment. Your engineers and R&D team also won't need to be physically present to gather this data.

Complete software updates and equipment updates faster

Because information is easily shared with essential teams within your organization, you can move up timelines to get software updates and equipment to market faster – a key part of being able to pivot quickly in increasingly competitive markets.

Predictive maintenance and anything as a service

Benefit shop floor operations as well as create new business model offerings

If an enterprise doesn't have IoT capabilities, teams miss critical information about what's happening with machines in production and in the field. The industrial IoT provides an avenue for you to apply predictive maintenance in your factory, as well as offer maintenance as a service to your customers through remote condition monitoring capabilities. Equipment sales can no longer be the final step of the customer relationship: it should be the beginning. By offering predictive maintenance as a service, your business can become a benchmark of quality in the market. Whether you use predictive maintenance on your shop floor or offer it as a service, you get these key benefits:

Reduced maintenance costs with less downtime on your shop floor

Set up alerts to receive insights about when something is wrong with equipment in your factory or when a threshold is hit. Your technicians can then proactively perform maintenance before downtime occurs.

Create new revenue streams and offer maintenance as a service and sell guaranteed uptime

By remotely monitoring equipment in the field, service technicians can proactively identify maintenance needed, as well as have a clear picture of any problems and the needed action before they arrive in the field, further reducing the likelihood of repeat trips and significant downtime.

Fewer people required in the factory and in the field

Since you'll be able to operate and see what's happening from anywhere, you'll need fewer people in the factory and only have to send in service staff as needed.

The U.S. Department of Energy estimates that predictive maintenance can decrease failures by 70 to 75 percent.[6]

Supply chain management

Benefit shop floor operations and delivery commitments

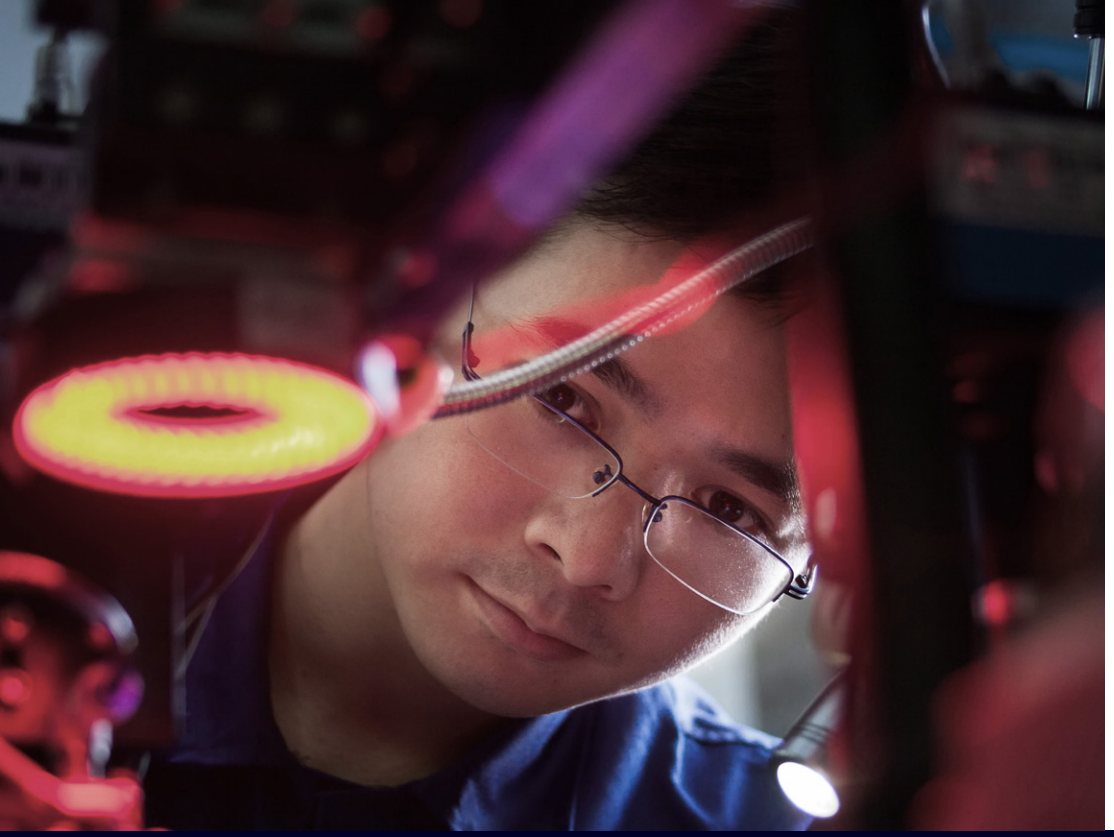
A digitalized supply chain is transparent making it more resilient, intelligent and sustainable. With the IoT, you can get more nuanced and detailed with how you manage your supply chains because you'll have the data to see what's happening now – and what can happen in the future. With the IoT, more efficient supply chain management can help your factory continue to run as various disruptions come along:

Track items in near-real time

Rather than wondering when parts will arrive or be delivered, you can estimate timelines with much more accuracy.

Plan for disruption

If there's an issue with a supplier, you can proactively respond and even work with a different supplier to get the parts you need on time.



Warranty protection

Create new business model offerings

When a piece of equipment breaks down in the field and it isn't connected to the IoT, you're faced with lots of missing information. Was the machine running in proper conditions? How many cycles did it last? Has anything been modified on it?

For example, say a customer has a one-year warranty on a piece of equipment. Six months in, the equipment breaks and the customer either calls a repairperson from a servicing company or repairs the equipment in-house. A non-branded replacement part is installed in the equipment to make it work. Three months later, the equipment breaks again. This time, the customer calls you and wants to leverage their warranty for a replacement. This could cost you in terms of money and time, as well as leave you without key information about why the equipment failed in the first place.

This situation is far less likely to occur when the industrial IoT is properly leveraged. With the IoT, you can offer dynamic warranties to customers and protect your bottom line:

Connect equipment and gather performance data

See when something is headed for an imminent outage or failure before it happens and alert the customer that the issue needs to be addressed. When you have critical field data, you can also respond properly to warranty claims.

Ensure replacements are brand approved

Send in your own service technicians to ensure that any replacement or spare parts introduced into the equipment are brand approved and aligned with the warranty.

Offer dynamic warranties

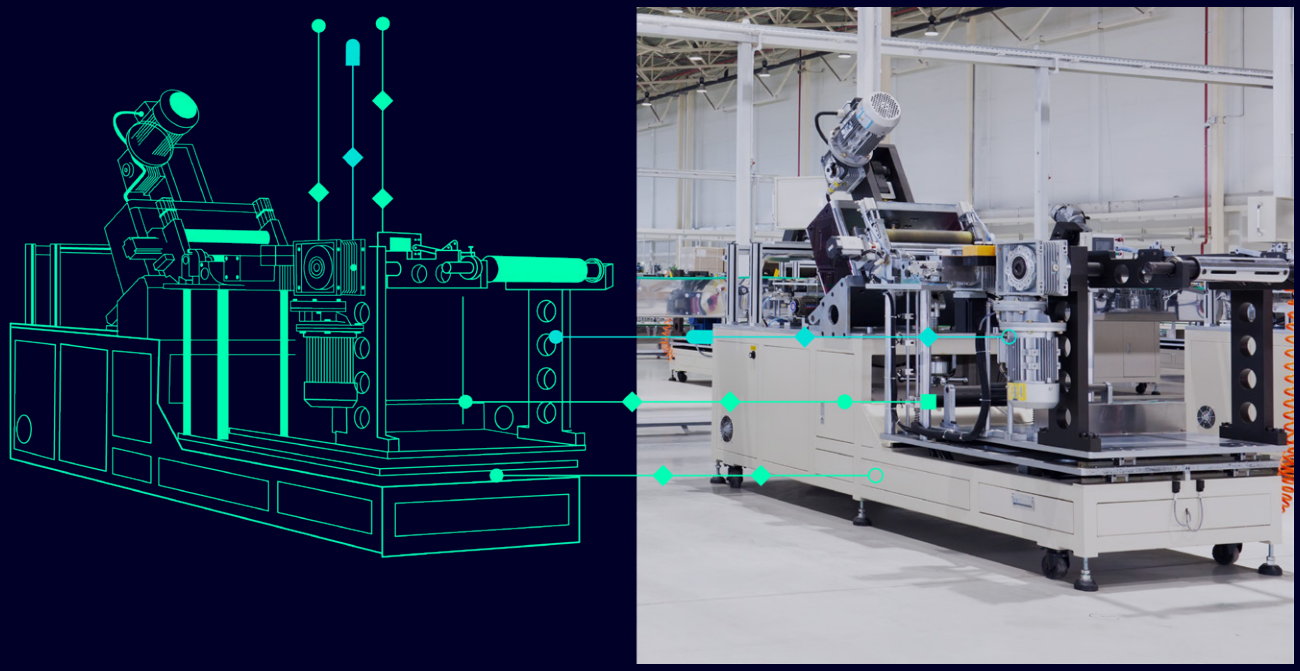
Start offering warranties based on actual machine use as opposed to expected use. For example, if there are fewer people working in a factory in response to a public health issue, machine usage may significantly decrease. In this instance, a warranty based on actual machine usage could offer significant cost savings to the customer and require less maintenance from your company.

Closed-loop digital twin

Benefit operations

As an OEM, you design and manufacture equipment with a specific vision in mind. But that vision may not always align with how your customers use their equipment. The only way to know if that vision aligns with customer usage is by having a comprehensive, closed-loop digital twin of the equipment.

With the IoT, the closed-loop digital twin brings live performance data from the machine in the field back into the digital twin of the product, and it can offer your company:



A more accurate simulation of the product

With live performance data being added to your simulations, you can more accurately test countless variables and predict how the physical product will act and respond, allowing you to improve the design.

Less prototyping

More accurate simulations will cut the expense of having to iterate with multiple prototypes.

Further, you can extend your capabilities and pull live performance data from your own production line to create the closed-loop digital twin of production. With live data from machines on the shop floor, you can update your simulations and model changes to a line prior to doing the actual change.

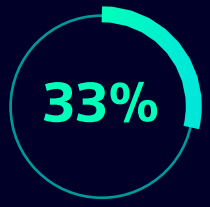
Whether your company manufactures smaller, less complex equipment or builds industrial machines, digitalization and the industrial IoT offers vital benefits as you look to create a future-ready business.

Buy or make an industrial IoT solution: how to answer

Digitalization and IoT capabilities can alleviate the stress that comes with volatile markets and offer benefits to help future-proof your business. But as you evaluate potential steps forward, the question of make or buy will arise:

Should you develop your own IoT solution, or should you buy one?

While both options are viable to do with the right partner, one method is obviously faster than the other. And with at least 33 percent of manufacturers now accelerating their plans for digitalization,[7] the imperative to get established and begin seeing a healthy return on investment is becoming more pressing.



of manufacturers are now **accelerating their plans for digitalization**

If time doesn't feel like a deciding factor, there are other considerations to keep in mind:

☑ What does your company specialize in?

Chances are, your IT department has a backlog of work and is really good at what you need them to do for your industry, but they don't have much experience with the IoT. Stay focused on your most strategic projects to remain an efficient market leader.

☑ How many extra resources do you have?

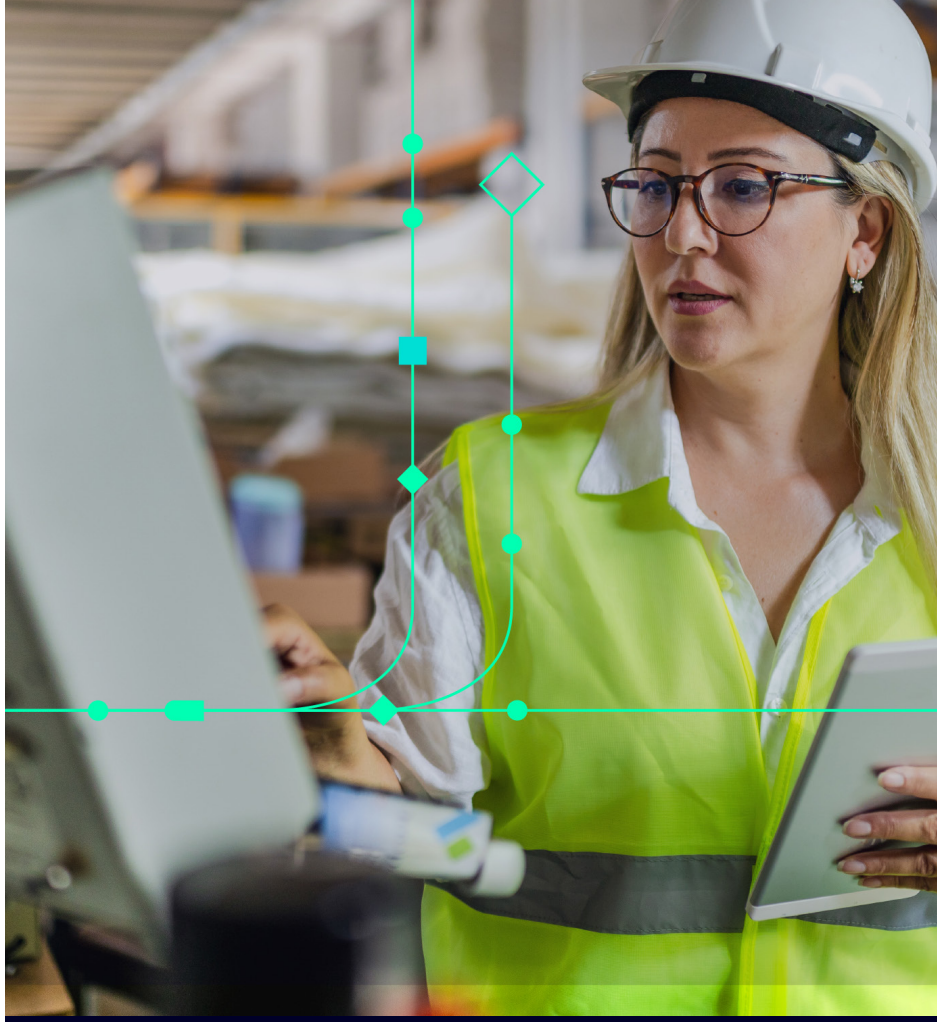
In most cases, you need four times as many people focused on building the solution than if you were to buy it. Additionally, you need those resources focused on it for the duration of its life – including general maintenance needs, equipment upgrades, infrastructure changes and updates – and it's a never-ending cycle.

☑ How will your machines connect to the IoT?

Connecting legacy machines and equipment of different types and brands means dealing with several connection needs. You will need to build solutions for all types of devices and protocols and make sure the connections stay online.

☑ How many different data sources do you have?

How will you develop the solutions needed to get several sources to contextualize with one another so you can perform robust analysis?



Want to dive deeper into what's involved with building a solution versus buying one?

Check out this make vs. buy infographic and checklist

Get ready to future-proof your business

If you're considering digitalization and forming a strategy, your first step should be the industrial IoT.

By adopting IoT capabilities, your company will be able to meet market demand and pivot quickly, regardless of the situations that arise outside your walls. And, you'll have a future-ready business that's primed for long-term success that keeps you one step ahead of the competition.

Ready to try an industrial IoT solution?
Get a free Insights Hub account and better understand what the IoT can do for you.

Insights Hub is the Industrial IoT application suite at the core of the Industrial Operations X technology portfolio for improved decision making. It empowers smart manufacturing to generate actionable insights from assets and operational data while driving manufacturing excellence and improving operational efficiency and quality. Industrial Operations X technology consists of Industrial IoT, Industrial Edge, and Industrial Low Code, enabling Siemens, customers and partners across the Siemens Xcelerator ecosystem to build industry-specific applications.

Published by Siemens AG
For the U.S. published by Siemens Industry Inc

1 Gartner: Digitalization Strategy for Business Transformation, 2020
2 Tech Clarity: Drive Higher Profits with IoT Machine Monitoring and Optimization, 2020
3 Tech Clarity: Drive Higher Profits with IoT Machine Monitoring and Optimization, 2020
4 Tech Clarity: Drive Higher Profits with IoT Machine Monitoring and Optimization, 2020
5 McKinsey: Welcome to the Digital Factory: The Answer to How to Scale Your Digital Transformation, 2020
6 Siemens, Machine health check: automating maintenance, 2020
7 Tech Clarity: Drive Higher Profits with IoT Machine Monitoring and Optimization, 2020

About Siemens Digital Industries Software

Siemens Digital Industries Software helps organizations of all sizes digitally transform using software, hardware and services from the Siemens Xcelerator business platform. Siemens' software and the comprehensive digital twin enable companies to optimize their design, engineering and manufacturing processes to turn today's ideas into the sustainable products of the future.

From chips to entire systems, from product to process, across all industries, Siemens Digital Industries Software – Accelerating transformation.

Americas: 1 800 498 5351

EMEA: 00 800 70002222

Asia-Pacific: 001 800 03061910

For additional numbers, click here.

SIEMENS