



The digital strategic orientation in the machinery industry is being put to the test

The machinery and plant sector, a pillar of German industry, is facing transformation

01 | Introduction

Following on the heels of its best year in history, Germany's machinery sector is now suffering from a more than 13% drop in sales revenue in the current crisis. Transforming this pillar of Germany's economy is therefore a top priority when it comes to maintaining the country's competitiveness and position as a global innovator. Observing current developments is vital in this respect.

02 | Where do we stand on digitalization in the machinery sector?

Germany's machinery sector pursues the fast-follower strategy. In other words, it tends not to be the first to introduce digitalization innovations on the market. Instead, it promptly reacts to and follows successful proofs of concept from other sectors. This lets it learn from others' mistakes and take a more targeted approach to developing its own business models.

03 | Obstacles to digitalization in the machinery sector

The demands on digital value-added services are high. In addition to optimizing resource utilization, these services are expected to increase plant output, optimize OEE, improve after sales activities and enable more flexible use of plants. Expertise in developing new digital business models is the key.

04 | Digital use cases – digital twin

As a rule, we must begin by distinguishing between two points of emphasis. One emphasis is on achieving compatibility using communication standards, and another is on developing specific value-added services with measurable benefits for the customer and emphasizing smart services in particular. This interaction between both points of emphasis results in a digital twin – the digital depiction of production.

05 | Guideposts for digital orientation

We should take a two-pronged approach to production within the context of digitalization. In addition to visible digitalization in the form of worker assistance in the manufacturing process, for example, the invisible aspect of digitalization by background software systems is essential for the ability to control and digitally depict productive processes.

06 | How to Achieve the Necessary Transformation

Driving digitalization in production calls for an integrated approach that combines various aspects and produces perceptible added value for the company. The emphasis here must lie on optimizing decision making and designing production processes more efficiently.

01 | Introduction

Following on the heels of its best year in history, Germany's machinery sector is now suffering from a more than 13% drop in sales revenue in the current crisis. Transforming this pillar of Germany's economy is therefore a top priority when it comes to maintaining the country's competitiveness and position as a global innovator. Observing current developments is vital in this respect.

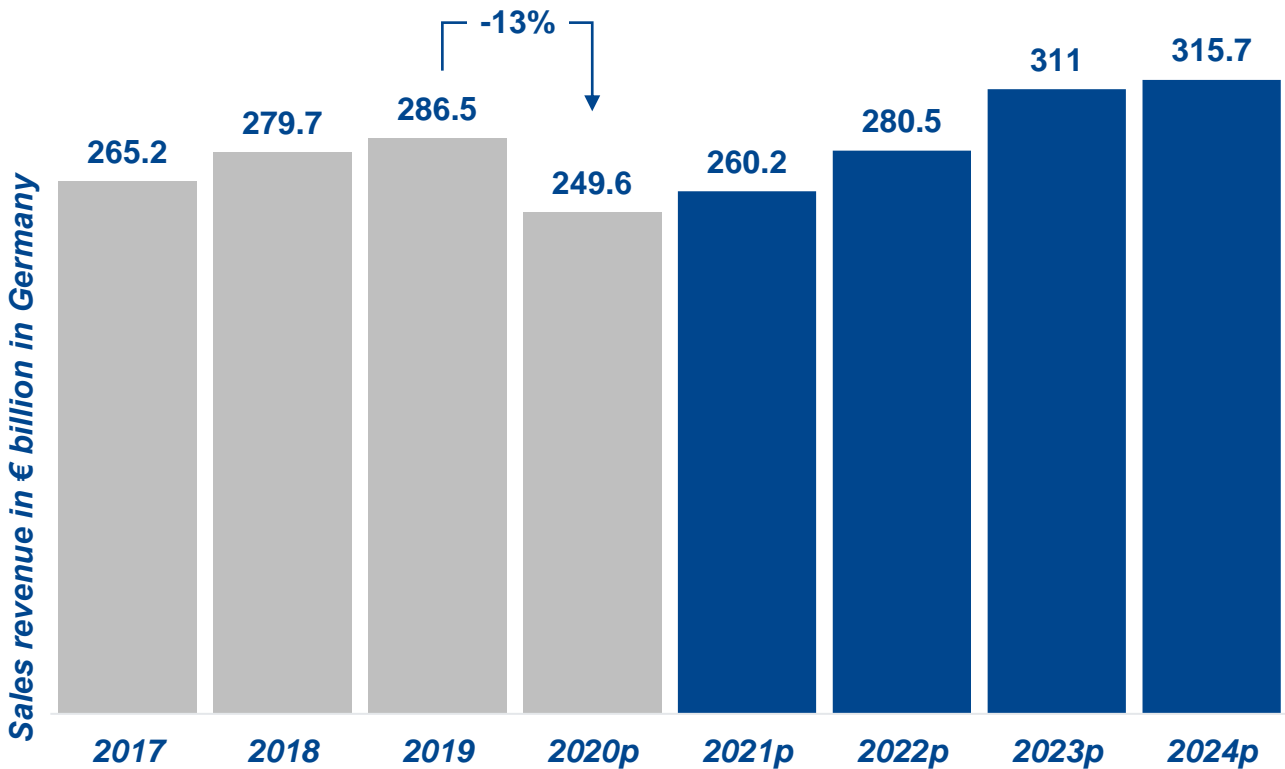


Figure 1: Sales revenue in the German machinery and plant sector in € billion

Source: European Commission Statistical Database, 2020

An evolving sector

2020 was hardly a banner year for Germany's machinery and plant industry. A more than 13% drop in sales revenue is putting the pillar of Germany's industry to the test.

Experts anticipate the sector's sales revenue to begin recovering over the year ahead. Andreas Hohmann, Vice President of Consulting at the German machinery and plant manufacturer Dürr, is convinced that "preserving the industry's profitability will require a lasting transformation toward digital business models and global markets."

This transformation is essential given the average plant capacity utilization of 65% to 70%.

Powered by digitalization

The machinery and plant sector is now investing one euro out of every seven in digitalization. Using digital platforms to produce value-added services plays a key role here. Partnerships have become a decisive tool when it comes to expanding expertise while simultaneously employing independent platform providers to react flexibly to requirements from end customers on the machinery and plant market.

02 | Where do we stand on digitalization in the machinery sector?

Germany's machinery sector pursues the fast-follower strategy. In other words, it tends not to be the first to introduce digitalization innovations on the market. Instead, it promptly reacts to and follows successful proofs of concept from other sectors. This lets it learn from others' mistakes and take a more targeted approach to developing its own business models.

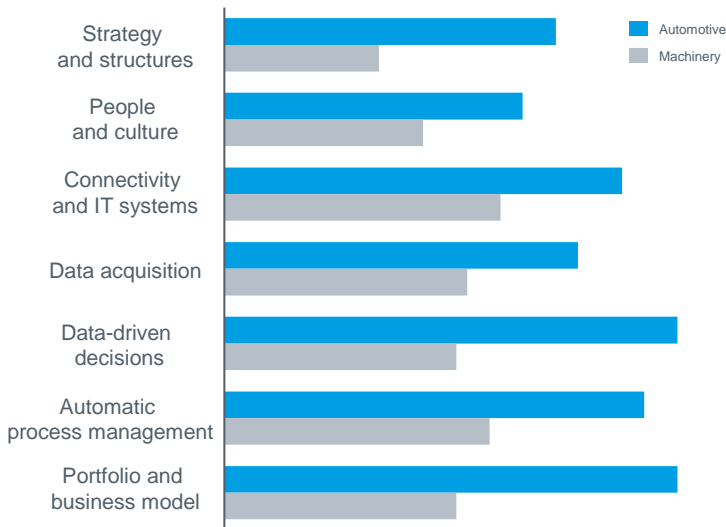


Figure 4: Digital readiness – machinery and plant sector
Source: Benchmarking performed according to methods developed by Dürr Consulting // Values in % readiness

Digitalization in the German machinery and plant sector is increasingly becoming a unique selling proposition. IIoT platforms are undergoing unprecedented growth, generating an annual sales revenue of around €40 billion in 2019. Experts are forecasting double-digit growth over the years ahead.

According to the latest surveys we conducted with our customer groups, independent platforms are regarded as the key to transitioning directly to cloud services when developing edge solutions.

03 | Obstacles to digitalization in the machinery sector

The demands on digital value-added services are high. In addition to optimizing resource use, these demands include increasing plant output, optimizing OEE, improving after sales activities and enabling more flexible use of plants. Expertise in developing new digital business models is the key.

Digital technologies and topics are frequently accorded insufficient strategic importance in German management boardrooms, not least due to a lack of management knowledge and clarity regarding end customers' demands on digital value-added services.

What's more, there is often a lack of business models that promote interaction with customers, particularly during challenging times, and open new sales channels. This often results in the cash flow required to develop and implement digital solutions not being shown transparently, which represents one of the biggest obstacles.

Strategy and structures	Definition of a transparent, feasible digital sales strategy	Targeted use of resources and funds
People and culture	"Culture eats strategy for breakfast" – a traditional mindset puts digitalization to shame	Lack of specialists and staff to implement digital projects
Connectivity and IT systems	Concerns about digital leaks in the establishing organization and an uncontrollable tide of outflowing data	
Data acquisition	IT system obstacles to standardized data communication and processing	
Data-driven decisions	Lack of transparency regarding the savings achieved with digitalization	
Automatic process management	Exploitation of physical process efficiencies	
Portfolio and business model	Lack of a clear approach to identifying digital business models	No atmosphere of innovation or transformation into routine digital work

Figure 5: Heat map of obstacles in the machinery and plant sector
Source: Dürr Consulting, in-house evaluation, 2020

04 | Digital Use Cases – Digital Twin

As a rule, we must begin by distinguishing between two points of emphasis. One emphasis is on achieving compatibility using communication standards, and another is on developing specific value-added services with measurable benefits for the customer and emphasizing smart services in particular. This interaction between both points of emphasis results in a digital twin – the digital depiction of production.

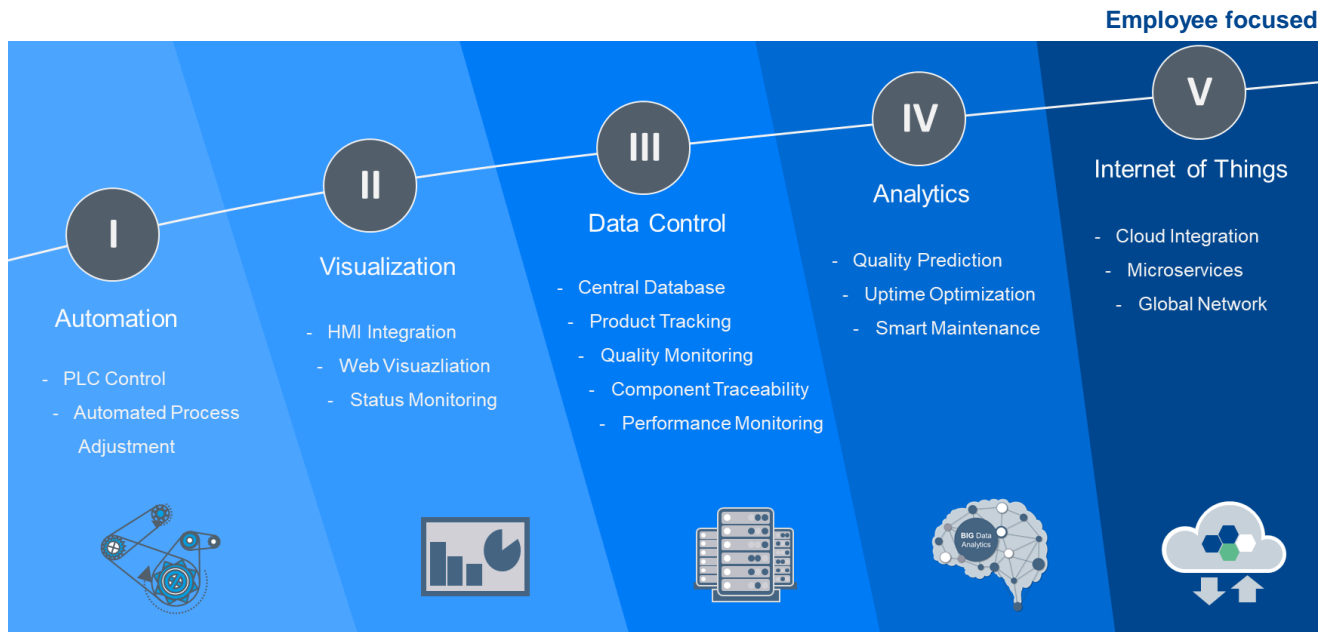


Figure 6: Digital twin road map – machinery and plant sector

The digital twin describes a digital depiction of production. The focus should lie on developing the digital twin specifically to suit the intended business models. Some steps in developing a digital depiction of production might not be essential. Depending on the application, priorities should be set to suit the specific objectives.

As a rule, creating a digital twin does not involve an integrated approach. Individual areas should be specifically assessed to set priorities for applying use cases – in other words, for prioritizing practical digital applications, resources and funds. This produces transparency and promises clear value based on digital solutions.

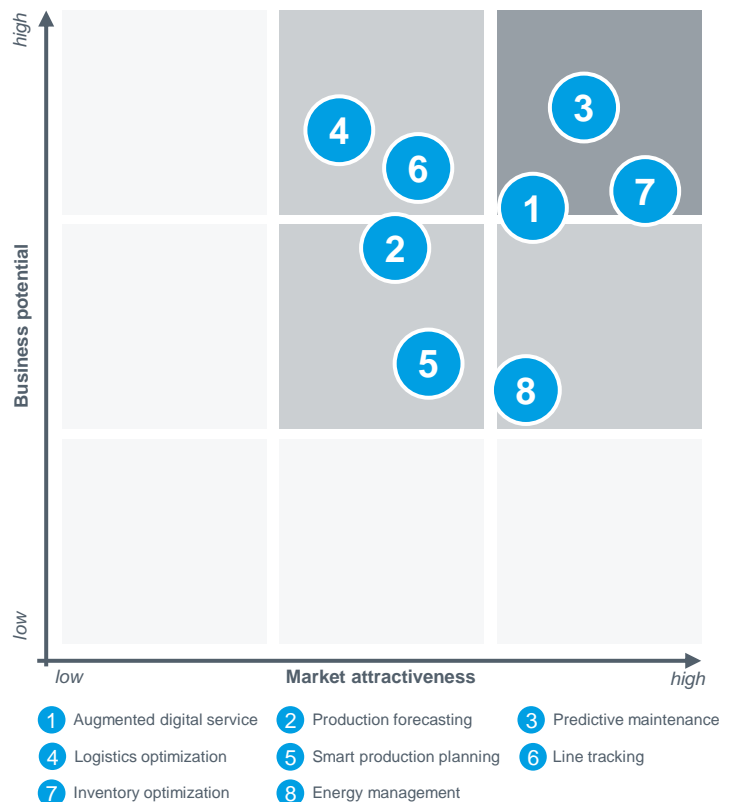


Figure 7: Potential assessment of digital use cases in the machinery sector

05 | Guideposts for digital orientation

We should take a two-pronged approach to production within the context of digitalization. In addition to visible digitalization in the form of worker assistance in the manufacturing process, for example, the invisible aspect of digitalization by background software systems is essential for the ability to control and digitally depict productive processes.



The digital twin holds the potential to radically change even the most refined business models, including design, procurement, manufacturing, sales, service and maintenance. As a rule, we must make a basic distinction between the general and special-purpose machinery sectors here.

While the general machinery sector focuses on maximizing compatibility using OPC-UA-based standards, the special-purpose machinery sector emphasizes added-value services. Combining these two approaches is decisive.

06 | How to achieve the necessary transformation

Driving digitalization in production requires an integrated approach that combines various aspects and produces perceptible added value for the company. The emphasis here must lie on optimizing decision making and designing production processes more efficiently.

01 | Added-value approach

Examining the value-adding production processes to optimize and organize the physical processes

02 | Identifying cost drivers

Which process steps produce the highest production costs? Can a digital solution make the process more efficient?

03 | Feasibility and implementation assessment

Can the optimization potential be depicted by a digital solution?



Figure 9: Integrated approach to assessing digital processes
Source: own representation



Cornelius von Podewils
Manager | Dürr Consulting

Email: cornelius.podewils@durr.com



Dr. Paul Bueß
Consultant | Dürr Consulting

Email: paul.buess@durr.com