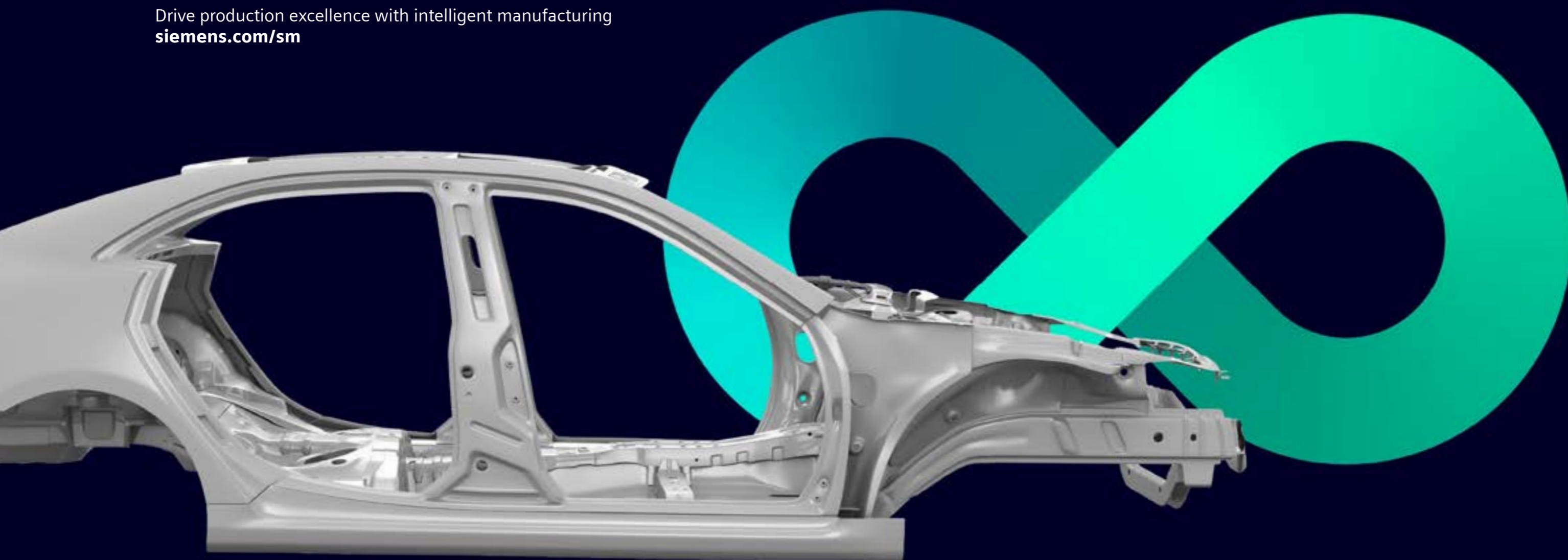


SIEMENS DIGITAL INDUSTRIES SOFTWARE

Smart Manufacturing

Drive production excellence with intelligent manufacturing
[siemens.com/sm](https://www.siemens.com/sm)



Transportation is being redefined before our very eyes. Never has the pace of change been so fast or the pressure facing automotive manufacturers so high.

Vehicles are evolving into complex, connected computers on wheels, enabled by electronics and software and more strictly regulated by environmental and homologation requirements.

All of this comes at a time when global competition is fierce, and manufacturers must reduce their time to market or risk getting left behind as their competitors forge ahead.

This new era has presented manufacturers with challenges to:

- Modernize plants rapidly with new technologies
- Compress development and launch timelines
- Adjust to production changes quickly

You are already changing the way you approach manufacturing to meet these challenges. However, your changes have significantly increased production complexity which leads to the question:

How can you anticipate production issues before they prevent you from launching successfully and manufacturing profitably?

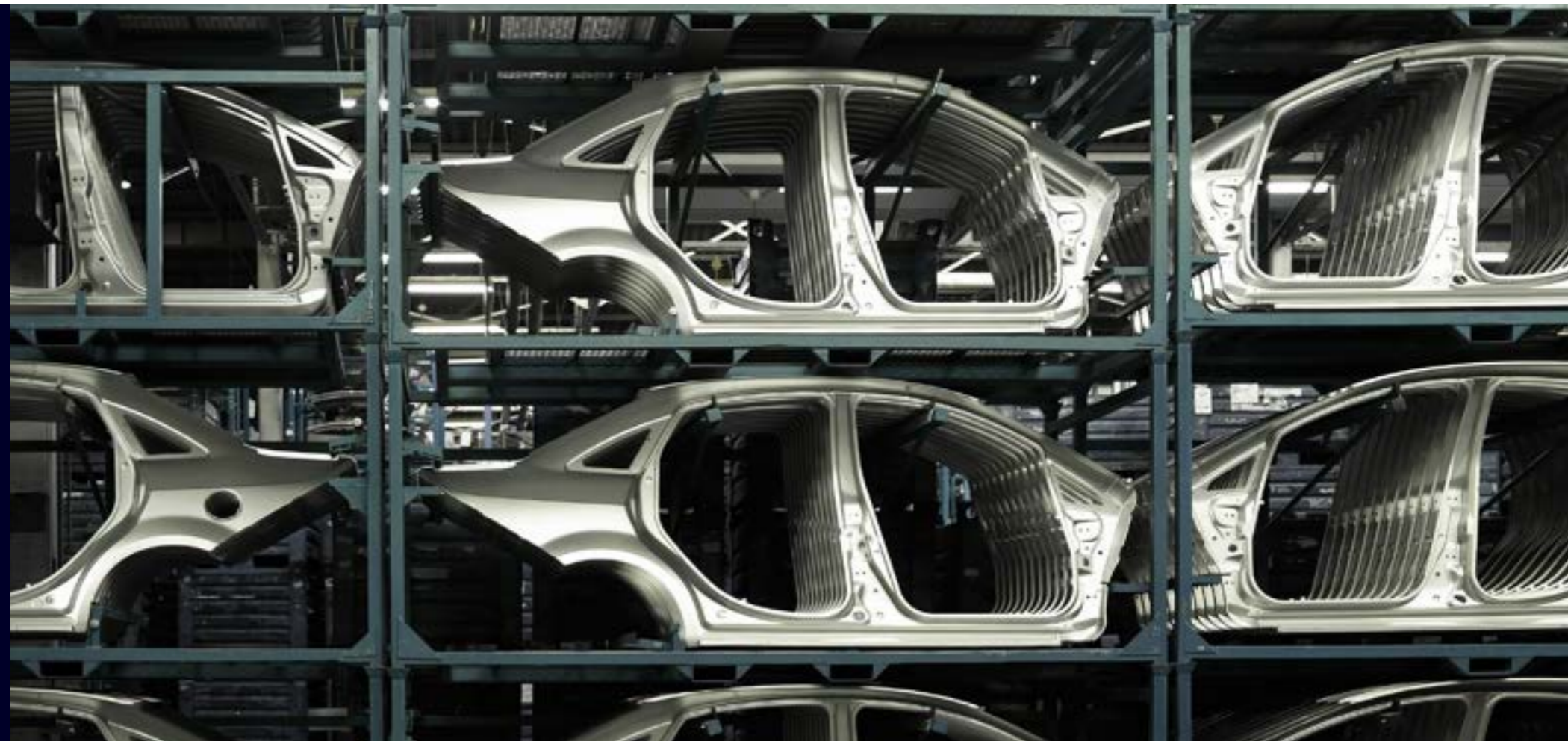
Siemens' Smart Manufacturing solutions help automotive manufacturers achieve this goal. It empowers you to efficiently optimize and monitor operations by digitizing your processes. It helps your manufacturing plants achieve:

- An error-free product launch
- Real-time visibility into operations
- Self-organizing manufacturing lines

Adopting Smart Manufacturing allows you to better plan your manufacturing work cells, lines, and operations to ensure your launch is flawless. You can more quickly ramp up, achieve line speed, and meet business and productivity targets. And, throughout production, you can keep your line running safely and securely to produce high-quality, compliant products on time.

Key Drivers for the Automotive Industry

- Increasing demands for higher fuel efficiency and lower emissions require rapid innovation
- Higher levels of personalization reduce batch sizes and increase the number of components
- New technologies require improved data exchange and cybersecurity
- Adding EV, AV, and ADAS to a current portfolio requires revamped manufacturing processes



Plan, optimize, and test operations virtually before physical commissioning

With a Smart Manufacturing approach, your mechanical, electrical, electronic, controls, and software domains build their plans using a single collaboration backbone to make designs accessible to each other and downstream operations.

This integration forms a virtual replication, known as a digital twin, of your work cells, manufacturing lines, and even your entire plant.

A digital twin enables you to develop work cells and assembly lines virtually before physical commissioning. It helps you to achieve launch readiness by providing an overall picture where you can use data to virtually identify obstacles, test solutions, and validate new scenarios.

With virtual development, you can practice the launch of a new product to ensure that costly last-minute changes do not delay your launch.

Virtual manufacturing development enables you to:

- Bring all engineering disciplines together to build a comprehensive digital twin
- Optimize production processes, pre- and post-launch
- Practice product launch with virtual commissioning
- Share product design data with manufacturing early in the development cycle
- Easily duplicate or relocate manufacturing lines anywhere in the world

Actual customer value

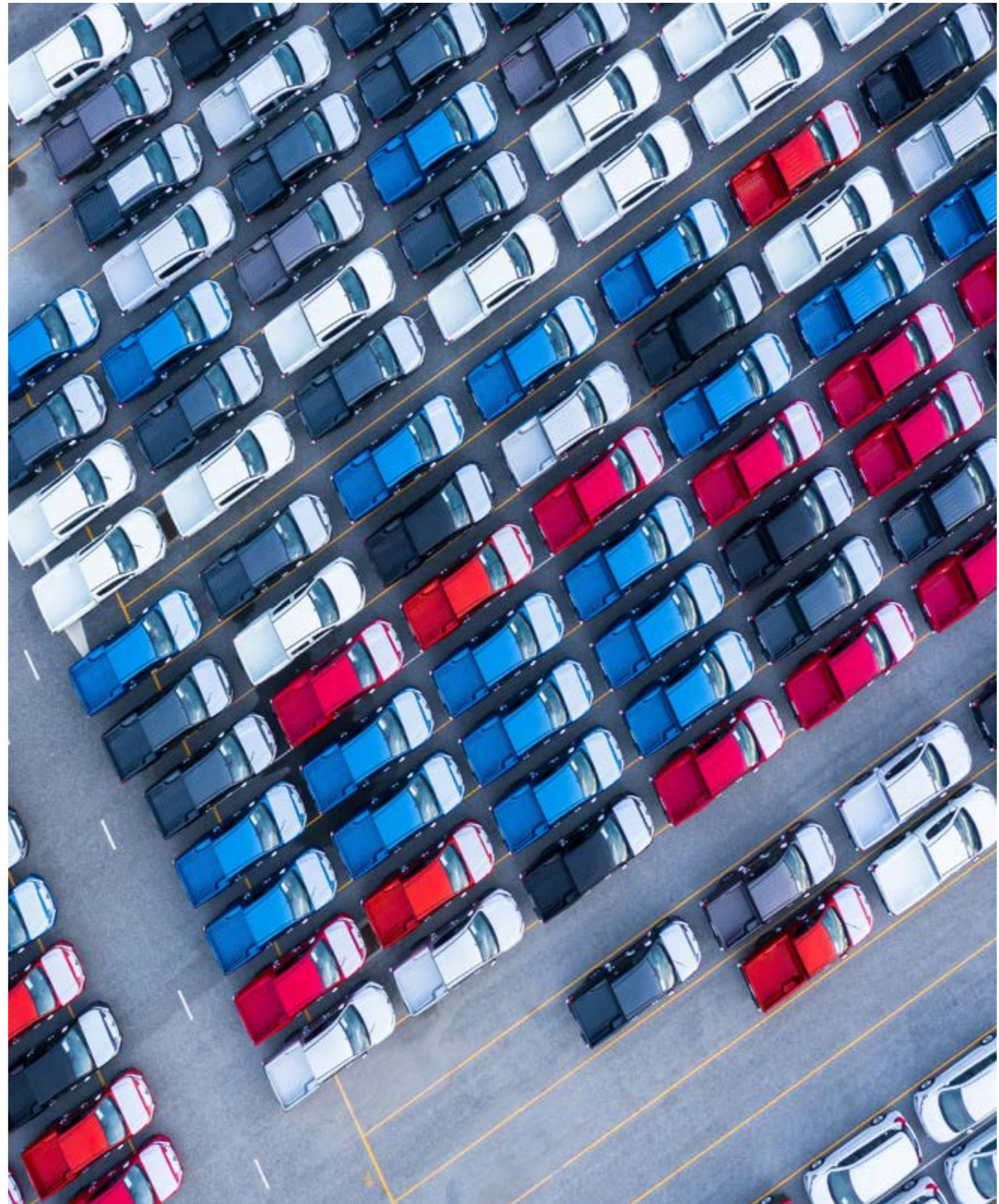


30% Reduction in development time



200% Gain in productivity

Maserati





Build a self-organizing manufacturing environment

Not every manufacturing line can be built from the ground up, which makes it challenging to implement cutting-edge technologies as they become available.

With a Smart Manufacturing solution that includes hardware and software that work seamlessly together, you can update legacy equipment with sensors and edge devices to collect and analyze data for trends and prescriptive insights.

Technologies like artificial intelligence (AI) and the industrial internet of things (IIoT) can connect work cells, assembly lines, and the entire plant to optimize production processes and resolve real-time issues.

A continuous communication loop creates manufacturing lines that can manage themselves to prevent errors, minimize downtime, and produce first-time quality parts at launch and throughout the product lifecycle. Feeding this data back into the digital twin of the product and manufacturing operations also improves the quality of future production.

Modernizing your equipment and creating a self-organizing ecosystem will drive efficiency and agility today while building the foundation for tomorrow's technological advancements.

With Siemens' Smart Manufacturing solution, automotive manufacturers can:

Boost flexibility and react faster to issues on the line by deploying edge technology that incorporates a self-organizing environment.

Reduce energy use and carbon footprint by leveraging advanced scheduling technologies.

Gain agility to implement cross-line and cross-plant production, using a cloud environment that manages data analytics to enable you to commission anywhere in the world.

Ensure that the right parts are built at the right time on the right machine with manufacturing execution systems (MES).

Fully merge the physical and digital worlds with Siemens Smart Manufacturing.



About Siemens' Smart Manufacturing:

Siemens Smart Manufacturing offers automotive manufacturers and their suppliers the tools to implement intelligent manufacturing. With Siemens Xcelerator on AWS Cloud, they can combine state-of-the-art technologies and automation to convert production lines into autonomous self-organizing environments.

A comprehensive digital twin enables companies to simulate products and manufacturing, providing the flexibility to replicate production anywhere in the world. Closed-loop feedback offers predictive insights that can be used to fine-tune manufacturing and increase uptime to maximize profitability.

Smart Manufacturing is a fully integrated, scalable approach that enables manufacturers to transform their operations rapidly.

For more information on Siemens Smart Manufacturing, visit [siemens.com/sm](https://www.siemens.com/sm) or follow us on LinkedIn and Twitter.

Siemens Smart Manufacturing,
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