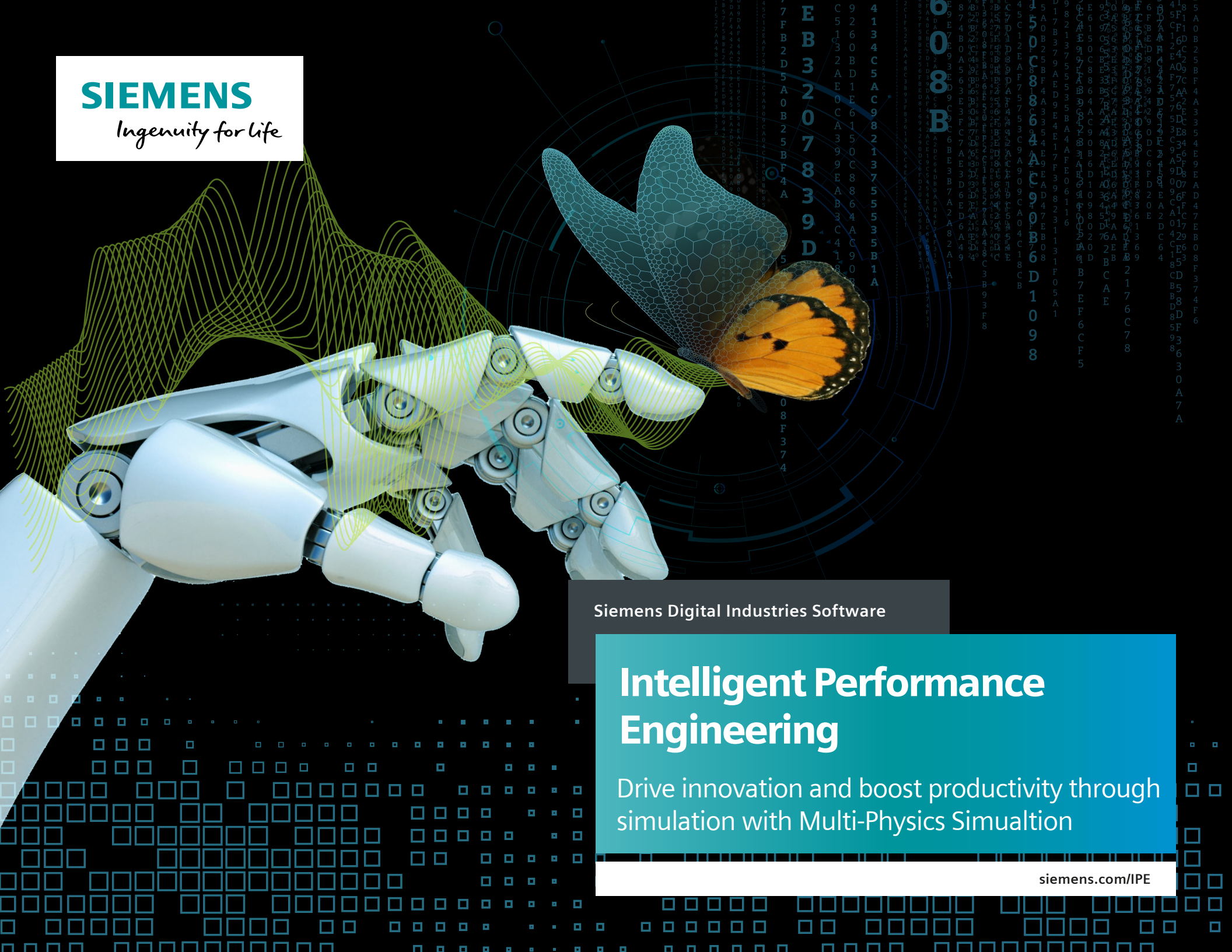
SIEMENS

Ingenuity for life



Siemens Digital Industries Software

Intelligent Performance Engineering

Drive innovation and boost productivity through simulation with Multi-Physics Simualtion

siemens.com/IPE

Trend #1

Consumer-driven demand for highly customized machines.

Trend #2

Smart manufacturing, explosive growth in the number of industrial machines connected via the Internet of Things (IoT).

Trend #3

Hyperautomation, the need to integrate silos of data across domains to gain knowledge.

Trend #4

Global competition, advanced technology increases pressure on companies to **innovate**.

In an age of **unprecedented technological change** in the industrial machine industry, machines are becoming more **complex**, raising new challenges for designers and engineers.

End customer demand for **highly customized machines** is growing, and with it the need for OEMs to be able to **produce one-of-a-kind machines** for their customers. To do so efficiently a **new design approach** is needed. Companies must **evolve away from traditional product engineering**.

Technology is the driving force for change in the industry. The **Internet of Things (IoT)** has drastically changed the way machines work, hardware and software components must integrate seamlessly to ensure **reliability**.

Thanks to **machine learning and smart manufacturing**, companies have more data than ever at their fingertips. If this data can be managed effectively companies can **gain huge insight** into machine performance and harness this information to **improve their innovation process**.

The need to find innovative solutions to offer to customers is ever present in a **competitive, global market.** Companies are increasingly under threat from competitors who are **more responsive, more innovative, or lower cost**.

To thrive you must offer **differentiation, cost competitiveness and cutting edge innovation**. But how?

Siemens offers the digital tools to help you evolve. With **Intelligent Performance Engineering (IPE) you can discover better designs faster and boost productivity**.

Key Drivers

Increased **machine complexity** drives a greater need for testing to ensure reliability.

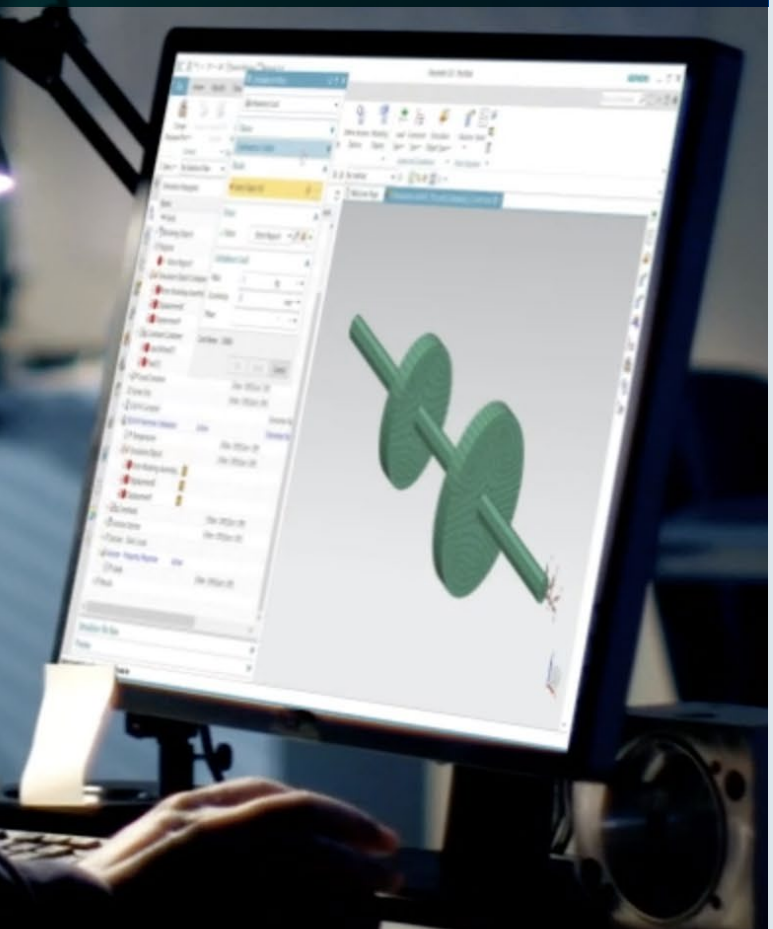
Today's industrial machines need to be highly **customizable and adaptable**.

Advanced technology enables the creation of smarter machines.

Global competition forces manufacturers to **compress cycle times and lower costs**.

Evolve into simulation-driven product design. Boost productivity with the power of simulation!

Siemens offers a dynamic simulation platform to help you manage the growing complexity of industrial machine development in today's global, competitive market.



Multi-Physics Simulation, a balanced multi-physics engineering solution from Siemens.

Multi-Physics Simulation is a powerful simulation tool that allows you to **balance multi-attribute engineering** to evaluate performance across **multi-physics domains**.

Multi-Physics Simulation enables you to **bring together a wide range of physics and disciplines under one umbrella** so you can **capture all the complexities of different types of physics**.

Study phenomena across domains

With Multi-Physics Simulation you can **study phenomena across mechanical, electrical, and electronic domains** by generating multiple what if scenarios in **1D models**. Find solutions to today's complex industrial problems spanning all systems, enabling you to improve your **innovation** processes.

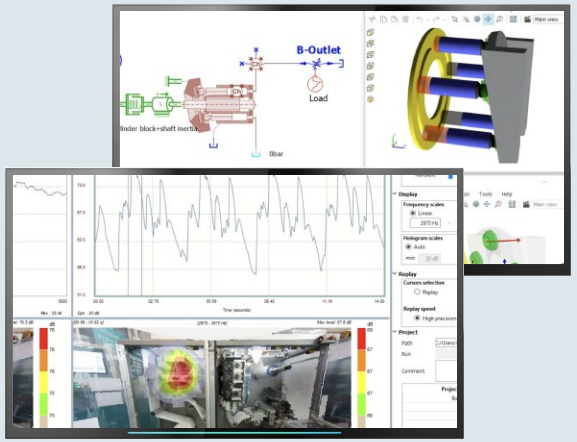
Bring together the **physical phenomena** that can affect your machine's performance. Get the benefits of a comprehensive **digital twin** to accurately **predict machine** behaviour in the real world, **demonstrate** the impact ovf different variables and **optimize** system performance.

Address conflicting needs simultaneously to give you greater **insight** into variables, their impacts and the best solutions to satisfy your cusotmer's needs. **Perform multiple simulations with the same 3D model**, streamlining your development lifecycle.

Sync simulation and design

Designers and engineers can access the same models in one system, enabling greater interdisciplinary **collaboration**, improving **efficiency** and helping you to balance the optimum design between performance and energy consumption to **build faster, more efficient machines**.

Greater indisciplinary collaboration guarantees improved **flexibility** and **agility** enabling you to **improve the overall performance** of your machines, **reduce time to market** and **cut costs** so you can better meet your customer's growing needs.



Get ready to produce the fully optimized machine faster.

As your customer's needs grow, it is more imperative than ever to be able to produce more flexible machines that deliver next generation performance. To stay ahead of the competition, you need a digital solution that allows you to optimize machine performance, while reducing cycle times. **Multi-Physics Simulation** will help you evolve into simulation-driven product design. Boost productivity, reduce cycle times and costs and produce the fully optimised virtual machine. .

Now it's your turn to drive innovation through simulation:

Capture and anaylse all physics complexities to find better solutions to the challenges of smart machines and gain a competitive advantage.

Connect teams to improve collaboration enabling you to be more agile and improve innovation.

Use 1D and 3D modelling to accurately simulate component performance with a range of variables, harness the power of the digital twin and build faster, more efficient machines.

Validate mechatronics efficiently, early in the development phase, to reduce cycle times and costs.

Improve machine performance, analyse multiple what if scenarios better and faster to increase reliability and boost productivity.

Whatever you imagine, simulate and validate it under real conditions, with **Multi-Physics Simulation**, part of the **Intelligent Performance Engineering** solution from Siemens.

About Siemens Intelligent Performance Engineering:
Siemens' Intelligent Performance Engineering solutions leverages Multi-Physics Simulation to help industrial machine manufacturers go from design to commissioning and beyond. With digital twin technology companies gain the ability to simulate multiple variables across physics domains to find the optimum balance between performance and energy efficiency. It provides a single thread of information to optimize processes and improve collaboration across design and engineering teams to boost productivity and innovation.

For more information on Siemens Intelligent Performance Engineering solution, visit www.siemens.com/plm/IPE or follow us on LinkedIn and Twitter.

Siemens Intelligent Performance Engineering
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