

DIGITAL BUSINESS MEDIA DAY: Digital Industries

Empowering industry to sustainably produce sustainable products

Challenges

The **energy transition, and sustainability** are trends that are **impacting** both consumers and the **industry**. For industry – which today **produces 20% of global CO2 and accounts for 30% of the world's energy consumption** – these developments pose a significant challenge. Add to that the need for high-quality, affordable, customized, and individualized goods with rising cost pressure, interrupted supply chains and increasingly finite access to materials, lack of skilled workers, and you are in for quite the challenge.

Solution

The key to master this is to **become a Digital Enterprise** by **combining the real and the digital worlds**, which can be done at speed and scale with **Siemens Xcelerator, our open digital business platform**. It is essential for companies to collect, understand and use the infinite amount of data created in the Industrial Internet of Things (IIoT) more intelligently. Imagine you have an all-electric car, and you want to **improve its range and performance**. Where do you start, and what do you optimize? As a Digital Enterprise you can collect the car's performance data while it is being driven. Then you **analyze and feed this data** into the **car's Digital Twin** and **simulate** every aspect of it until you find components that you can optimize for better range. The **SimRod steering knuckle has been improved** with our NX software and generative design and topology optimization. It is lightweight and robust at the same time and **weighs 30% less** than the original design – less weight means more range. The suspension component is produced using **Additive Manufacturing** – a technology that essentially says: **if you can dream it – you can make it**. The **production** of different vehicle variations becomes **more flexible and energy-efficient** thanks to Automated Guided Vehicles (AGVs) and mobile robots – **controlled with Siemens automation** technology. These work together in an optimal way via a reliable wireless communications network using Industrial 5G. We also show how data can be transformed into a truly valuable resource to **significantly boost plant productivity and reduce energy consumption** – thanks to **intelligent and integrated software, automation** and applications for best data usage **from the Siemens Xcelerator portfolio**. The electric vehicle in our showcase is a representative technology carrier, for any product, and market, and it spans all the way from the Digital Twin of Products and Production to real production with intelligent charging solutions and managing smart grids.

Value

The use of **data for continuous optimization** helps the industry to become **more sustainable** and to **save energy** – in the design process, production planning and during production.

- **Simcenter (simulation software):**
 - **Reduce total development time** for new motor generations for electric vehicles **by 50%**
 - More digital and less physical leads to **lower cost for prototyping** and **40% less physical testing**
 - **Reduce body structure weight** for electric vehicles **by 35%**
 - **Improve** electric vehicle **sound quality** by **minimizing noise and vibration** with accurate data
 - **Finding mistakes early** in the planning process leads to a **huge cost saving potential**
 - Plan for sustainability and manage requirements to make sure all **sustainability targets are met**
- **Additive Manufacturing:**
 - In production: **Reduce material usage** due to **30% weight reduction** in comparison to subtractive manufacturing
 - In operation: **Reduce energy consumption** due to performance enhancement & weight reduction
 - In service: **Increase product lifetime** by smart repair and **localized, on demand spare part production**

Siemens' innovative solutions and an open ecosystem of partners also helps manufacturers measure and **improve the overall carbon footprint** – from developing an energy efficient product to CO2 emissions of the facilities and throughout the supply chain. In short, with a curated, modular portfolio of software and IOT-enabled hardware, and services we are helping industry become **more decarbonized and more sustainable**, and at the same time more profitable.