We make real-world technology that works for everyone
Jussi Mäntynen
Our Zero Harm Culture@Siemens program follows three principles:

- Zero incidents – it’s achievable!
- We take care of each other!
- No compromises on health and safety!

Our employees are our greatest asset. That’s why we want every single Siemens employee to be able to rely on a safe working environment at all times.
Global trends are changing our markets & living – structurally and profoundly.
The European Union strives to make Europe the first climate-neutral continent by 2050.

Source: European Commission
We are in the middle of a transformation…

Decarbonization
Decentralization
Digitalization

2x electricity consumption by 2050

>50% renewable annual energy by 2035

82% households have smart meters in 2050
Security and reliability of supply

Flexibility of systems

Active Prosumers

Storage

Renewables

Microgrids

Energy Efficiency and Optimization

Growing Demand

Load Management/Demand Response

Photo-voltaic

Wind

Heating

eMobility

Electrification of everything

Renewables

Load Management/Demand Response

Security and reliability of supply

Flexibility of systems

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Microgrids
Technology
Transform to
Everyday & Everyone
We commute in cars designed with Siemens software … … built in factories running on Siemens automation … … charged by a renewable and decentralized Siemens smart grid.
We work in **smart buildings** that keep us comfortable and healthy … … with a **carbon neutral footprint** that keeps the planet healthy as well.
We travel on Siemens trains … and on planes brought to life using Siemens technology.
We rely on **lifesaving drugs** to market …  

… thanks to **Siemens innovations**.
Siemens is shaping the future
Our four strategic priorities

Customer impact
We’re putting customer impact at the very center of Siemens.

Empowered people
Siemens is driving progress through empowerment.

Technology with purpose
Innovative technology has been at the core of Siemens for more than 170 years and it will remain at the core of the future we’re building.

Growth mindset
Being open to change, to new ways of working, always learning. Because being successful today does not guarantee success tomorrow.
## Ingenuity drives innovation

| **€5.7 bn** | **45,100** |
| R&D expenditures<sup>1</sup> | R&D employees<sup>2</sup> |
| **6,850** | **3,750** |
| Inventions<sup>3</sup> | Patent applications<sup>3</sup> |

### Cooperation with universities

| **8** | **17** |
| CKI universities<sup>4</sup> | Principal partner universities |

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<sup>1</sup> In fiscal 2019 (with Siemens Energy)  
<sup>2</sup> On average during fiscal 2019  
<sup>3</sup> In fiscal 2019 (with Siemens Energy and Siemens Healthineers). As of September 30, 2019, Siemens held about 68,300 patents worldwide in its continuing operations.  
<sup>4</sup> Centers of Knowledge Interchange
<table>
<thead>
<tr>
<th>The areas our research and development is focusing on</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additive manufacturing</td>
</tr>
<tr>
<td>Autonomous robotics</td>
</tr>
<tr>
<td>Blockchain applications</td>
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<tr>
<td>Connected (e)mobility</td>
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<tr>
<td>Connectivity and edge</td>
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<tr>
<td>Cybersecurity</td>
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<tr>
<td>Data analytics, Artificial intelligence</td>
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<td>Future of automation</td>
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<tr>
<td>Materials</td>
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<tr>
<td>Power electronics</td>
</tr>
<tr>
<td>Simulation and digital twins</td>
</tr>
<tr>
<td>Software systems and processes</td>
</tr>
</tbody>
</table>
Protect the data of individuals and companies, …

… prevent damage to people, companies and infrastructures and …

… establish a reliable foundation on which confidence in a networked, digital world can take root and grow.
Next47 is an independent, global venture firm backed by Siemens AG. We combine capital with hands-on business development capabilities that help our portfolio companies grow revenue through the Siemens ecosystem. Next47 works with start-ups that use deep and frontier technologies such as artificial intelligence, augmented and virtual reality, cybersecurity, autonomous driving, IoT, robotics, and advanced manufacturing to solve the most difficult and fundamental industry challenges facing Siemens and Siemens customers.

Next47 is also an enabler of “intrapreneurialism” within Siemens. The Next47 Accelerator, a program built in partnership with Alchemist, aims to identify and nurture big, breakthrough ideas within Siemens with the goal of empowering internal talent to create new business opportunities for the company.
What’s important? Expectations from the markets, but us humans...
Our contribution

Sustainable society

637 million metric tons of CO2 emissions were curbed for customers yearly.

10,900 students in vocational training yearly

2030 goal: Siemens will be carbon neutral

4.3 million jobs supported through our contributions
Ecosystem across energy supply, buildings and industry.
Sustainable Society and Smart Infrastructure drives transformation of transactive grid edge and new consumer opportunities

Digitalization
... enables new services and new business models
Energy supply side
Smart grids

Energy demand side
Smart buildings and industries
Energy supply side
Smart grids

Energy demand side
Smart buildings and industries

Grid edge
Energy demand side
Smart buildings and industries

Energy supply side
Smart grids

Grid edge

- Virtual power plant
- Energy market solutions
- Load-generation balancing
- Electrical vehicle charging infrastructure
- Renewable integration
- Distributed energy solutions
- Digital services
  - Software
  - Services
  - Solutions
- Equipment and products
- Building performance and optimization
- Demand flexibility
- Energy monitoring and optimization

Microgrid

Unrestricted | © Siemens 2020 | Smart Infrastructure | Nov 2020
Smart grids

Smart grids – driving energy intelligence

Transmission
Power generation
Decentralized energy generation
Smart grid solutions
Renewables management
Storage
Electric vehicle charging
Smart buildings and industry
Connecting and managing
Financing
Optimization
Grid edge
Delivering energy intelligence – efficiency, flexibility, sustainability and reliability across the energy value chain

On-site energy supply
- Energy generation
- Storage solutions
- Energy mgmt. and grid control (Microgrid)
- Advisory services

Demand side efficiency
- Energy audit and monitoring
- Advisory services
- Turnkey energy efficiency solutions
- Asset performance management

Smart energy solutions and services
- Data-driven services and digital twin
- Virtual Power Plant
- eCharging

Business and delivery models
Use cases

Grid Edge technologies
Digital substation with grid IoT applications

Glitre Energi Nett, Norway

Challenge

• Modernize aging infrastructure
• Growing grid complexity
• Increasing number of e-vehicles
• Optimize the utilization of grid assets
Smart Energy Ecosystem - LEMENE

- Solar power 4 MW
- Gas engines 8.1 MW
- Fuel cells 130 kW
- Electrical storages 4 MW@30 min
- District heating
- MicroGrid management
- Virtual Power Plant
- Main grid connection at 20 kV
Smart energy solutions provides value with comprehensive lifecycle services and utilize the full breadth of technology.
Sello shopping center, Commercial, Finland

“Every sunny day generates a clear financial saving for us.”

Olli Paunola – Property Manager at Sello shopping center

"The partnership with Siemens has enabled Sello to reduce emissions and enhance its image as an environmentally friendly company."

Matti Karlsson – CEO of Sello shopping center

€118,000 savings in energy efficiency and maintenance

€480,000 gains in energy market

281 t CO₂ emission reduction
Virtual power plant – Grid Edge Platform

- Local energy production
- Local BMS
- HVAC systems
- Energy storage
- EV Charging eCar OC

Grid Edge Platform

nordpool

FINGRID
Demand Response Market

FORECA

SIEMENS
Flexibility in energy markets

Aurora Pyramids, Levi

- Building technology
- Regional electrification
- 132 kWp solar panels: 114 MWh/a
- 1,3 MW energy storage
- 10 vuoden guarantee for functionalities
- Connection to virtual power plant
- Finance: Siemens Financial Services

Sello
Lappeenranta City
VR Group
Goodman
Hartwall
INNOVATIVE SERVICE MODEL
helps brewery Sinebrychoff make the transition to the green economy

- Improved power quality in production facilities
- Lower electricity costs
- Reduced CO₂ emissions
- Active participation in the energy market
- Minimal expense and investment risk

~300 million liters
... beer, cider, soft and energy drinks p.a.
GET TOGETHER

Modern co-creation model for digitalization

Value
• Solving the business critical challenges
• Creation of measurable value

Cooperation
• Modern and agile working model
• Co-creation with customers
• Next step for digital transformation
Digital factory
Nestlé Juuka

- Shared vision
- Development of a digital twin
- Modernization of a automation system
- Virtual commissioning
- Business model based on outcome economy
- Sharing of benefits
- Continuous development

KPI
Cost of production
Annual production
M4 kg
+100 sauce recipies
Several raw material providers
Siemens in figures
More than 170 years ago

Siemens was founded on a powerful idea: a company should not only focus on maximizing profit. It should also serve society – with technologies, with its employment practices, with everything it does. This idea is still alive today. Serving society while doing successful and profitable business is at the heart of Siemens’ strategy. It’s our company’s ultimate purpose.”

– Joe Kaeser, President and CEO of Siemens AG
173 years of social responsibility
As a leading technology company, we provide industry-specific support to our customers. That’s what we do today and will do tomorrow.

293,000 employees*

€57.1 bn in revenue*

>8% R&D from revenue*

14.3% adjusted EBITA margin for the Industrial Businesses*

* Official FY2020 numbers in press release 12.11.2020, shown numbers might have some deviation
Outlook

Future
Market drivers
Evolution of smart grids and smart buildings & industries

- **Sustainable infrastructure**
  - Semi-autonomous operation, multi-stakeholder, one common database

- **Digital grid.AI**
  - Automated grid operations and control, self-healing grids

- **Smart building/factory.AI**
  - Self-optimizing building control structure, user centricity

- **Smart grids / distributed energy systems**
  - Smart meters / energy storage / microgrids / prosumers, digital twin

- **Energy automation / long-distance transmission**
  - Bulk renewable integration, HVDC

- **Automated building/factory**
  - Building management system, industry automation

- **Data density**

- **Bulk power generation**
  - Power plant and grid control centers

- **Building control**
  - HVAC control

- **Unrestricted | © Siemens 2020 | Smart Infrastructure | Nov 2020**
Enjoy the Event!
Stay Healthy!

For further information:

siemens.com/smart-infrastructure