Ingenuity for life creates perfect places.

Building Technologies Division Presentation 2018/19
Achievements FY18

~4,700
New sites connected

~4,200
Desigo CC licenses sold

~3,200,000
Valves & actuators sold

~45,000
New system installations

~190,000
Rooms equipped with Room Automation

~1"
Migration revenue

~310,000
Service agreements under contract

~230,000
Data points connected

~5,000,000
Fire and smoke detectors sold
Our organization
Our history – We can draw on more than 100 years of experience in building technology

Our history is based on a successive merging of different companies.

Since 1998
Siemens Building Technologies

Picture shows Building Technologies Division headquarters in Zug, Switzerland
### Our organizational structure

<table>
<thead>
<tr>
<th>Solution and Service Portfolio (SSP)</th>
<th>Region Americas</th>
<th>Region Germany</th>
<th>Region Europe</th>
<th>Region Middle East/Asia-Pacific</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eike-Oliver Steffen (Head)</td>
<td>David Hopping (CEO)</td>
<td>Uwe Bartmann (CEO)</td>
<td>Carsten Liesener (CEO)</td>
<td>Elangovan Karuppiah (CEO)</td>
</tr>
<tr>
<td>Beat Vanza (Head BA)</td>
<td>Peter Kamps (CFO (a.i.))</td>
<td>Hubertus Bernhard (CFO)</td>
<td>Thomas Stöffler (CFO)</td>
<td>Wolfgang Eger (CFO)</td>
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<table>
<thead>
<tr>
<th>Control Products and Systems (CPS)</th>
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</thead>
<tbody>
<tr>
<td>Henning Sandfort (CEO)</td>
<td></td>
</tr>
<tr>
<td>Mariana Porley (CFO)</td>
<td></td>
</tr>
</tbody>
</table>
Our key figures

<table>
<thead>
<tr>
<th>Metric</th>
<th>2018 fiscal year 10/01/2017 – 09/30/2018</th>
<th>% Change (comp.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New orders (€ million)</td>
<td>7,077</td>
<td>+4%</td>
</tr>
<tr>
<td>Revenue (€ million)</td>
<td>6,613</td>
<td>+6%</td>
</tr>
<tr>
<td>Profit (€ million)</td>
<td>755</td>
<td></td>
</tr>
<tr>
<td>Employees Headcount (on 09/30, excl. trainees)</td>
<td>29,282</td>
<td></td>
</tr>
</tbody>
</table>

### Revenue
- Europe, CIS, Africa, Near & Middle East: 54%
- Americas: 38%
- Asia, Australia: 8%

### Employees
- Europe, CIS, Africa, Near & Middle East: 58%
- Americas: 33%
- Asia, Australia: 9%
Close to our customers in more than 400 locations all over the world
Driving research and development of new products and solutions in 19 R&D and 9 production sites around the globe.
Our markets & customers
Our world is undergoing big changes...

Demographic change
Climate change
Digital transformation
Urbanization
Globalization

Growing importance of energy efficiency and sustainability
Increased need for security
Higher innovation speed

that influence the building technology industry.
Our customers represent different industries and markets…
and for all of them, buildings are a crucial factor.

Real estate is often the **2nd** largest expense on organizations’ income statement.

Energy costs alone represent about **30%** of an office building's total operating costs.

Worldwide buildings account for **41%** of all global energy demand.

In most organizations, the real estate portfolio is the **3rd** most valuable or expensive single asset.

**Improving building performance is a big lever for cost saving AND efficiency increase.**
Our vision
Something drives us every day to make buildings better.

People spend about 90% of their lives indoors.

We believe that the places we spend time in have a great influence on our lives.

They affect how we grow, how we develop, what we achieve, who we become.
Creating perfect places for every stage of life.

We believe in “Creating perfect places”.

With our ingenuity.
Our technology.
Our products.
Our solutions.
Our services.
Our innovation.
Our people.
Our commitment.

Creating perfect places is our daily motivation for improving building technology to improve people’s lives.
We all begin our lives in a perfect place.

#CreatingPerfectPlaces
siemens.com/perfect-places
Why shouldn’t all our lives be lived in perfect places? That’s our inspiration. Our vision.
Our mission
Digitalization has a tremendous effect upon our business

By 2018 there will be more connected devices than people alive; Est. 50 billion by 2020

Business IP traffic will grow at a CAGR of +20% from 2014 – 2019

Mobile computing to grow by +57% CAGR from 2014 – 2019

Costs sinking dramatically
$500 per 1 million transistors in 1990;
$0.05 per 1 million transistors in 2012

Large amounts of data can be turned into value for our customers
Our mission – we are the leading automation and digital service provider

Based on a strong core in automation...

A trusted partner for high performance, safe, efficient, sustainable and secure buildings
With our digitalization competence, we can drive additional customer value for our customers

From building data…

Connect
Collect
Store
Optimize
Analyze and simulate
Visualize and communicate

to customer value

Increase energy efficiency
Optimize energy supply
Increase sustainability
Be legal- and regulatory-compliant
Ensure business continuity
Reduce cost
Increase building value

Better informed decisions, optimized investments and effective use of buildings
Our customers want more transparency and added value from their building data

80% of customers want visualization of data

65% of customers demand location-independent access to their data

69% of customers expect an improved service process

50% of customers expect new digital services and business models

Digital services meet the expectations of our customers

Existing services get digitally enhanced…

and new data-driven services are created by using building data intelligently.
What we are doing
Our portfolio provides answers to building technology questions

<table>
<thead>
<tr>
<th>Building automation and energy management</th>
<th>Fire safety</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enterprise business</strong></td>
<td>Energy efficiency and sustainability management, enterprise security solutions</td>
<td></td>
</tr>
<tr>
<td><strong>System house business</strong></td>
<td>Integrated building solutions, solutions for vertical markets (data centers, life science industries, premium offices, healthcare), building automation solutions, fire safety and security solutions</td>
<td></td>
</tr>
<tr>
<td><strong>Product business</strong></td>
<td>Building automation and control systems, HVAC, fire safety, extinguishing, evacuation, security, including access control, video surveillance</td>
<td></td>
</tr>
</tbody>
</table>
Our market offering covers the integration of all building disciplines into dedicated vertical market solutions.

- Fire detection
- Extinguishing
- Evacuation

- Access control
- Video surveillance
- Intrusion detection

- HVAC control
- Room automation

- Maximize efficiency
- Optimize supply
- Enhance sustainability

- Lighting control
- Shading

- Monitoring
- Reporting
- Decentralized energy systems

- 3rd-party integration of all building disciplines
Desigo CC is the leading integrated building management platform in the market place

Management level

Automation level

Field level

Remote

Desigo CC

Fire safety
Security
HVAC
Lighting
Power
3rd Integration

Building Technologies
Applications increase the added value of Desigo CC

- **Increase building value**
- **Increase energy efficiency**
- **Customer satisfaction**
- **Increase sustainability**

### Smart room operator
Easy room operation of lights, blinds and HVAC from a PC, tablet or smartphone

### Annual shading
Shadow calculation for each window or group of windows, based on external changes in e.g. time of day and position of the sun

### Simatic S7 integration
High availability of critical plants or equipment through integration of Simatic S7 into Desigo CC, including migration of Siclimat X
With our service platform, we are connecting buildings and provide digital services based on advanced analytics.

**Data collection and intelligent evaluation (big data/analytics)**

- **Navigator**
  - Advanced Service Center (ASC)
  - Service technician, energy engineers
- **Customer**
- **Service portal**
  - Sales, operation, service, BA
  - Customer

**Siemens Service Platform**

**Networking (IoT)**

- **.connectivity**
  - Building management system
  - Other technical systems
  - SAP/ERP
  - Weather
  - etc.

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Building Technologies
Enrich the service portfolio based on data-driven services – increased performance

- Increase building value
- Increase energy efficiency
- Optimize energy supply
- Ensure business continuity
- Increase sustainability

System performance reporting

Decide if and when it makes sense to replace the systems

Benchmarking

Identify cost saving potential by comparing with other buildings

Forecasting

Forecasting helps to create energy supply mix scenarios, e.g. when and to what extend to invest in PV
Enrich the service portfolio based on data-driven services – transparency and cost reduction

- Reduce cost
- Increase energy efficiency
- Increase sustainability
- Be legal- and regulatory-compliant

**Smart Room Operator**

- Individual dashboards give full transparency

**Show KPI development**

- Tracking KPIs ensures a clear status of the reduction achievements

**Compare key parameters**

- Benchmark with other similar buildings and identify further savings
Security

Complementing portfolio based on Desigo CC for single buildings and the Siveillance Suite for corporate security and critical infrastructure

SiPass
Mass notification
Desigo Video
Our product and systems portfolio contains a unique width, depth and quality.

Management level

Integrated building management platform Desigo CC

Room and automation level

Field level

Thermostats
Metering
Sensors
Room operator units
Fire control panels
Controllers
Fire detectors
Extinguishing

Valves & actuators
Damper actuators
Variable speed drive
Desigo CC – Integrated building management platform

Desigo CC is suitable for **small to large** and for **simple to complex** buildings

- Building management platform that enhances **safety, comfort** and **productivity**
- Makes building run more **efficiently** in terms of **cost and energy**
- **Open** platform allows to design building management according to user needs
- Offers multi-discipline **building control in just one platform, reduces complexity**
- Thanks to intuitive, easy engineering and unique user interface, Desigo CC **saves time for engineering efforts and costs**
Acvatix 6-port control ball valve – an excellent choice for your business

6-port control ball valves ideal for 4-pipe systems in heated and chilled ceilings

- **Lower project costs** thanks to fewer data points
- **Flexible planning and installation**
- **Energy efficiency** thanks to 100% bubble-tight valves

Benefits of the OpenAir family of damper actuators

- **KNX** for **easy integration**
- **Tool-free** actuator coupling
- **Easy operation**
Room thermostats and controllers with open communication standards to easily combine electrical and HVAC applications

- Wide HVAC application range: Very attractive price/performance ratio
- Integrated in Desigo building automation system, for remote room management
- Meets highest energy efficiency standards: e.g. EN 15232
- Controlling functions inside: less wiring, simple set-up
- Preloaded applications: no programming
ASA technology – An innovation that sets new standards and give a Genuine Alarm Guarantee

Multi-sensor fire detectors with ASA technology

• **Smart sensors**
  Increased detection reliability with two thermal and two optical sensors

• **Patented chamber**
  Reduces background light, making detector resistant to dust

• **Unique ASA technology from Siemens**
  Converts signals into mathematical components and compares them in real time with programmed values using intelligent algorithms

• **Dynamic ASA parameter sets**
  Influence the algorithms; selection according to current environmental conditions
We have satisfied customers underlining our positioning #CreatingPerfectPlaces around the world
A perfect place to study.

University of Applied Sciences (HAW)
Hamburg, Germany

Customer requirements
• Energy efficiency and renovation of outdated HVAC system
• Reduction in maintenance and energy costs
• Innovative building management system that meets the needs of students and employees

Siemens solution
• Building management system migrated to Desigo V5.1
• Measurement, control and regulating systems modernized
• Energy Performance Contracting

Customer benefits
• Building Technologies guarantees annual energy savings of more than 27%; HAW thus saves €500,000 – and 2,077 t CO₂
• The building automation system saves another €200,000
A perfect place to work.

Customer requirements
- Sustainable use of resources and energy efficiency
- Comfortable workplaces
- Protection of people, data and business processes against intrusion, theft and fire

Siemens solution
- Multi-discipline solution, including building automation
- Danger management system with video surveillance, intrusion detection and video-based access control system
- Fire detection system, including voice alarm
- Green Building Monitor displays energy consumption

Customer benefits
- Comfortable, tailored building management system
- Optimum, phone-operated workplace conditions
- Energy efficiency and cost savings
A perfect place to rely on.

Customer requirements
- Reliable and redundant energy supply
- Fire safety and security technology
- Energy efficiency, especially in terms of building cooling

Siemens solution
- Building automation, fire safety technology and energy supply with Desigo, Sinteso and GMA Manager
- 1,600 fire detectors, 150 SIESTORAGE surveillance cameras, 168 door sensors

Customer benefits
- Efficient energy consumption and LEED certification
- Maximally redundant system with 99.995 percent availability
A perfect place to generate power.

Customer requirements
- Availability and reliability for the unmanned platforms; all systems have to be redundant, low maintenance and remote-controllable
- High priority for fire safety

Siemens solution
- Complex fire safety technology with different extinguishing systems (e.g. gas, foam or spray deluge systems)
- Video surveillance and access control
- HVAC

Customer benefits
- Reliable extinguishing with easy operation
- Data transfer and control from the mainland
Customer requirements

- Reliable fire safety solution
- Historic preservation status makes for special challenges in terms of installation aesthetics

Siemens solution

- SWING wireless fire detection system with two redundant paths installed in the museum and office rooms
- Hardwired fire detector in the basement and attic areas

Customer benefits

- Extremely reliable fire safety solution so that the castle interior remains untouched
- Fast installation with no disruptions during business hours
A perfect place to communicate around the world.

Digital Realty
Santa Clara, USA

Customer requirements
- Digital Realty needs a partner in energy management, fire safety and security in order to quickly provide data centers

Siemens solution
- Cross-divisional project for developing and producing premounted electrical modules for data centers, including switchboards, distribution transformers, low and medium voltage, fire safety and security systems

Customer benefits
- Energy-efficient, reliable and permanently available electrical infrastructure for data centers
- Digital Realty was able to reduce the time required to provide data centers from 179 to 80 days
A perfect place to research.

Fraunhofer Institute
Boston, USA

Customer requirements
• Integration of different disciplines into the 100-year-old building, which serves as a “living laboratory” for building technology research

Siemens solution
• Building management platform Desigo CC
• Building automation with heating, ventilation and air conditioning
• 1,000 data points
• 16 ONVIF cameras

Customer benefits
• The integration of different disciplines makes it possible to analyze the efficiency of materials and technologies
• Desigo CC simplifies data collection and evaluation
A perfect place to trade.

Customer requirements
• A robust and integrated access control system to improve security as well as processes and workflow on site

Siemens solution
• Siemens security technology solution SiPass and Siveillance Vantage from Siemens
• Unification of sub-systems into a single user interface with command and control functionality over port security operations

Customer benefits
• Improved security accountability, reporting and operational efficiency
• Expanding business and improving profitability while keeping the real cost of security as minimal as possible helps reaching their business objectives
Customer requirements

- Energy savings cover implementation costs within 20 years
- Significant greenhouse gas emission reduction

Siemens solution

- Apogee building management system
- Energy performance contracting and sustainability consulting plus on-site Sustainability Coordinator
- Lighting and controls, water conservation, HVAC upgrades
- Energy management including Demand Flow technology, scaled solar PV, power storage and EV charging stations

Customer benefits

- US$3.2 million in operating cost reductions and over 12% GHG net reductions
- Algonquin College as a model for energy management and sustainability
A perfect place to live.

Customer requirements
- This research project is intended to help development a new business model for the changing power market while linking the pilot applications and building technology

Siemens solution
- Building management platform Desigo CC
- Desigo Room Automation with heating, ventilation, blinds and lighting; 110 apartments with Gamma KNX
- Energy management
- Sinteso FS20 fire detection system
- Navigator collects and evaluates data

Customer benefits
- Building management and basis for research project
- New business models can be developed
A perfect place to keep a tradition on tap.

Customer requirements
• Modernization and optimization of the fire safety systems to protect the iconic brewery building
• The goal was a more simple structure with fewer, but networked, control stations

Siemens solution
• Over 2,000 fire detectors
• Thanks to the modernization of the fire safety system, now only 5 fire control panels are required instead of 17

Customer benefits
• Fast and reliable maintenance and service
• Advanced planning continues: For instance, Sinteso Mobile may be integrated sometime in the future for remote access by smartphone or tablet
A perfect place to stay.

Customer requirements

• Reducing energy consumption and CO$_2$ emissions

Siemens solution

• Energy audits and optimization of building management systems
• Green Building Monitors visualize energy consumption and urge viewers to save energy

Customer benefits

• Pilot project Paris Charles de Gaulle Airport Marriott Hotel: 15% cut in energy costs; 6% lower electricity costs and 17% lower gas costs as well as 15% reduction in CO$_2$ emissions
Customer requirements

• Maximum requirements for a multiple award-winning design object

Siemens solution

• Fire safety solution Sinteso and automated extinguishing systems with nitrogen
• Desigo PXC automation stations
• Service agreement: 7/7, 24/7
• UAE MM8000 danger management station

Customer benefits

• Complex overall solution (fire safety, security, comfort from a single source)
A perfect place to succeed.

Lilacs International Commercial Center
Shanghai, China

Customer requirements
- Lower energy costs for owners and tenants
- Tenant satisfaction
- Improved range of services

Siemens solution
- Multi-discipline solution, including energy management
- SiPass access control
- Apogee Building automation
- Cerberus PRO fire alarm system
- Lighting
- Parking space management

Customer benefits
- LEED Silver certification
- 15% lower costs, thanks to technical integration
Customer requirements

- Reliable power supply and energy efficiency for one of China’s tallest buildings
- Fire safety for people and the building

Siemens solution

- High voltage, low voltage
- Fire detection system
- Intelligent lighting (EIB)

Customer benefits

- LEED Platinum certification
- 5% – 10% energy savings expected, along with improved comfort
- The world’s most reliable power supply system
- Comprehensive, secure fire safety solution
A perfect place to celebrate.

WAFI
Dubai, United Arab Emirates

Customer requirements
- Flexible, modular and reliable building management system
- Energy efficiency
- Access control

Siemens solution
- Building management with Desigo
- Energy optimization with the Demand Flow solution, including optimization of the cold water system
- Data acquisition and creation of energy profiles with Navigator

Customer benefits
- Guaranteed €320,000 savings in energy costs per year, i.e., energy consumption reduced by 17%
A perfect place to work.

Marina Bay Financial Center
Singapore

Customer requirements

- Integrated building management system with central control from one platform
- Standardized, transparent security concept, integration of video surveillance into access control system

Siemens solution

- VeriNET E4
- OPC DA interface to the building management system
- Siveillance Fusion security management station
- Apogee building automation system, Navigator and Green Building Monitor

Customer benefits

- Improved comfort, fire safety and security, along with simplified system integration
- Standardized security processes
A perfect place to study.

**Customer requirements**
- Management, control and monitoring of a large campus
- Lowering energy consumption, increasing energy efficiency of the system and communicating these improvements to the students

**Siemens solution**
- Pilot project for “3for2” concept from ETH Zurich and partners: Reducing space for lighting and cooling system helps to economize an entire floor
- Desigo CC (first time installed in Singapore), Navigator, Desigo Room Automation

**Customer benefits**
- Consumes 40% less energy than comparable buildings
Thank you for your attention.