

The image features a modern building with a glass facade and a dark metal frame. The glass reflects the surrounding greenery and sky. In the foreground, there are tall grasses and some trees. The Siemens logo is positioned in the top left corner.

**SIEMENS**

Control Products and Systems – Building Technologies

**We create green comfort  
in buildings**

The background of the slide is a photograph of a modern exhibition space. The room is dimly lit, with light from projectors creating vertical and horizontal patterns of blue, purple, and white on the walls and floor. Two people are walking through the space, their figures slightly blurred. Several spherical light fixtures are suspended from the ceiling. The overall atmosphere is futuristic and high-tech.

# Overview

# Welcome to Building Technologies

The future is smart

## Global trends change the world and affect our lives

### Digitale transformation



Worldwide data volume doubles every two years to 40 zettabytes in 2020.

### Globalization



Between 2000 and 2012 the total volume of global trade tripled.

### Urbanization



Until 2050 – 70% of the world's population will live in cities.

### Demographic change



By 2050 the world's population will increase to 9.6 billion people.

### Climate change



In the year 2100: highest CO<sub>2</sub>-concentration in the atmosphere in 800,000 years.

**Facts asking for solutions**

## Building Technologies



### Facts asking for solutions

- The majority of the global population lives in cities
- Cities consume 75% of energy
- CO<sub>2</sub> emissions are increasing
- Increasing demand of public security
- Increasing demand of protection in critical infrastructures (life science)
- More and larger events lead to a higher population density

## Building Technologies

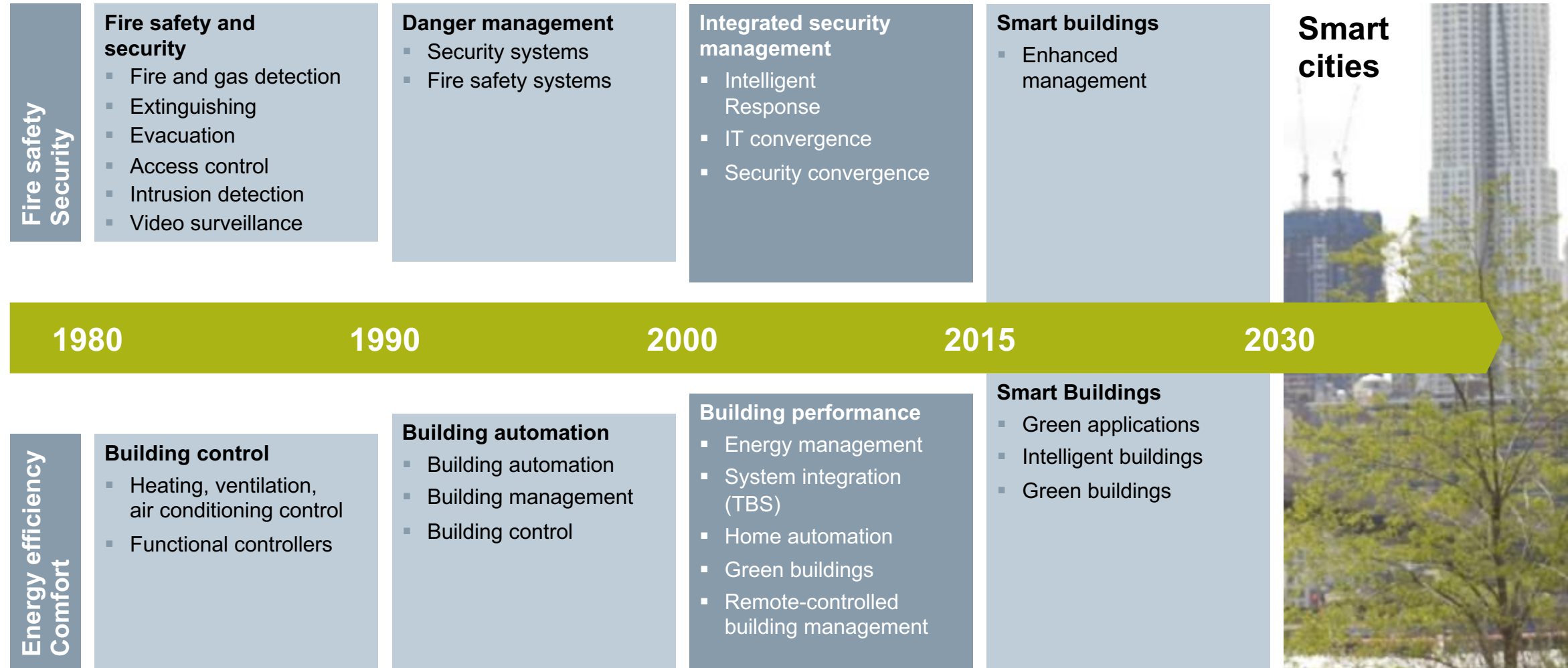


### Building Technologies has the technology and the knowledge,

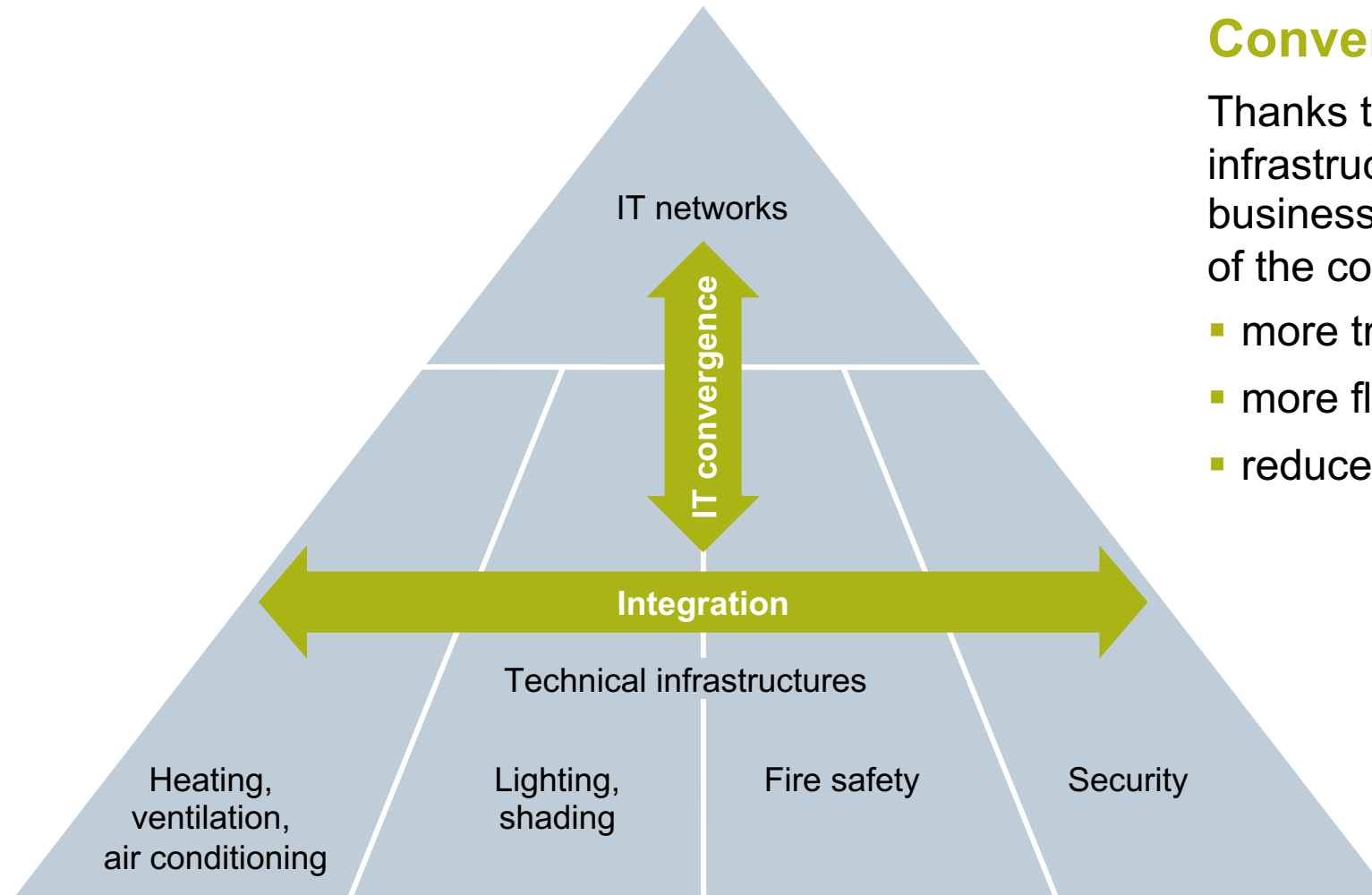
needed in buildings and public infrastructures

- to reduce both energy consumption and CO<sub>2</sub> emissions,
- to sustainably protect people and assets,
- to increase comfort, efficiency, availability, safety and security,
- to create the best possible work and life conditions.

# Individual subsystems grow together to smart buildings and smart cities



# Convergence and integration of autonomous systems in one communication platform



## Convergence and integration

Thanks to interfaces, the technical infrastructure solutions converge with superior business systems, thus increasing the benefits of the complete infrastructure for:

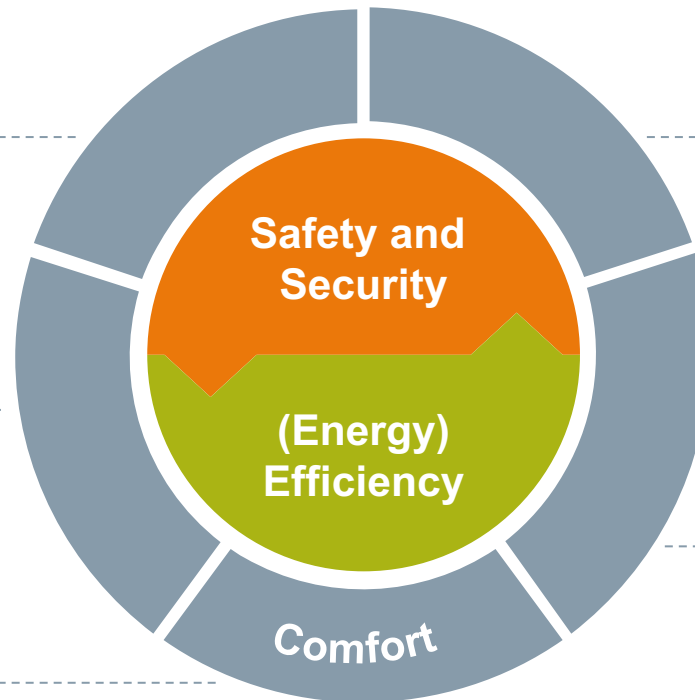
- more transparency
- more flexibility
- reduced operating costs

# Our value proposition considers our society's demands and tomorrow's trends

We sell easily operable products

We offer reliable products, solutions and services

We provide comfort, optimized room climate and intelligent concepts

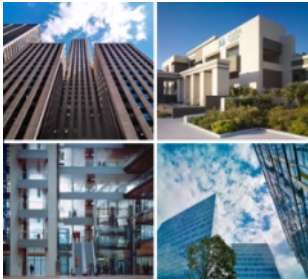




We offer high return on investment and reduce energy consumption

We develop products and solutions that allow flexible use of buildings and integration possibilities

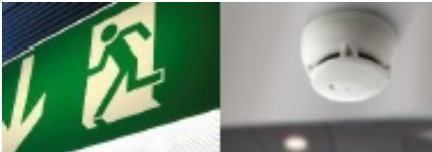



**We are the trusted technology partner for (energy-)efficient, safe and secure buildings and infrastructure**

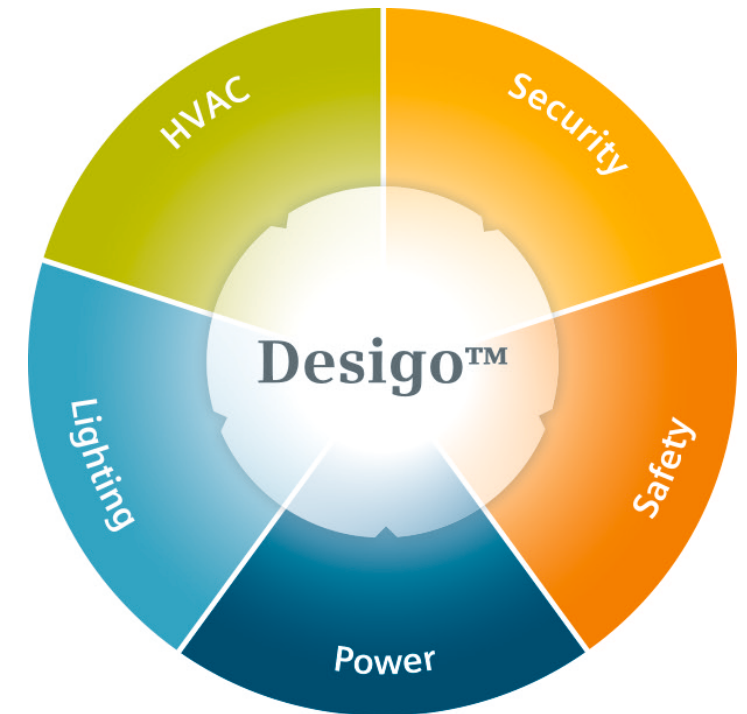
# Our three business areas at a glance

		Building automation	Fire safety	Security
<b>Enterprise Business</b>		Energy efficiency and sustainability management	Enterprise security solutions Evacuation, command and control solution, corporate access control, video surveillance	
<b>System House Business</b>		<b>Total Building Solutions, solutions for vertical markets (data centers, life sciences)</b>		
		Building automation solutions Smart building in a smart grid	Fire safety solutions	Security solutions
<b>Product Business</b>		Building automation Field devices	Fire detection Fire protection	

# With an innovative portfolio to energy-efficient and safe buildings

**Life Cycle Management**

 <p><b>Fire safety</b></p>	<ul style="list-style-type: none"> <li>▪ Fire, smoke and gas detection</li> <li>▪ Evacuation</li> <li>▪ Extinguishing</li> <li>▪ Danger management</li> </ul>
 <p><b>Security</b></p>	<ul style="list-style-type: none"> <li>▪ Access control</li> <li>▪ Video surveillance</li> <li>▪ Intrusion detection</li> </ul>
 <p><b>Comfort</b></p>	<ul style="list-style-type: none"> <li>▪ Building management/automation</li> <li>▪ Heating, ventilation and air conditioning</li> <li>▪ Lighting and shading</li> </ul>
 <p><b>Energy efficiency</b></p>	<ul style="list-style-type: none"> <li>▪ Energy Performance Contracting</li> <li>▪ Energy management</li> <li>▪ Energy consulting</li> </ul>



# Control Products and Systems – green comfort in buildings

CPS Comfort

# Control Products and Systems – In the 21<sup>st</sup> century

## The situation

- Buildings account for 41% of the world's energy consumption
- Buildings produce 20% of the CO<sub>2</sub> emissions

## The challenge

- Efficient use of limited resources
- Reduction of CO<sub>2</sub> emissions and no further increase of global warming

## Our solution

- Building and room automation for maximum energy efficiency
- Intelligent products and systems for using renewable forms of energy



The background of the slide is a photograph of a modern building's interior. It features multiple levels with glass railings and wooden handrails. The space is filled with lush green plants and trees, creating a vibrant, natural atmosphere. The lighting is bright, highlighting the architectural details and the greenery.

**Siemens provides innovative products and systems to automate buildings and infrastructure – for maximized comfort and energy efficiency.**

# Control Products and Systems

## Products for building technology – the comfortable decision

### We focus on two key benefits:

- **High energy and cost efficiency plus environmental protection** – advanced technologies for accurate and energy-saving HVAC control; full compliance with environmental declarations
- **Intelligent room comfort and ease of operation** – ideal climatic conditions in any work or living environment; operation, maintenance and service are smart and straightforward



# Control Products and Systems

## Energy performance of buildings

### BACS efficiency classes as per EN 15232



**BACS** Building Automation and Control System  
**TBM** Technical Building Management System

### Performance factors

Class	Thermal energy				Electrical energy			
	D	C	B	A	D	C	B	A
Offices	1.51	1	0.80	0.70	1.10	1	0.93	0.87
Auditoriums	1.24	1	0.75	0.50	1.06	1	0.94	0.89
Educational facilities	1.20	1	0.88	0.80	1.07	1	0.93	0.86
Hospitals	1.31	1	0.86	0.86	1.05	1	0.98	0.96

The European standard EN 15232 assigns efficiency classes to all relevant energy functions of building automation.

The efficiency classes rate the use of energy-saving potential with regard to the control and operation of HVAC plants and building systems.

# Control Products and Systems

## Energy performance of buildings – product and system certification

### Product certification



Zone controllers  
Heating controllers  
Sensors and actuators

### System certification



Entire installation  
in a specific building

### Tested in laboratory

### On-site inspection

The combination of the two certifications guarantees that the products and systems deliver the assured qualities while achieving the best energy efficiency in the building.

# Control Products and Systems

## Energy performance of buildings – global initiatives

We are active in various associations and standardization committees to guarantee high-quality products and systems for the market.

### Associations/standardization we are active in

### Certifications/standards we have or support



## Products for building technology

### A unique portfolio in width, depth and quality

1

**Siemens as a reliable partner worldwide** – high-quality products and systems from a single source

2

**Ease of handling in every phase of a project** – thanks to innovative products and systems that ensure ease of installation, operation and service

3

**More flexibility on every application** – ensured by a unique portfolio in width, depth and quality

4

**Increased productivity** – with intelligent products and systems from Siemens that ensure lower energy usage



# A unique portfolio in width, depth and quality

CPS Comfort – green comfort for buildings

# Products for building technology

## A unique portfolio in width, depth and quality

### Building automation system



### Standard systems/controllers



### Building control



### Room thermostats



### Sensors



### Valves and actuators



### Damper actuators



### Variable speed drives



### Meters



# Desigo building automation – Energy efficient and flexible

## Desigo™ – comprehensive system to ensure flexible and energy-efficient building automation

### Desigo CC



User-friendly **integrated management platform** to operate, monitor, evaluate and optimize all integrated systems and processes from a higher level.

### Desigo PX



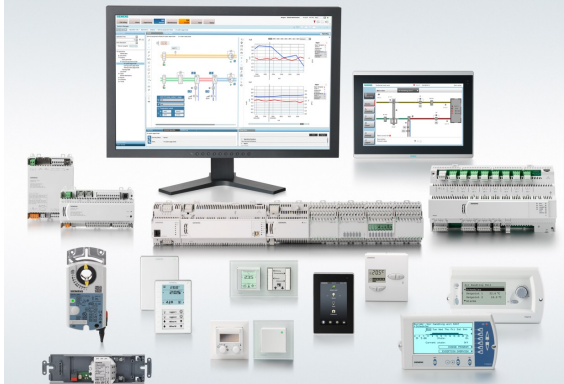
Scalable **automation system** to control, operate and monitor primary plants via operating units and optional Web-based operation.

### Desigo TRA



Flexible, adaptable **room automation system** to control comfort in individual rooms, including lighting and shading.

### Desigo Open



**Interfaces** to integrate heating boilers, refrigeration machines, pumps, variable speed drives, energy metering, access control, fire alarm or other equipment at all system levels.

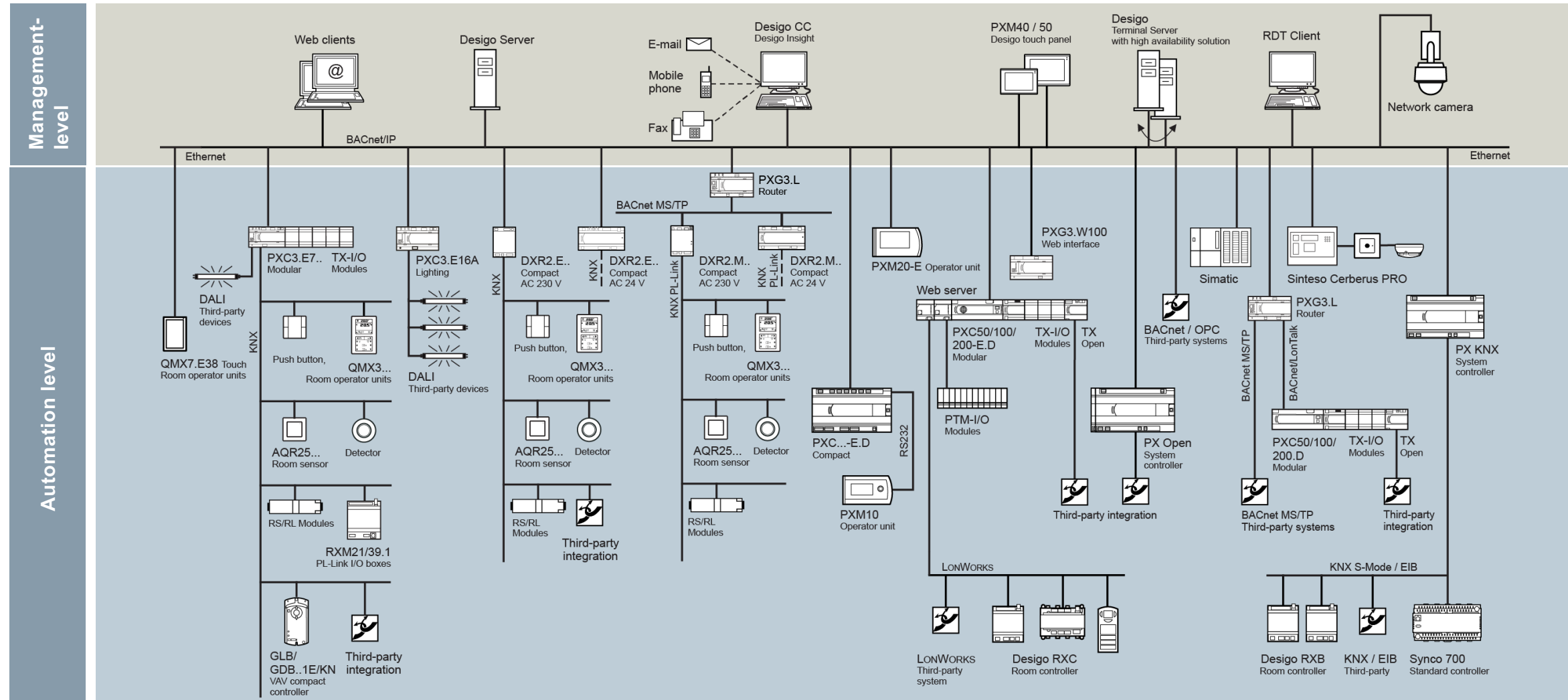
Open **BACnet** communication for linking the automation and the management level



**KNX** and **DALI** as well as **EnOcean** and **LonWorks** for linking room automation and decentralized secondary processes



# Desigo building automation and control system – Key components of a plant



## Desigo building automation – Energy efficient and flexible

- **Lower energy cost** – thanks to intelligent energy performance management, innovative energy savings and monitoring features plus efficient processes
- **Long-term investment protection** – thanks to open communication and straightforward extendibility
- **Flexible system design** – for every building, thanks to a modular portfolio



## Desigo building automation – Energy efficient and flexible

- **Easy operation for maximum comfort** – optimum living and working conditions plus ease of operation thanks to straightforward handling
- **Reliability of a proven and tested system** – with a broad installed base
- **Worldwide support** – over the whole life cycle



## Desigo Total Room Automation (TRA) – For flexible and energy efficient rooms

- **Comfort for a pleasant room climate** – the combination of several disciplines (HVAC, lighting, shading) allows for individually tailored room solutions
- **Energy efficiency to save cost** – involving the room user through the Green Leaf symbol on the room operating unit saves up to 25% energy
- **Flexibility to lower investment** thanks to an open, programmable room automation portfolio with a flat system architecture
- **Reliability and quality** thanks to expertise and certified application solutions



# Desigo Total Room Automation (TRA)

## Active energy management by room users

### Interaction with room users



#### RoomOptiControl

Intelligently linked efficiency function across all disciplines automatically detects unnecessary energy use in the room.

#### Green Leaf symbol



Energy-optimized operation



Unnecessary energy use  
Energy saving potential

A simple press of a button ensures that the plant returns to energy-optimized operation.



# Products for building technology

## A unique portfolio in width, depth and quality

**Building automation system**



**Standard systems/controllers**



**Building control**



**Room thermostats**



**Sensors**



**Valves and actuators**



**Damper actuators**



**Variable speed drives**



**Meters**

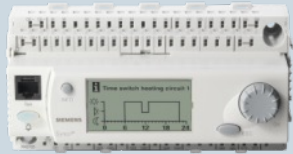


# Standard system/controllers – Synco

Comprehensive portfolio for all control needs

## Communicating controllers for use with systems – communication via KNX standard bus

### Synco™ 700



Versatile range of HVAC controllers of modular design

### Synco RXB/RXL controllers RDG/RDF room thermostats



Enhanced comfort thanks to individual room climate

### Synco operating



Efficient operation of plant including straightforward remote control

Open **KNX communication** for optimum interaction of controllers with standardized data exchange



## Stand-alone controllers for small buildings and basic applications

### Synco 200

HVAC controllers for all types of standard applications



### Synco 100

Temperature sensor, controller and control panel in one unit



# Standard system/controllers – Synco

## Topology of communicating control system (KNX)

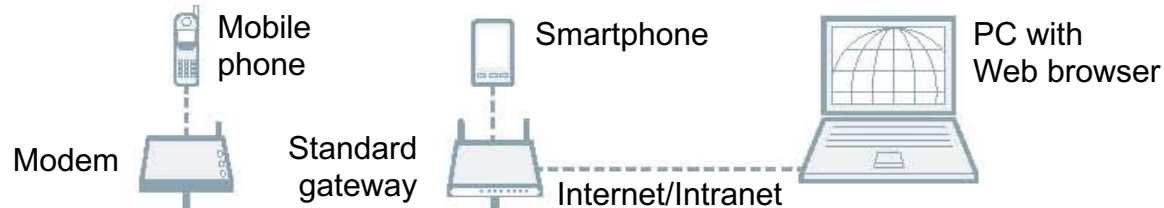
### Synco tool

Tool for commissioning and diagnosis



### Synco operating

Efficient plant operation with alarming and handling



Central control unit for heating, ventilation and air conditioning plants

### Synco 700

Central control unit for heating, ventilation and air conditioning plants

Room controller and central control unit for individual room climate

### Synco RXB/RXL Synco RDG/RDF

## Standard system/controllers – Synco

Comprehensive portfolio for all control needs

- **High level of energy efficiency, cost savings and environmental compatibility** – thanks to integrated energy saving functions, a high degree of control accuracy, individually adjustable room climate and energy indicator
- **Exact and energy-efficient plant operation** – thanks to straightforward operation
- **Long-term investment protection** – thanks to tested, long-lasting controllers confirmed by more than 200,000 plants operating flawlessly
- **Optimized climate for relaxed living and performance-oriented working** – thanks to comfortable individual room control and simple operation via HomeControl app



## Standard system/controllers – Synco

Comprehensive portfolio for all control needs

- **High reliability lets you focus on important things** – highest level of product quality and long life cycles thanks to support from highly skilled HVAC control professionals from Siemens
- **Fast, simple plant procurement and assembly** – thanks to a comprehensive product range
- **Time and cost savings** – thanks to simple planning and commissioning with no programming or preliminary testing required
- **High flexibility** – thanks to simple expandability and matching of controllers and standard functions



# Standard system/controllers – Synco living

## Enhanced comfort for living spaces

### Synco living – home automation system with convenient acquisition of consumption data

#### Room units



- **QAX9..3** central apartment unit
- **QAW910** room unit
- **AFK914/C01** radio controller
- App HomeControl for room automation

#### Indoor/outdoor sensor



- **QAA910** room temperature sensor
- **QAC910** meteo sensor

#### Actuator/controllers



- **SSA955** radiator control actuator
- **RRV91..** heating circuit controller
- **RRV934** multi-unit controller

#### Consumption data acquisition



- **WRI982** consumption data interface
- **WF../WF..** heating/cooling meters
- Counters for electrical energy
- Gas meters

#### Safety, lighting and shading



- **AP 260** door and window contact
- **QFP910** water sensor
- Lighting and shading control with GAMMA

#### System products



- **OZW772** Web server
- **ERF910** radio repeater

## Standard system/controllers – Synco living

Enhanced comfort for living spaces

- **Versatile and stylish home automation system for the private sector** – heating/cooling, cold/hot water, lights, blinds, security and acquisition of consumption data
- **Up to 30% energy savings** – thanks to individual room control
- **Ease of operation and readout** – consumption data can be read out from the central apartment unit or a remote location without having to enter the apartment
- **Satisfied tenants/owners** – fewer complaints thanks to more transparency



## Standard system/controllers – Synco living

Enhanced comfort for living spaces

- **Flexible and easily extendible without any need for making major structural changes or laying wires** – thanks to modular design and wireless communication via KNX RF
- **Easy operation and monitoring of settings** with the HomeControl app
- **Improvement in value** – Synco living provides important prerequisites for complying with efficiency class A
- **Easy and fast commissioning thanks to plug and play** – directly from the central apartment unit, with no need for using extra tools



# Standard system/controllers – heating controllers

For small and medium-sized buildings

## Stand-alone and communicating heating controllers for small and medium-size buildings

### RVP2..



Affordably priced heating controllers featuring analog operation –

for single-family homes, apartment complexes and small commercial/industrial buildings.

### RVP3..



Compact heating controllers featuring open communication –

for single-family homes, apartment complexes and small to medium-sized commercial/industrial buildings as well as public buildings.

### RVL4..



Multi-functional heating controllers featuring open communication and adjustable heating curve –

for single-family homes, apartment complexes and small to medium-sized commercial/industrial buildings as well as public buildings.

### RVD1.. RVD2..



Environmentally friendly district heat controllers featuring open communication –

for substations in single-family homes and small to medium-sized commercial/public buildings.

## Standard system/controllers – heating controllers

For small and medium-sized buildings

- **The right product for any type of application** – communicating or non-communicating as well as digital or analog, standard heating controllers operate very reliably
- **High energy and cost efficiency** – thanks to integrated energy saving functions and exchange of data about the plant's heat or cooling energy demand
- **Time- and cost-saving handling** – thanks to ease of installation, commissioning and operation on the basis of programmed applications and the HomeControl app



# Products for building technology

## A unique portfolio in width, depth and quality

Building automation system



Standard systems/controllers



Building control



Room thermostats



Sensors



Valves and actuators



Damper actuators



Variable speed drives



Meters



# Building control – GAMMA

## Future-proof electrical installation

### GAMMA building control – future-proof electrical installations

#### GAMMA *instabus*



**Electrical installation for more economy, safety, flexibility and comfort.**

Flexible networking of all electrical components in the home or building based on the worldwide open KNX communication standard, a technology that can be matched to individual needs.

#### GAMMA wave



**Enhanced comfort at low cost – profiting from all benefits offered by modern electrical installations.**

The GAMMA wave RF system does away with costly wiring.

#### EnOcean



**Flexible, self-powered and maintenance-free room operating units and wall transmitters.**

The product line includes room operating units and wall transmitters for lighting, shading and room climate applications. EnOcean devices can be mounted on any surface and do away with wiring – they are simply screwed or glued.

**KNX:** The worldwide standard for home and building control



## Building control – GAMMA

### Future-proof electrical installation

- **Everything from a single source** – matching products and systems for comprehensive building and room automation
- **Flexibility** – thanks to simple connection to superior building management systems
- **Energy-efficient operation** – without loss of comfort or security
- **Investment protection** – thanks to the open worldwide KNX communication standard



# Products for building technology

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# Room thermostats –

## For individual, energy-efficient temperature control

### Room thermostats for all types of heating, ventilation and cooling applications

#### Heating only/ cooling only



For living and work spaces:  
control of domestic hot water,  
electric heating as well as radiator  
and floor heating systems.

#### Fan coil unit applications



For small heating zones in  
commercial buildings, single-family  
homes, apartment complexes and  
hotel rooms: control of fan coil units.

#### VAV applications



For small heating zones in  
commercial buildings:  
control of variable air volume  
systems, ventilation systems and  
chilled ceilings.

#### Heat pump applications



For small heating zones in  
commercial buildings, single-family  
homes, apartment complexes and  
hotel rooms: control of heat pumps  
for use with renewable forms of  
energy.

## Room thermostats –

For individual, energy-efficient temperature control

- **Stylish room thermostats that meet all needs** – from simple to complex communicating units of different design
- **Room thermostats for all types of application** – from heating only to fan coil unit applications
- **Energy savings of up to 30%** – thanks to time schedules, absence function or the use of external sensors
- **Ease of operation and maximum room comfort** – thanks to individual setting choices, self-explanatory menus and constant room temperatures



## Room thermostats –

For individual, energy-efficient temperature control

- **Fast, cost-efficient installation and commissioning** – based on uniform product concept
- **Long-term investment protection** – thanks to high-quality products that conform to standards and integration into existing systems via KNX



# Products for building technology

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# Sensors – Symaro

Innovative sensors, measurable quality

## Symaro™ sensors – for all standard HVAC measuring ranges and applications

### Temperature



Reliable and accurate acquisition of temperatures in any location via room, duct, immersion, outside, clamp-on and cable sensors.

### Humidity



Highly stable acquisition of humidity even under arduous conditions via room, duct, outside and dew point sensors as well as hygrostats.

### Air quality



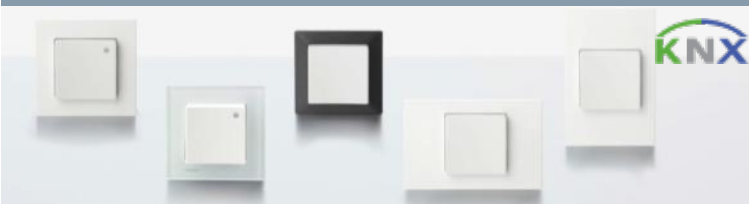
Long-term stable acquisition of air quality to ensure high energy efficiency and room comfort by means of room and duct sensors.

### Pressure



Highly precise acquisition of pressures via differential and relative pressure sensors for air, liquids, gases and refrigerants.

### Sensors for flush-mounting



Acquisition of temperature, humidity and air quality with sensors for flush-mounting in DELTA switch design.

### Flow



Flexible and efficient flow measurement in fluids or air.

### Certified sensors



Sensors for demanding requirements (e.g. in the pharmaceutical industry): pressure and humidity.

## Sensors – Symaro

Innovative sensors, measurable quality

- **Advanced sensor technology** – self-monitoring, service mode, consistent installation concept and functional design
- **Energy savings of 20 to 70%** – thanks to fast, highly accurate measurement, efficient measuring techniques, demand-controlled ventilation and low energy consumption
- **Matching sensors for any measuring requirements and fields of use** – for all standard HVAC measuring ranges and applications, including stylish sensors for flush-mounting



## Sensors – Symaro

Innovative sensors, measurable quality

- **High level of room comfort and ease of operation** – thanks to demand-controlled ventilation and multi-sensors with display of measured value
- **Lower installation and wiring costs** – thanks to multi-sensors with several measuring parameters in one unit
- **KNX communication** – for seamless integration into building control systems
- **Guaranteed quality** – decades of experience, in-depth application know-how and systematic testing of sensors



# Products for building technology

## A unique portfolio in width, depth and quality

**Building automation system**



**Standard systems/controllers**



**Building control**



**Room thermostats**



**Sensors**



**Valves and actuators**



**Damper actuators**



**Variable speed drives**



**Meters**



# Valves and actuators – Acvatix

Versatile product range for more energy efficiency

## Acvatix™ – reliable valves and actuators for any type of application

### Globe and pressure independent combi valves



Extensive range of 2- and 3-port valves plus pressure-independent combi valves with actuators that ensure flexible planning and energy-efficient operation of HVAC plants – be it for small, large or complex central HVAC plants, district heating or room and zone applications.

### Rotary valves



Very broad range of slipper, ball and butterfly valves with actuators that ensure flexible planning and energy-efficient operation of HVAC plants – be it for small, large or complex central HVAC plants, district heating or room and zone applications.

### Refrigerant valves



Hermetically sealed, very fast-acting and highly accurate valves with magnetic actuator for use in refrigeration plants – for expansion, hot-gas or suction throttle applications, for example.

## Valves and actuators – Acvatix

Versatile product range for more energy efficiency

- **Consistent product range** – simple product selection, installation and commissioning
- **Unique choice of valves and actuators for the entire hydraulic circuit and any type of application** – be it for heating, cooling, heat recovery, refrigeration, domestic hot water or steam, from very small to very high volumetric flows or differential pressures in open or closed circuits
- **High energy efficiency and minimum operating costs** – thanks to finely graded valve range for optimum plant design in terms of hydraulics, control performance and energy usage



## Valves and actuators – Acvatix

Versatile product range for more energy efficiency

- **Investment protection** – owing to rugged design, unique backward compatibility, high level of fail safety and products which have been used successfully millions of times throughout the world
- **Reliable and efficient operation of plant** – thanks to indication of operating state and position, auxiliary functions for optimum operation and protection plus easy manual control, for example



## Valves and actuators – Acvatix

Versatile product range for more energy efficiency

- **Fast, simple and secure assembly of valve and actuator** – thanks to straightforward, error-free valve coupling and self-explanatory assembly, for example
- **High quality, fully tested** – based on many years of experience and coming from Siemens' own development, production and testing facilities



# Products for building technology

## A unique portfolio in width, depth and quality

Building automation system



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Meters



# Damper actuators – OpenAir

## Robust products for energy-efficient ventilation

### OpenAir™ damper actuators for a broad field of use

#### Actuators for HVAC applications



Reliable and powerful actuators for recirculated air, outside air and central air conditioning unit applications.

#### Actuators for air volume control



Highly accurate actuators, quick and easy parameterization, ensuring high comfort and energy efficiency from installation to usage.

#### Actuators for fire and smoke protection dampers



Highly reliable and secure actuators, ensuring that fire or smoke cannot spread via air ducts.

## Damper actuators – OpenAir

Robust products for energy-efficient ventilation

- **High investment protection** – thanks to long service life and extreme reliability based on robust housing, function-tested assembly concept and 100% function-tested products
- **Energy and cost savings** – by power operation and high precision
- **Damper actuators for all types of application** – four different housing sizes for all HVAC applications: from recirculated air, outside air and shutoff dampers to air volume control and central air conditioning units
- **Optimum comfort for living and work spaces** – thanks to low noise, brushless motors plus fast and accurate control



## Damper actuators – OpenAir

Robust products for energy-efficient ventilation

- **Ease of installation and commissioning** – thanks to self-centering shaft adapter, prewired actuators and VAV compact controllers for quick and straightforward adjustment on VAV boxes
- **Full support for your practical work** – from documentation to basic training courses and advice
- **Straightforward product selection** – with the help of service tools such as HIT or slide rule



# Products for building technology

## A unique portfolio in width, depth and quality

Building automation system



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Damper actuators



Variable speed drives



Meters



## Variable speed drives – G120P

For straightforward and energy-saving HVAC operation

### G120P – boosts efficiency and reduces costs

Reliable variable speed drives for control panel or wall mounting



G120P variable speed drives ensure simple and efficient control of power consumption of high-power fans or pumps while keeping service and operating costs low.

The variable speed drives consist of a control unit, a power module and an operator panel or blanking cover. They are available in two degrees of protection: IP20 for control panel mounting and IP54 or IP55 for wall mounting.

## Variable speed drives – G120P

For straightforward and energy-saving HVAC operation

- **Energy savings of up to 60%** in connection with fans or pumps – thanks to demand control, hibernation mode and low harmonics technology
- **Flexibility and serviceability** – thanks to modular concept
- **Cost savings** – thanks to quick and straightforward commissioning and maintenance, low wear-and-tear operation of motors, extended motor life, reduced reactive currents and no need for AC line reactors
- **Long-term investment protection** – thanks to reliability, longevity, straightforward maintenance and logistics plus reduction of mechanical wear of motors



## Variable speed drives – G120P

For straightforward and energy-saving HVAC operation

- **Extensive product range** – based on leading-edge technology
- **Enhanced comfort for living and work spaces** – thanks to lower noise level resulting from speed control of motors and less impact on sensitive equipment such as computers and communication modules
- **Security in the event of fire** – thanks to smoke-free escape routes controlled by a fire control installation



# Products for building technology

## A unique portfolio in width, depth and quality

**Building automation system**



**Standard systems/controllers**



**Building control**



**Room thermostats**



**Sensors**



**Valves and actuators**



**Damper actuators**



**Variable speed drives**



**Meters**



# Heat and water meters – Acquisition of energy and water consumption

## Heat and water meters for acquiring energy and water consumption

### Heat and water meters



Mechanical and electronic cold and hot water meters to measure water consumption.

Electronic and ultrasonic heat meters for acquiring the amount of heat supplied by district heat networks to commercial or residential buildings

### Heat cost allocators



For installation on radiators to acquire the amount of heat emitted.

## Heat and water meters – Acquisition of energy and water consumption

- **Precise, long-term stable and reliable acquisition of consumption data** – including consumption-related billing
- **Can be easily matched to different types of buildings** – thanks to modular system design
- **Convenient readout and protection of privacy** – thanks to user-friendly remote readout without having to enter the apartment
- **Easy installation and integration into billing systems** – via M-bus and KNX RF



## Heat and water meters – Acquisition of energy and water consumption

- **Faster recovery of energy costs** – thanks to quicker, error-free readout and billing
- **Investment protection and improvement in value** – thanks to high-quality products (EN 1434-tested)
- **Flexible communication** – thanks to support for different communication standards (Impulse, M-bus, M-bus RF)



# References all over the world

Control Products and Systems Comfort – green comfort in buildings

MediaCityUK

## Practical examples of energy savings

### Desigo building automation, Fraunhofer CSE in Boston, USA

- Central building management with the integrated management platform Desigo CC
- Easy integration of different disciplines and systems thanks to open protocols
- Handling of day-to-day work has been greatly simplified
- Desigo CC offers trend analyses and evaluation functions that can be used to show extra energy saving potential



Energy savings of up to 25%

### Desigo Total Room Automation, Schwäbischer Verlag in Ravensburg, Germany

- All disciplines – lighting, shading and HVAC plant – are interlinked
- Desigo TRA is used for individual room control in 64 office rooms
- Control of shading to keep heating costs as low as possible



Energy savings of up to 25%

## Practical examples of energy savings

### BAYTNA passive house in Doha, Qatar

- Sustainable energy use in residential construction to save energy and water resources
- Integration of all disciplines: heating, ventilation, air conditioning, lighting, shading and fire safety



Energy savings of up to 50%

### Daimler parking garage in Sindelfingen, Germany

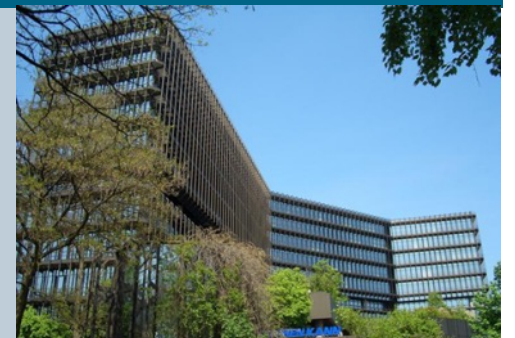
- Presence-controlled lighting
- Emergency and safety lighting based on the latest technology
- Savings: 500,000 kWh/a



Energy savings of 45%-50% (approx. €60,000)

### European Patent Office in Munich, Germany

- Room automation with Gamma *instabus*
- DALI in connection with KNX to monitor, switch and dim any lamp



Energy savings of 30% to 40%

## Practical examples of energy savings

### Polyclinic with optimized control

- Control strategy tailored to requirements
- Demand-controlled ventilation
- CO<sub>2</sub> reduction: 22%
- Payback time: 6 months



**Energy savings of up to 30%**

### Synco in Italian luxury hotel

- Exchange of energy information via KNX
- Integrated energy saving function
- Certified controllers for up to 8% more energy savings



**eu.bac-certified control accuracy and energy efficiency**

### Zero energy with Desigo TABS control

- Heating and cooling via thermally active building structure
- Air exchange based on approx. 90% heat recovery
- Web operation



**Zero energy balance**

### Efficient controllers and components

- Highly efficient condensing boiler controllers save 20% energy
- Heat pump controllers help save 40% energy
- Variable speed drives save up to 60% energy

**Energy savings of 20-60%**

Thank you for your attention!



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