DISTRICT ENERGY

Sustainable district heating and cooling

Fully integrated solutions

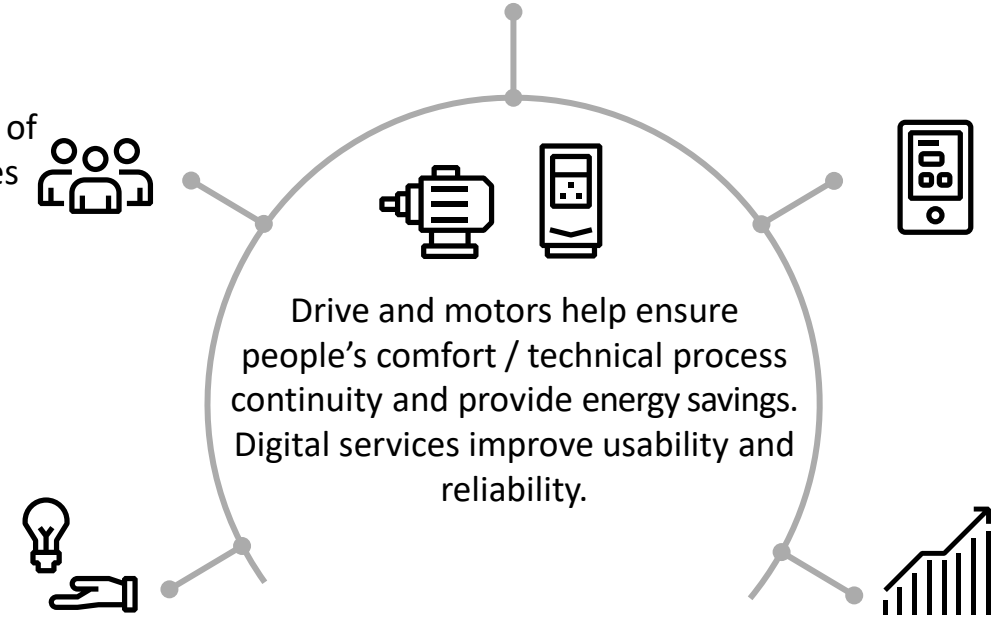
District energy market
General trends

Sustainability

Municipalities follow sustainability agenda reducing local CO_2 footprint. District energy, especially when based on renewables or wastes supports it well.

Population increase & urbanization

By 2030, population will reach 8 billion 60% of which will live in cities. Urbanization requires investment in HVACR and district energy systems.



Digitalization

The world goes digital with increased usage of smart devices and wireless connectivity. Young generations expect digital services also in industry.

Energy efficiency

Governmental directives and rising energy costs force OEMs and property owners to increase energy efficiency of equipment, processes and buildings.

Increasing living standards

The world keeps evolving. Life standards become higher. People expect indoor environment to be comfortable and safe.

What ABB offers district energy industry

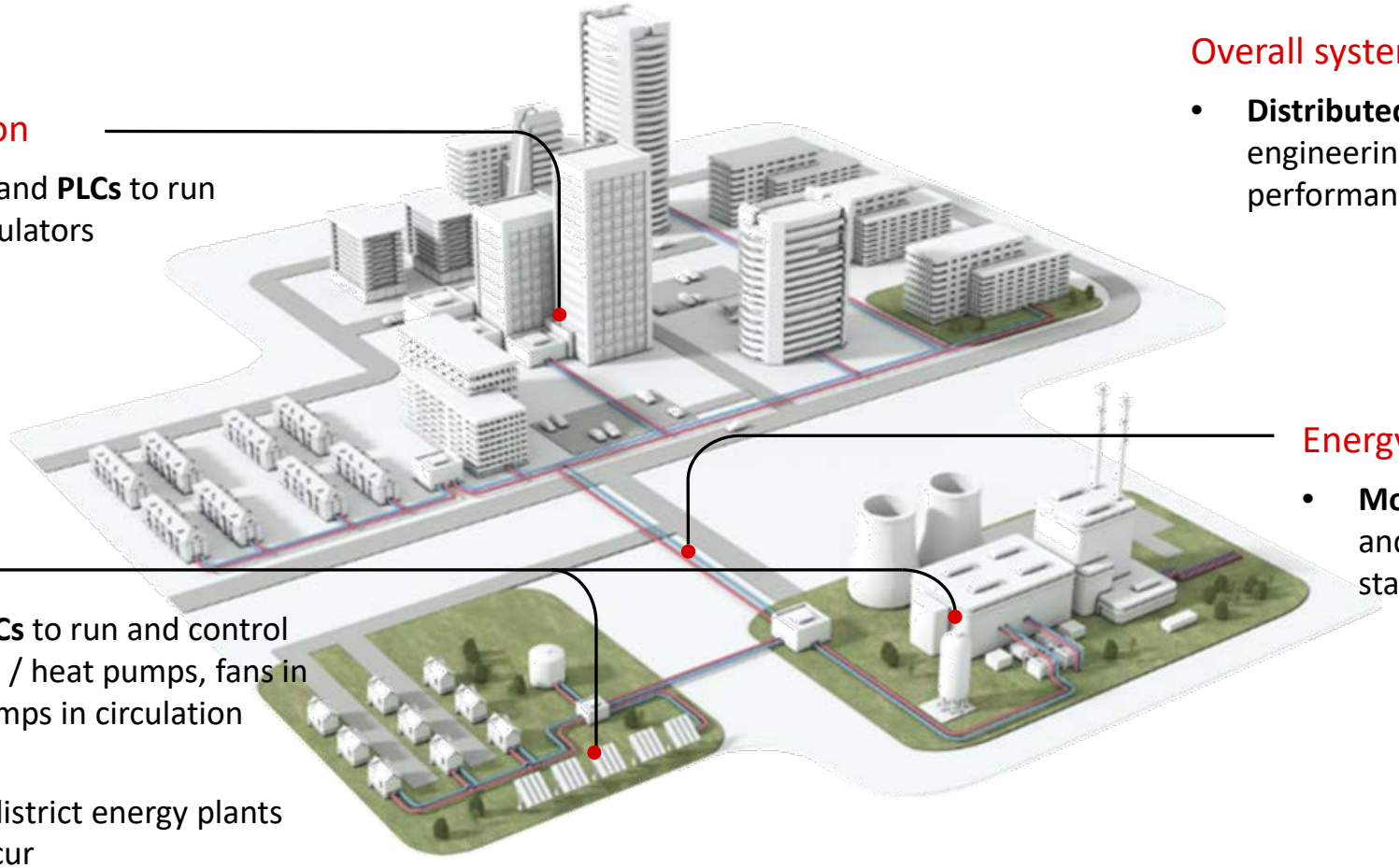
Answering customer needs with system solutions

Energy distribution

- **Motors**, **drives** and **PLCs** to run and control circulators

Overall system control

- **Distributed control system** to improve engineering efficiency, operator performance and asset utilization



Energy transmission

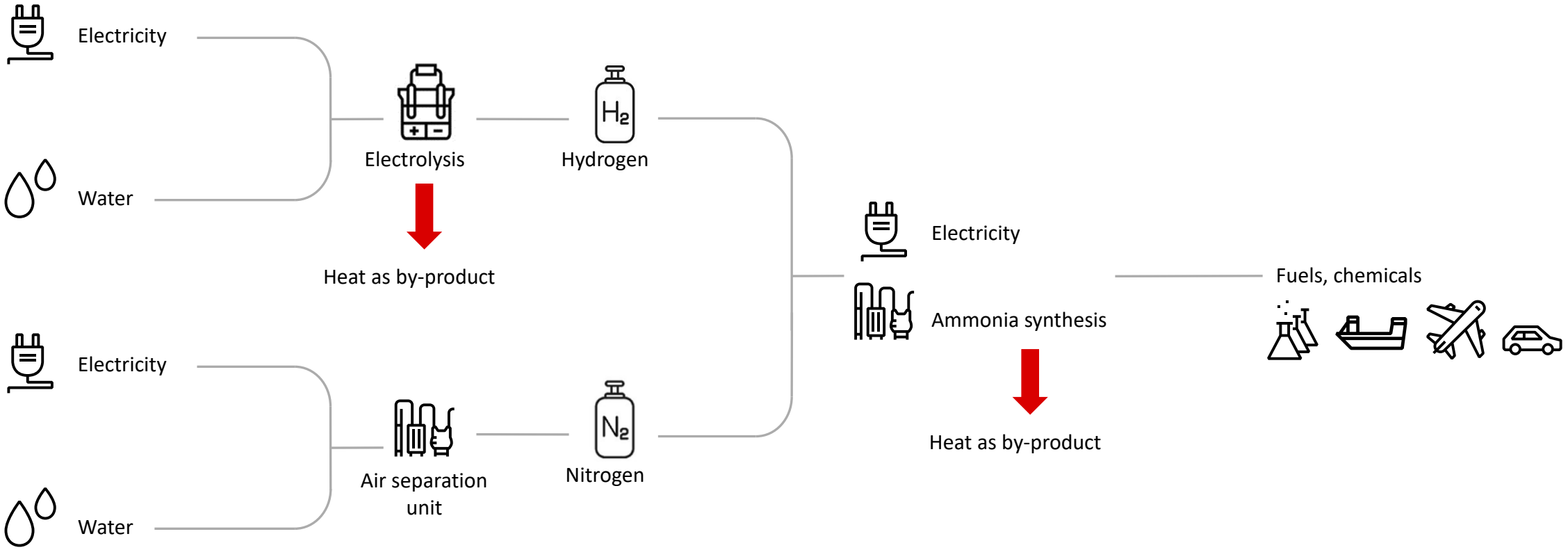
- **Motors**, **drives** and **PLCs** to run and control booster pump stations

Energy generation

- **Motors**, **drives** and **PLCs** to run and control compressors in chillers / heat pumps, fans in cooling towers and pumps in circulation loops
- **Generators** to power district energy plants should a brownout occur

District Heating improves Power-to-X business case

Power-to-X-to-Heat



Heat pumps in District Energy

Large system require close collaboration and joint engineering

Automation and mechanical controls must be closely integrated

We support the full system integration in close collaboration with our OEM customers

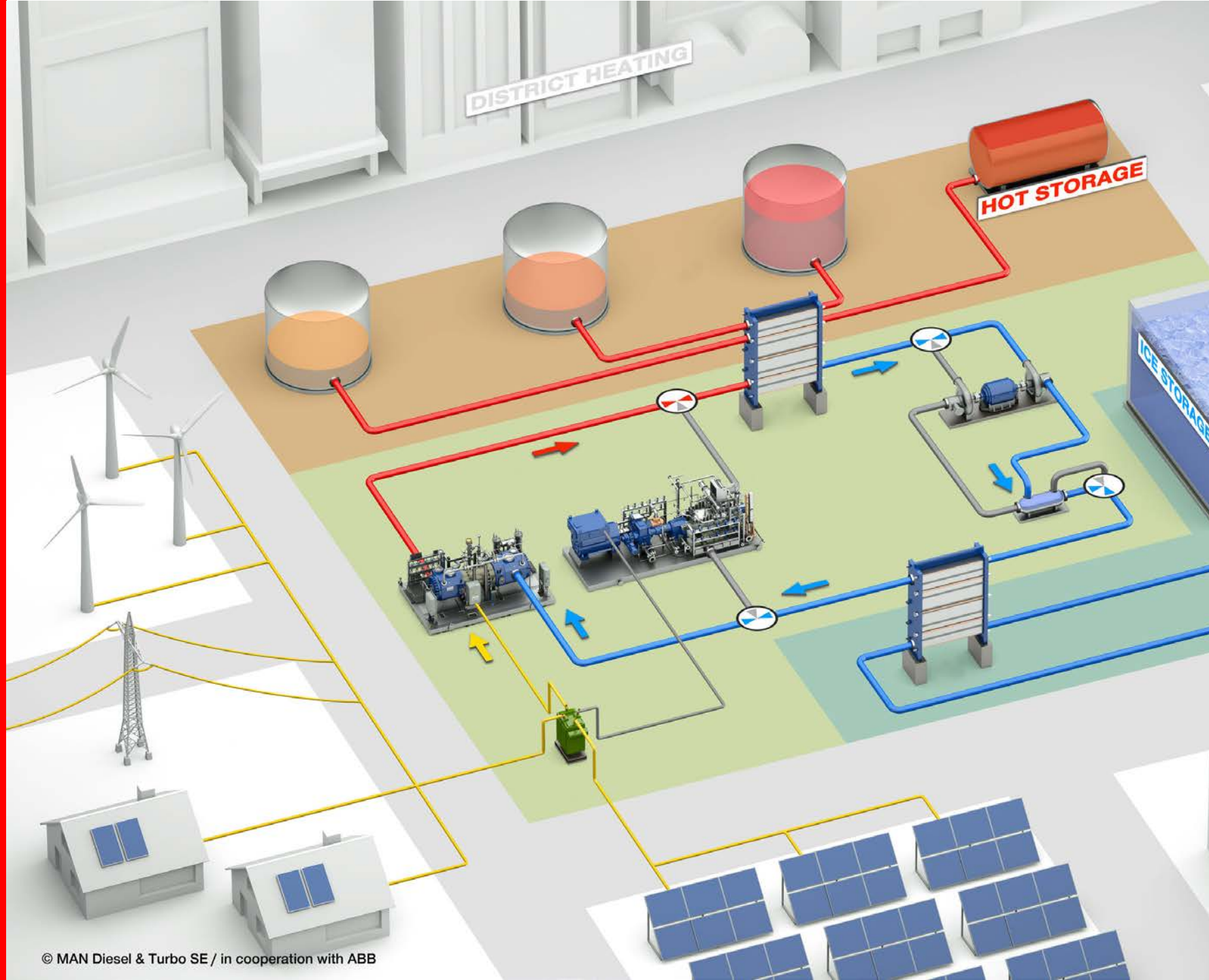


ABB experience and competences

District energy and electrical

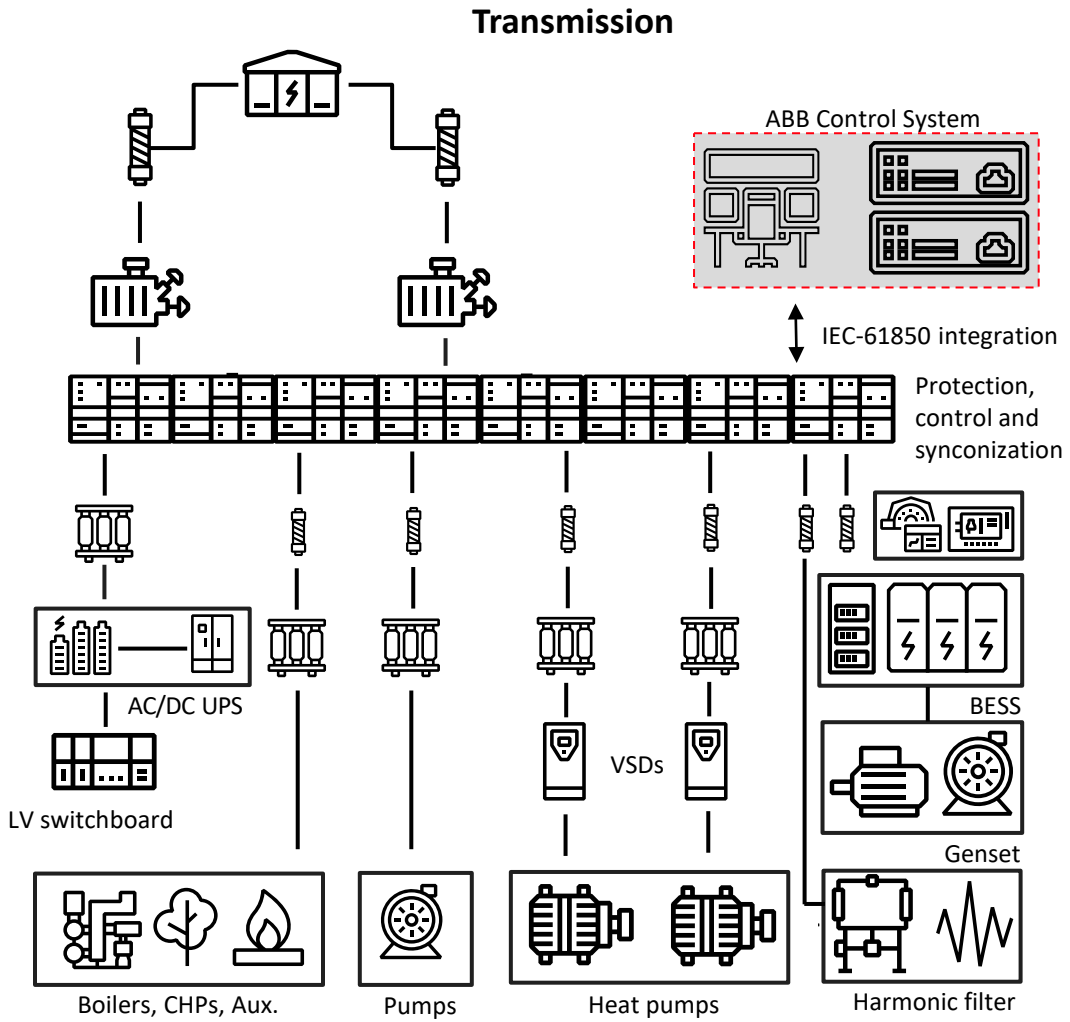


ABB motors, generators and drives services

From spare parts to cloud-based condition monitoring

Service agreements – tailored to your specific needs

Installation and commissioning

Professional commissioning services provide the foundation for long-term, trouble- free operation

Training

Training courses give your people the specialized skills they need

Spares and consumables

Full support of parts for all motors, generators and drives

Maintenance

Preventive maintenance tailored to your equipment’s lifecycle phase

Technical support and repairs

In emergencies or during scheduled shutdowns, we will quickly repair and service your equipment – on-site and remotely

Engineering and consulting

Engineered solutions across a broad range of applications, designed to meet the needs of your business or process

Advanced services

Services that utilize your equipment’s data to optimize performance and predict maintenance

Extensions, upgrades and retrofits

Effective way of extending the lifetime of your equipment

End-of-life services

Your equipment will be dismantled, recycled or reused responsibly

Replacements

Quick and efficient replacement services to minimize production downtime

ABB digital powertrain

Services for increased system reliability

Drives

- save 20 to 60% energy in pumps, compressors and fans
- reduce mechanical and electrical setress
- decrease project investment costs
- increase process reliability

Motors

- up to 40% reduction in losses with ABB SynRM technology

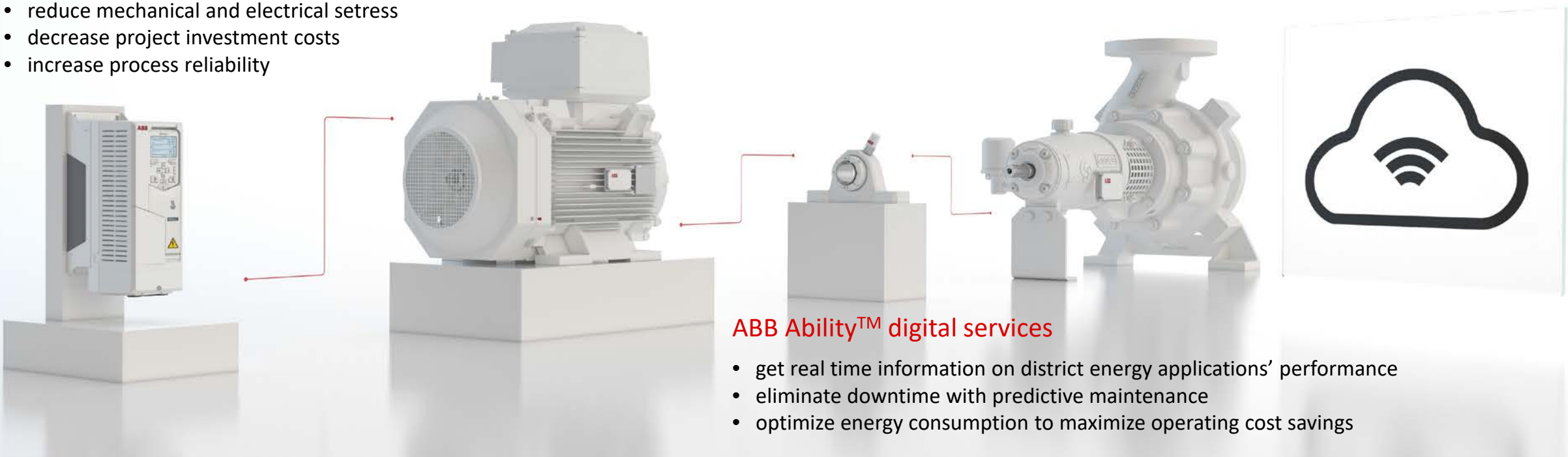


ABB Ability™ digital services

- get real time information on district energy applications' performance
- eliminate downtime with predictive maintenance
- optimize energy consumption to maximize operating cost savings

ABB LV and MV AC drives

Product portfolio for district energy segment

Low Voltage Drives

ACH580

- 0.75 to 500 kW at 230 to 690 V output
- Diode or active front end (ultra-low harmonic)
- Full functional safety
- HVAC control program

ACS880

- 1.5 to 5 200 kW at 230 to 690 V output
- Diode or active front end (ultra-low harmonic)
- Optional regen front end for 4Q operation
- Full functional safety
- Best in class motor control, high performance

Medium Voltage Drives

ACS580

- 200 to 6 300 kW at 3.3 to 11kV output
- Low harmonic footprint, using high-pulse integrated transformers
- All-compatible user interface

ACS1000

- 315 to 5 000 kW at 2.3 to 4.16 kV output
- Installation flexibility, using external or built-in transformers
- Lor harmonics with 12 or 24 pulse rectifier
- Flexibility to configure
- Small footprint
- High reliability
- Highest personal safety

ACS2000

- 250 to 3 700 kW at 4.0 to 6.9 kV output
- Installation flexibility, using external or built-in transformers
- 12 pulse rectifier or optional active front end for 4Q operation
- Small footprint
- High reliability
- Highest personal safety

ACS5000

- 2 000 to 36 000 kW (higher on request) at 6.0 to 13.8 kV output
- Installation flexibility, using external or integrated transformers
- 36-pulse diode rectifier
- Small footprint
- High reliability
- Highest personal safety

ABB large motors and generators

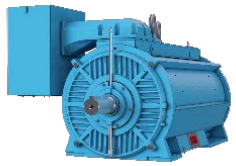
Product portfolio for district energy segment

High Voltage Induction Motors

Rib cooled

Modular

Above NEMA



Water jacket

- 100 kW to 28 MW
- Available as configured to order or built from the basic design
- Flameproof options, offering for hazardous and contaminated areas

Synchronous Motors

- 1 MW to 75 MW
- Optimized designs for specific application
- All main mounting and cooling types

Generators

For wind turbines

- 1 to 15 MW
- Proven solution to all major wind turbine concepts

For steam/gas turbines

- 1 000 to 85 000 kVA
- Meet the highest demands for efficiency, performance and reliability

For diesel/gas engines

- 500 to 60 000 kVA
- Widely used in land and sea,
- Designed to perform

For network stability

- 1 000 to 85 000 kVAr
- Strengthen power network facing challenges of higher penetration of renewables

ABB PLCs

Automating complex district energy processes seamlessly

Engineering suite

Automation builder

- connects engineering tools for PLC, safety, control panels, SCADA, drives and motion
- combines the tools required for configuring, programming, debugging and maintaining automation projects from one common intuitive interface

Library packages

- For efficient engineering of demanding applications
- Easy-to-use application examples

Visualization

CP600-eCo
- The economical control panel for basic and standard functionality

CP600
- The robust control panels for performance, communication for machines and systems

CP600-Pro
- The high end visualization performance, multi-touch operation, trendsetting communication

Programmable Logic Controllers PLCs

AC500-eCo
- Compact PLC offering optimally suited for smaller applications
- Seamless integration into whole AC500 PLC platform

AC500
- Powerful PLC with wide range of performance, communications and I/O capabilities, ideal choice for complex and high-speed applications

AC500-XC
- Extreme condition with extended operating temperature, immunity to vibration and hazardous gases, high humidity

AC500-S
- Integrated safety PLC (SIL3, PL e) designed for complex safety applications

I/O modules

S500-eCo
- Wide range of modular I/Os for competitiveness in smaller applications
- Directly compatible with AC500 or AC500-eCo CPU modules
- For usage as remote I/O

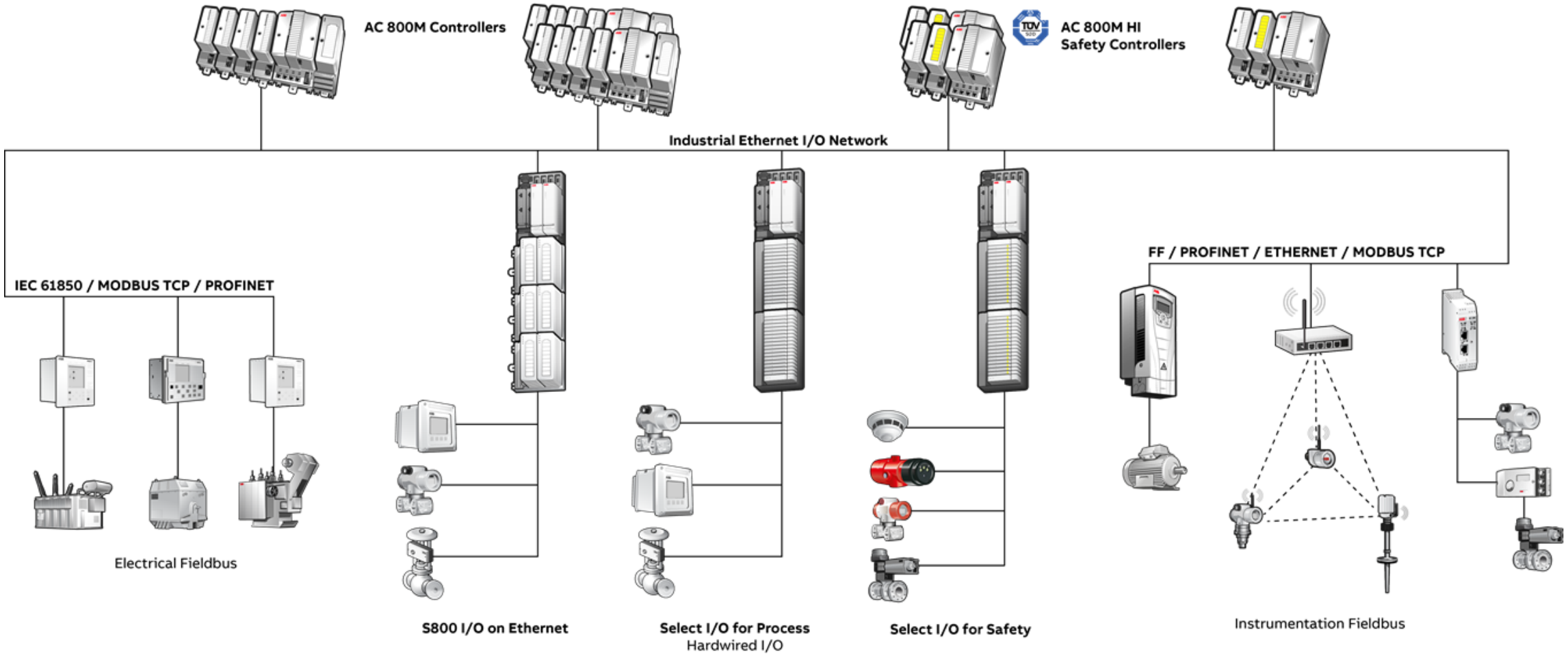
S500
- Modular I/O assortment for local or remote usage with protected outputs and comprehensive diagnosis, covering a wide range of signal types
- Support of different fieldbuses for usage with PLCs from different manufacturers

S500-XC
- Extreme condition variant with extended operating temperature, immunity to vibration and hazardous gases, high altitudes and in humid environments

S500-S
- Safety variant of the S500 I/O system
- Extreme condition variants available
- Profinet/Profisafe for remote connectivity

Starting with complex system optimization

ABB SCADA system for district heating and cooling



Supporting industry associations

Working together for a sustainable future