

FEBRUARY 24TH, 2021

Introducing ABB Integrated Solution for District Energy

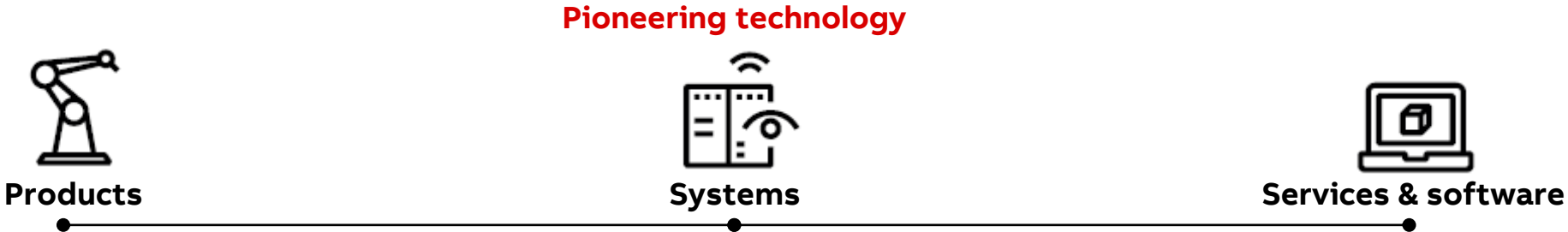
Driving the green energy transition



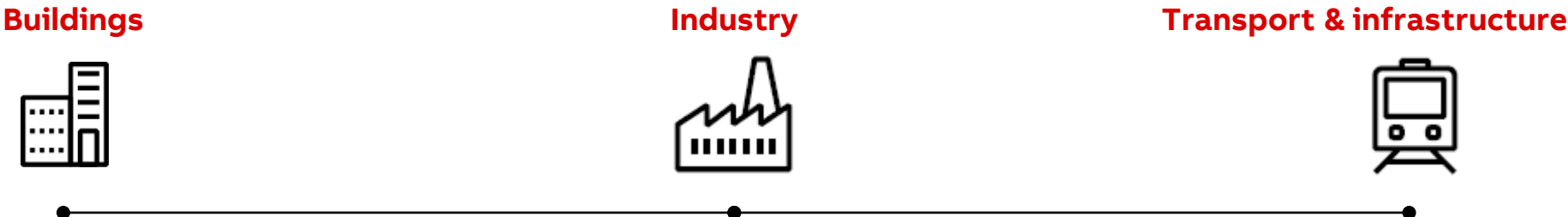
ABB at a glance

Facts and figures

What
Offering



For whom
Customers

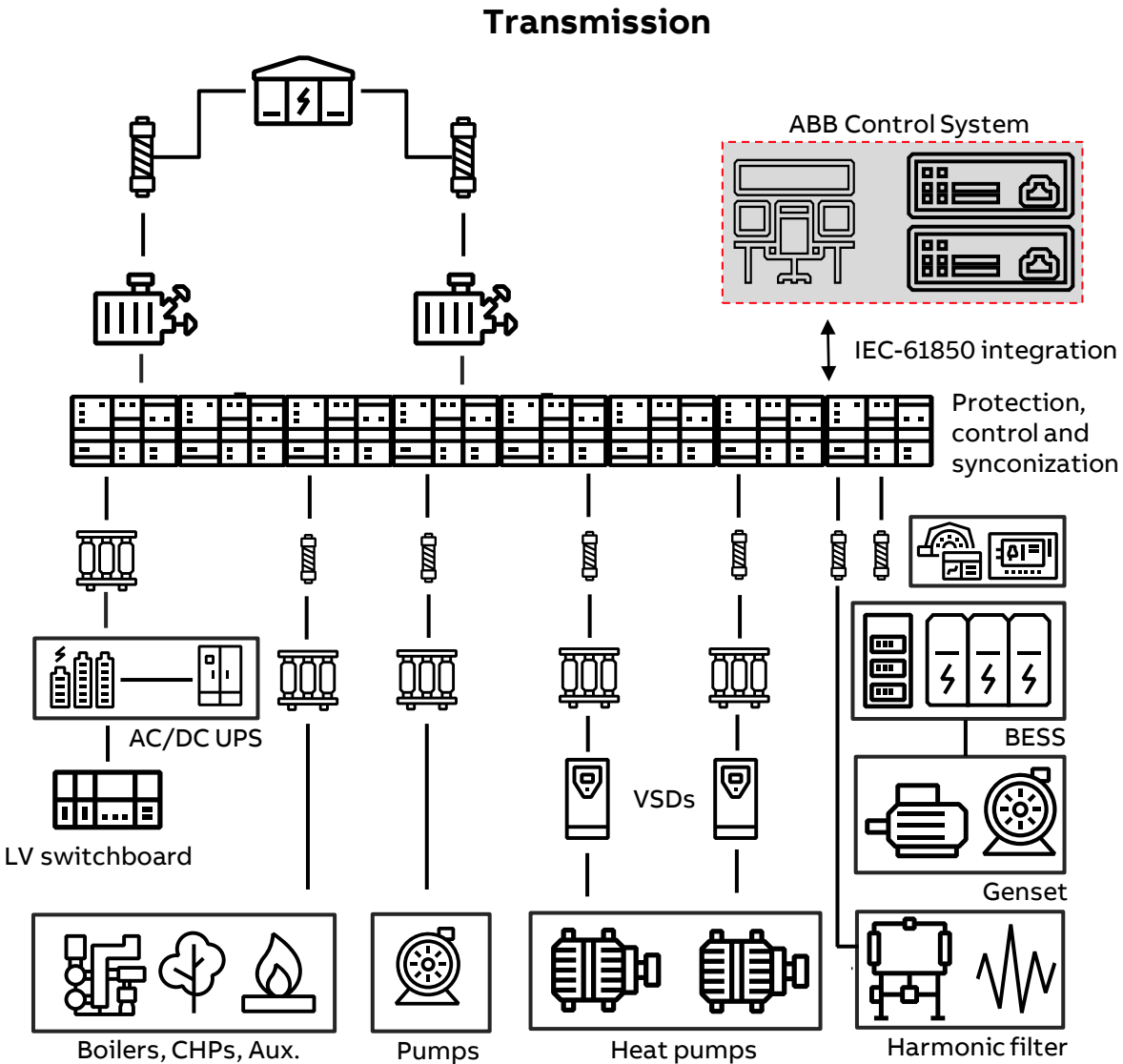


Where
Geographies



ABB experience and competences

District energy and electrical



Electrical integration

Complete system with electrical solutions, instrumentation and control

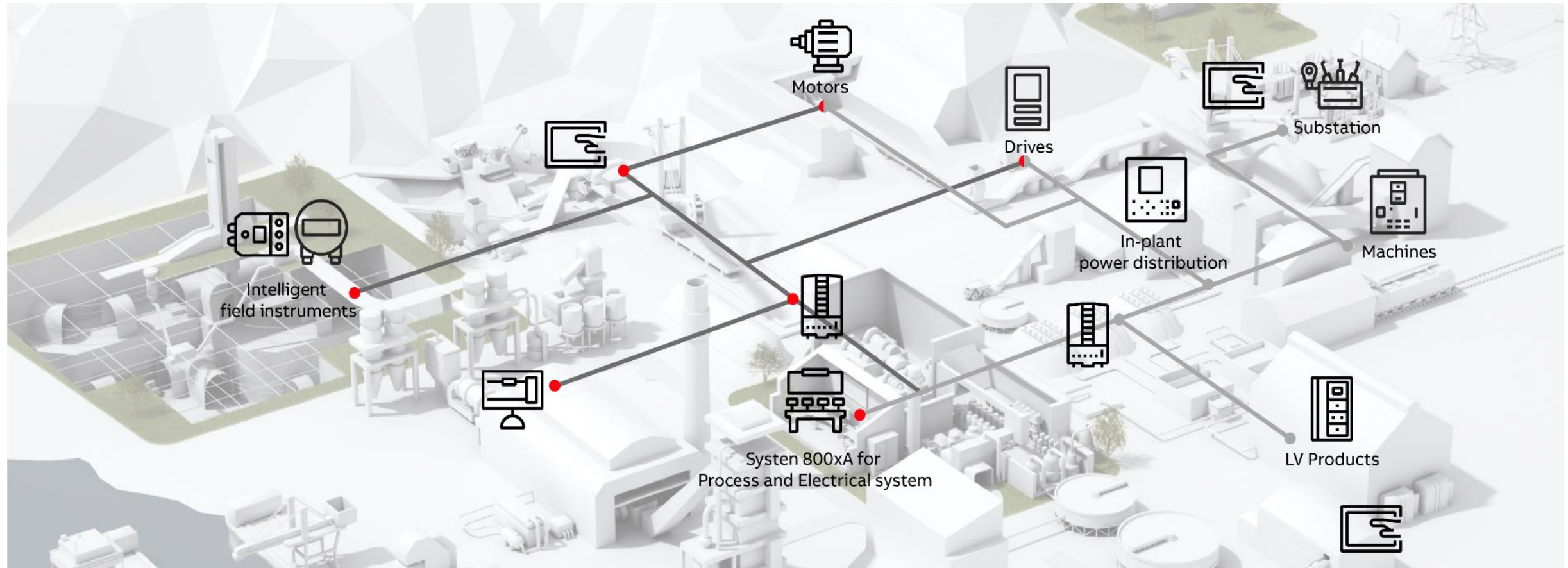


ABB full scope project package

New energy solutions – heat pumps, power-to-X, storage...

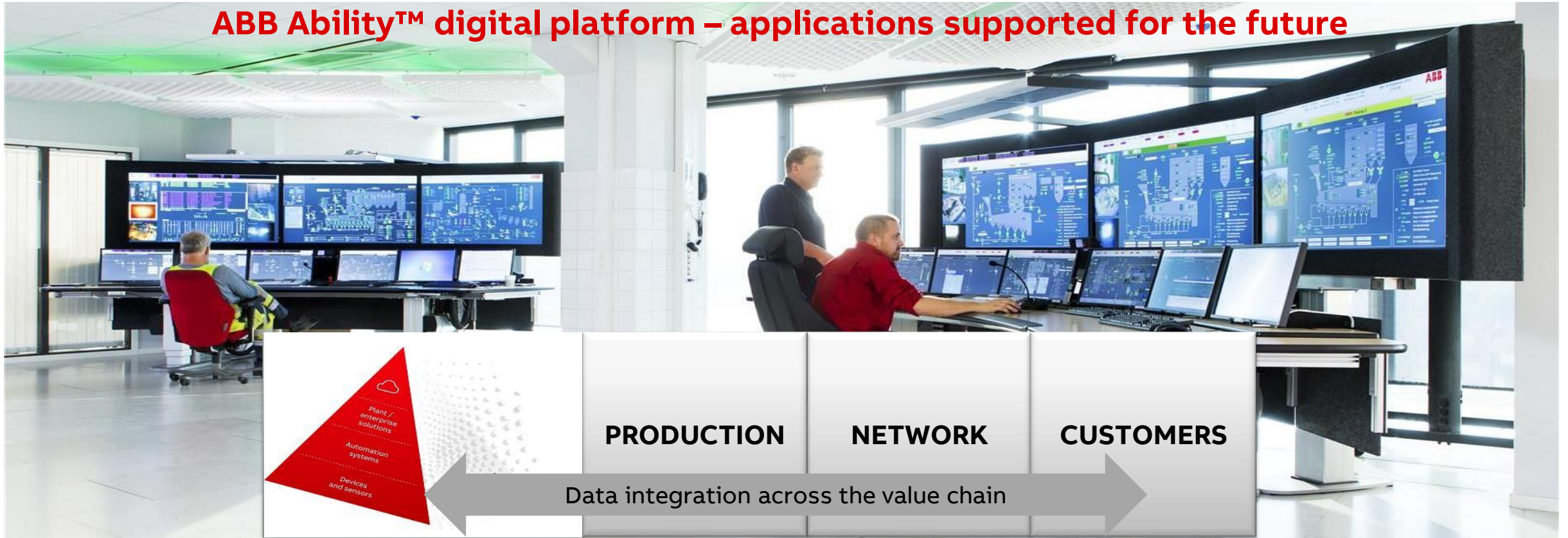
- Design, engineering and project management, EIC
- Transformers
- Cables
- MV and LV switchboards
- Motors and drives
- Process instrumentation
- Managing electrical installation works
- Test and commissioning
- Local after sales support and service



Integrated control and optimization

One cockpit approach

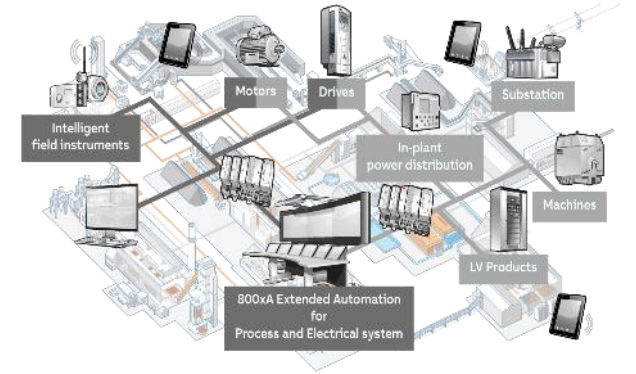
ABB Ability™ digital platform – applications supported for the future



Summary

Integrated solution provides cost reductions and built-in knowledge and experience

- Integrated solution – electrical and heating
- Minimum of interfaces – reducing project risk
- Experience with high level energy plant solutions
- High availability of electric supply
- Low harmonic impact from “the power train”
- Seamless DH control – optimizing the operation
- Experience and competences in Denmark
- Local ABB lifetime support



Main power supply for heat pump and chiller plants

Taking a closer look at ABB portfolio

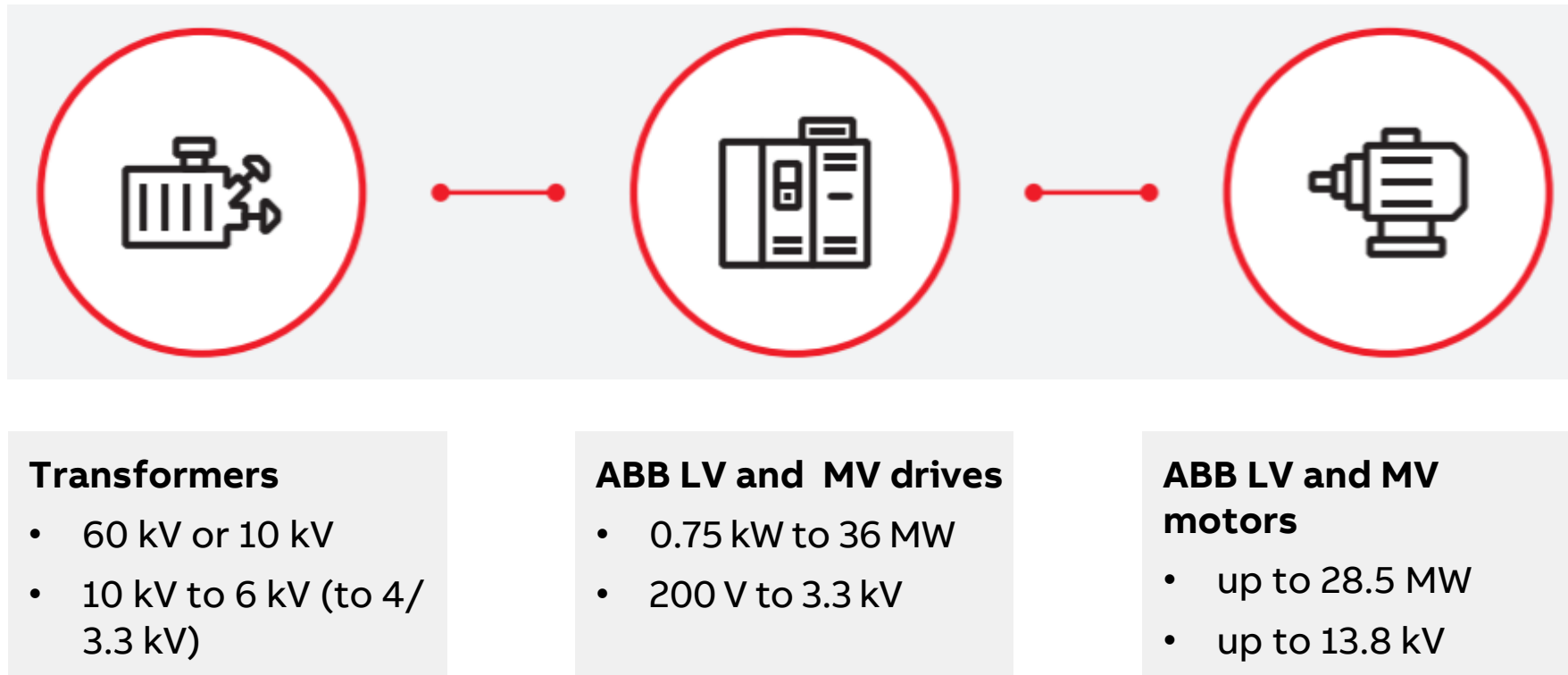


ABB LV and MV AC drives

Product portfolio for Infrastructure and HVACR 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



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
- Low harmonics with 12 or 24 pulse rectifier
- Flexibility to configure for specific needs
- 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

Specifying variable speed technology for district heating

Effect on capital investments with ABB ultra-low harmonic drives

20% size
down with AFE

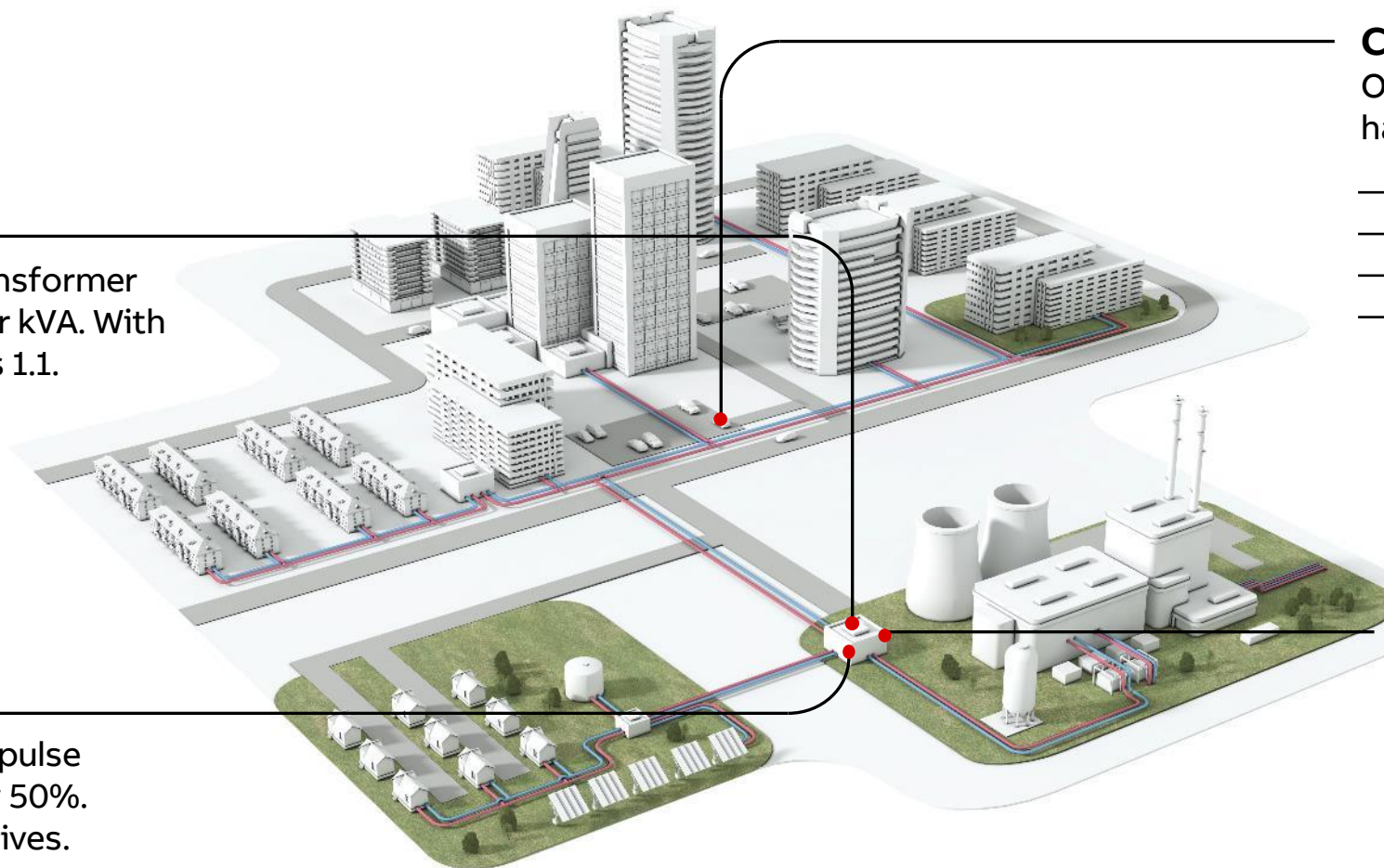
Transformer

6-pulse drives need transformer oversize by 1.35 x motor kVA. With AFE drives, the factor is 1.1.

50% size
down with AFE

Generator

Generator supplying 6-pulse drives to be derated by 50%. Avoided if using AFE drives.



Cabling

Oversizing depends on the harmonics content in the grid.

TDD	Overize
10%	1.00
50%	1.12
70%	1.22

10% size
down with AFE

~10-30% size
down with AFE

Switchgears / breakers

Harmonic currents may lead to a step up in the switchgear size or result in an extra busbar per phase in the circuit breaker.

Digitalizing powertrains in district energy

ABB motors, drives and services

Drives

- save 20 to 60% energy in pumping
- reduce mechanical and electrical stress extending system lifetime
- decrease project investment costs
- increase process reliability

Motors

- up to 30% improved part load efficiency with ABB SynRM technology

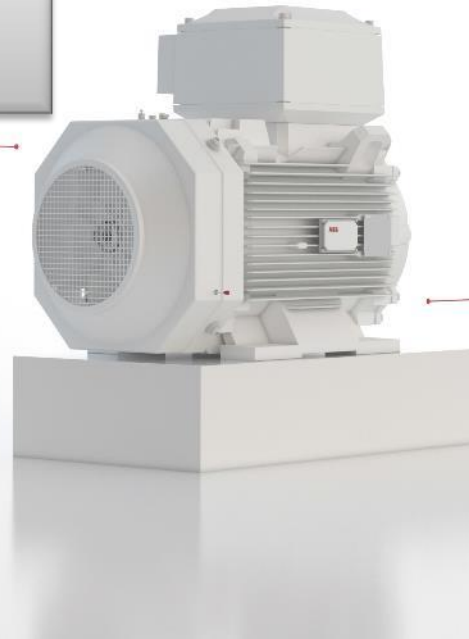


ABB Ability™ digital services

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

Thank you for listening! Questions?



ABB