

Hitachi Energy Investor Days 2023

Energy transition perspective –
Evolving energy landscape & technologies for tomorrow



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CTO
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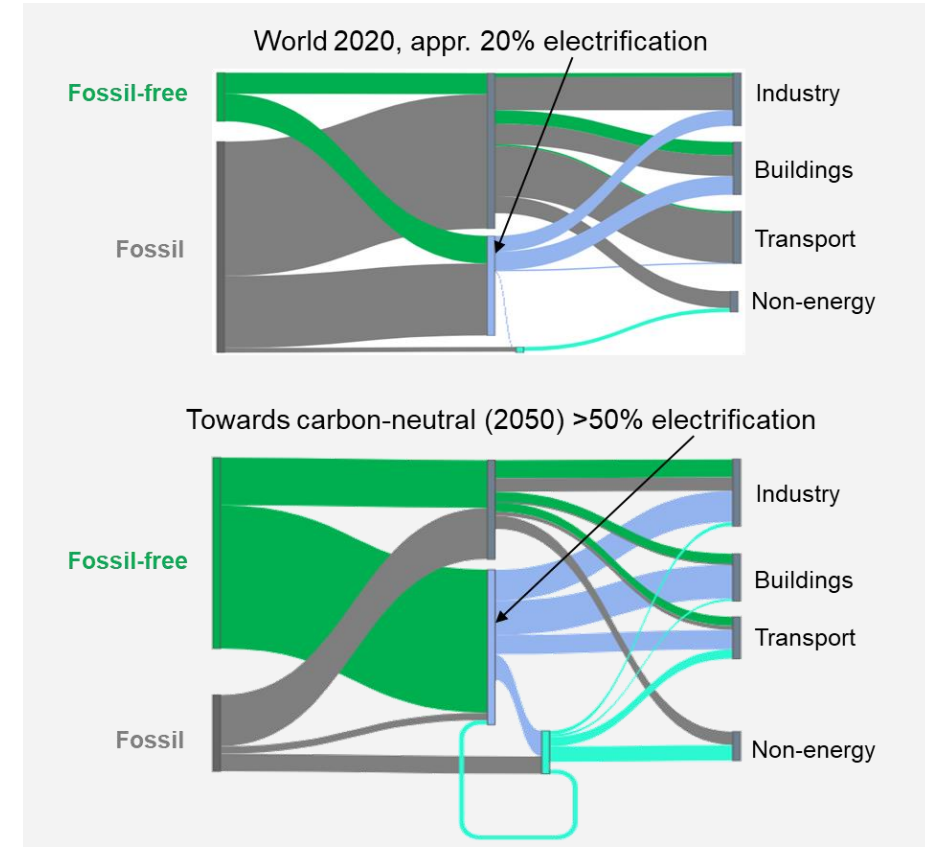
Hitachi Energy –
Advancing a sustainable
energy future for all



Carbon emission reduction, energy security and energy efficiency are driving electrification growth

64 countries that account for 89% of global emissions have announced net-zero targets

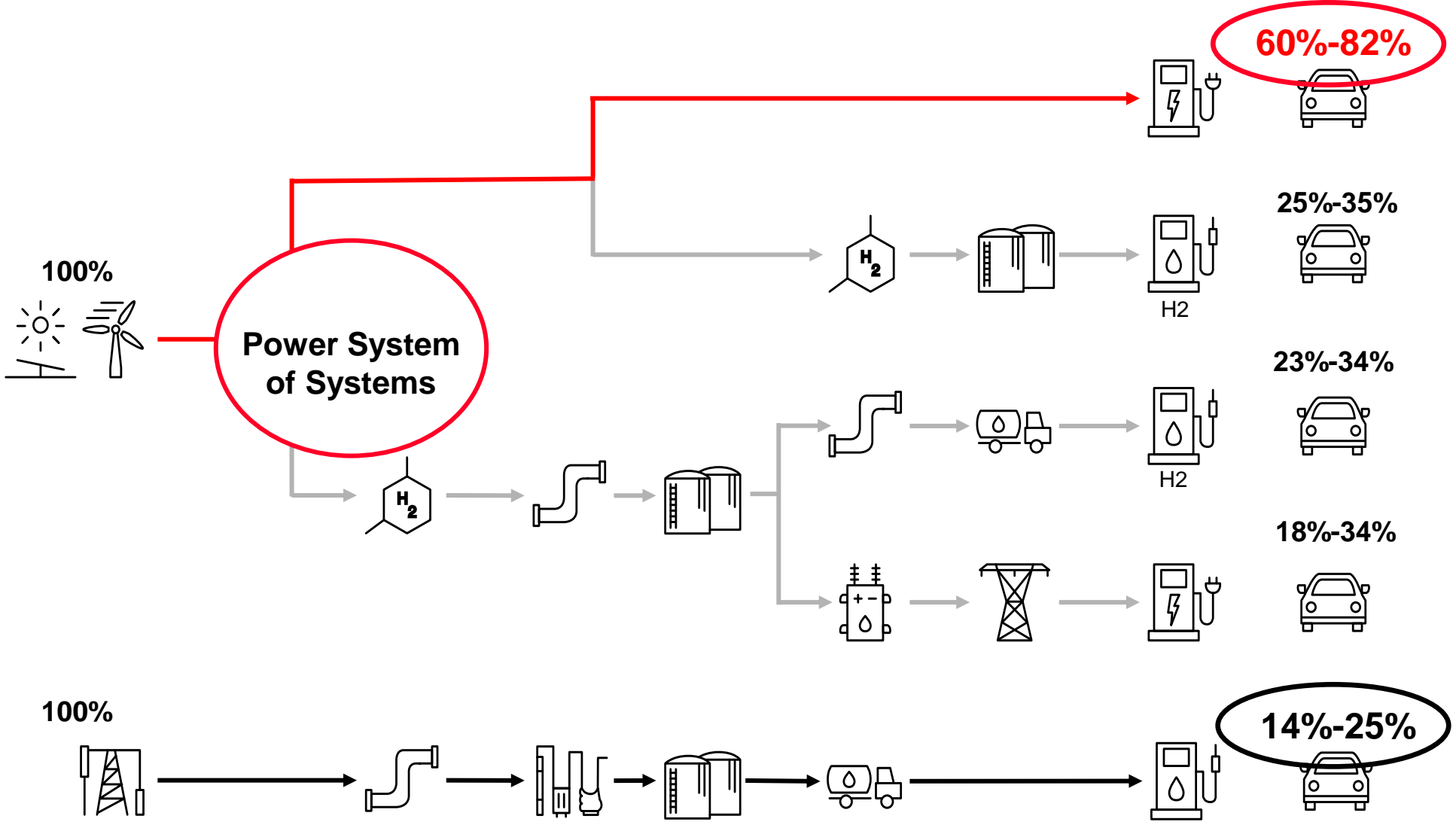
■ Country with net-zero target announcement

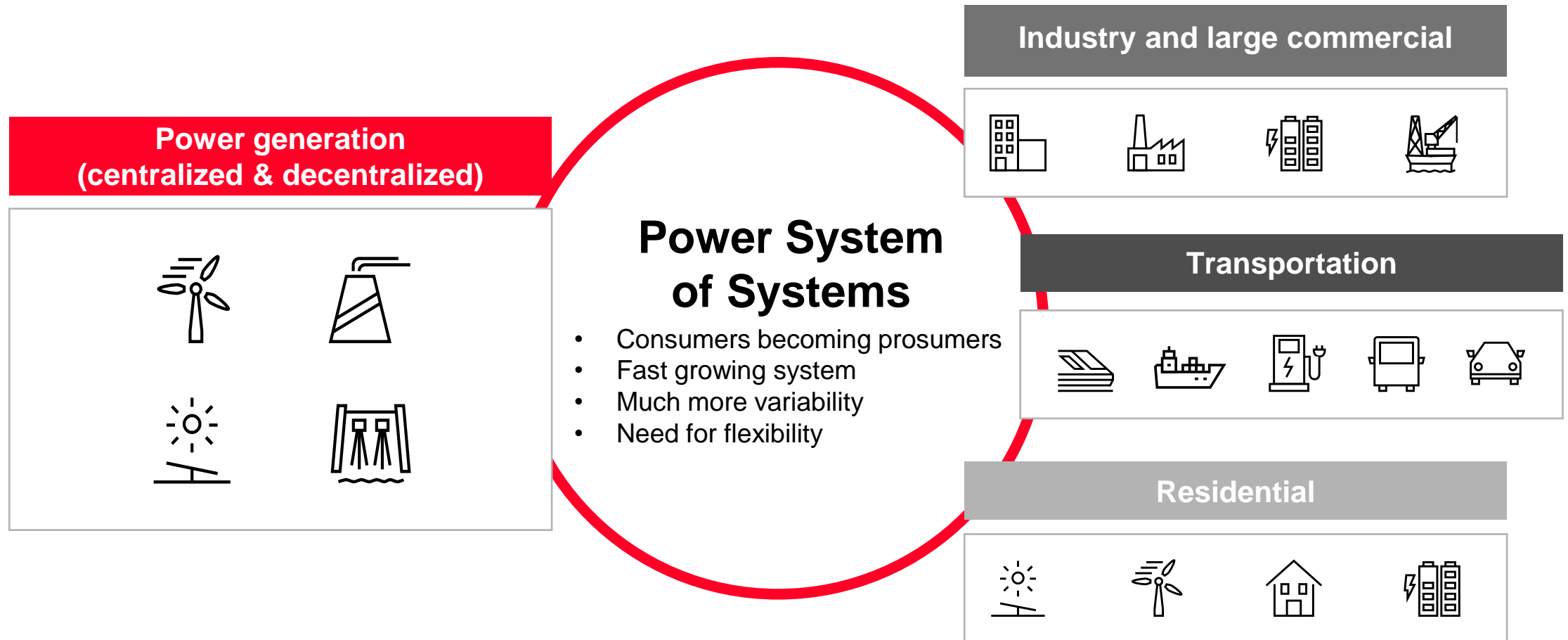


The global power system of 2050 will require four times today's generation capacity and will need to transfer three times as much electrical energy

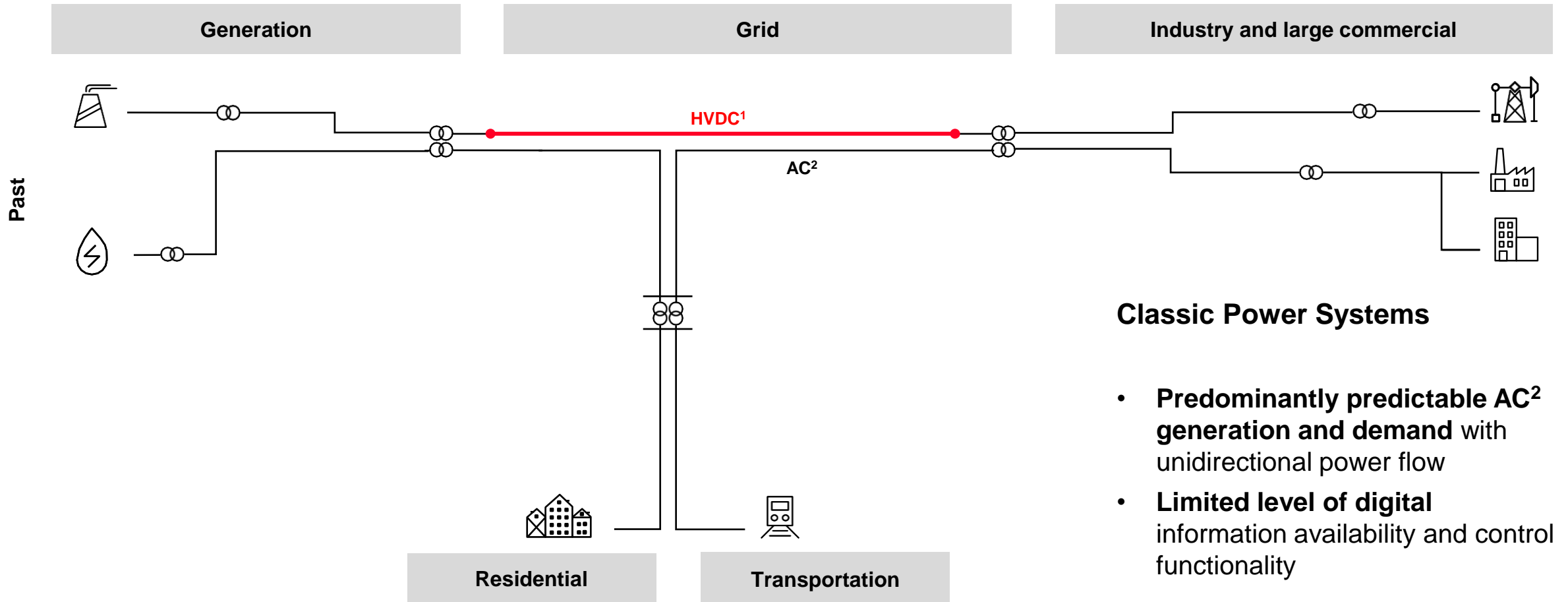
Electrification growth driver efficiency – example transportation

Direct electrification for mobility is outstanding in terms of efficiency





The electrification growth drivers are turning studies into real infrastructure – we are only at the beginning

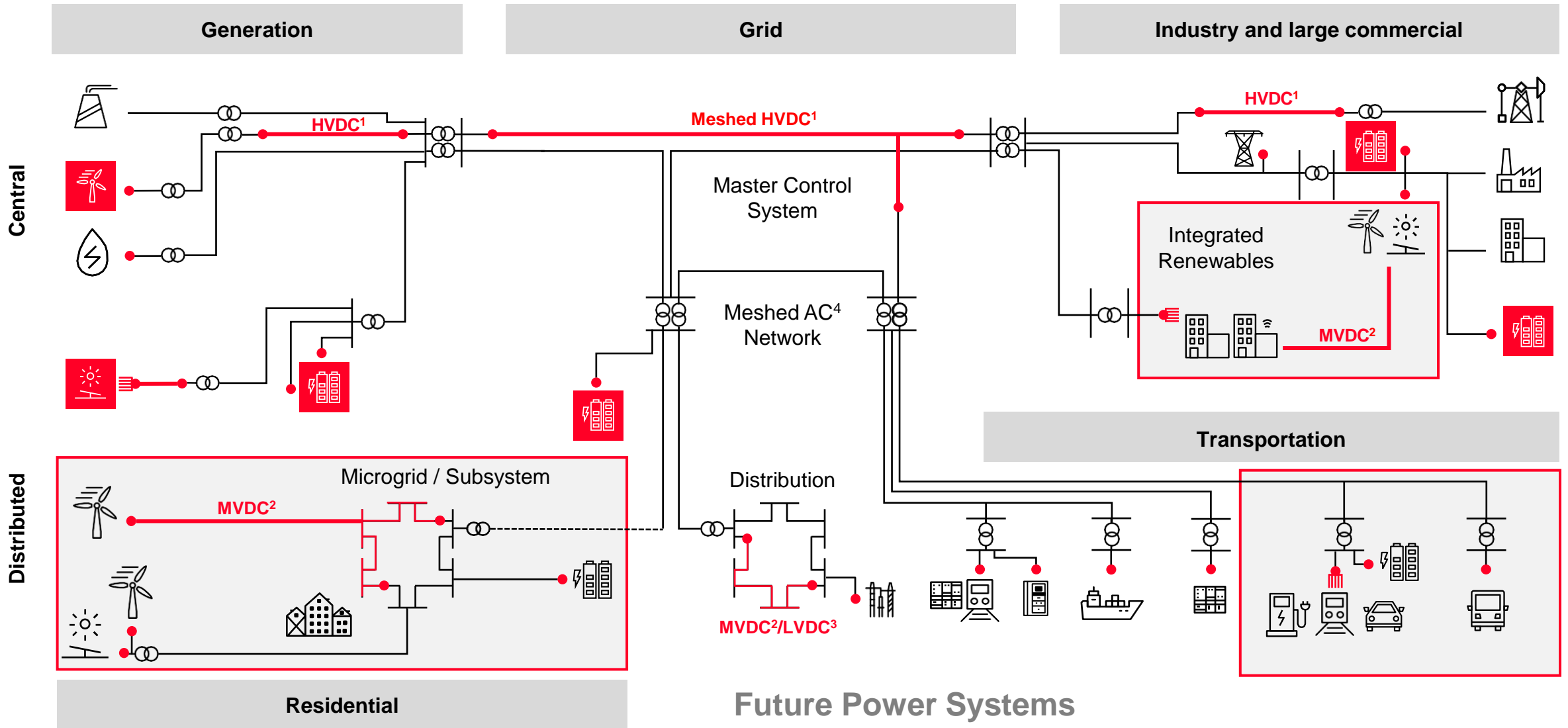


Classic Power Systems

- **Predominantly predictable AC² generation and demand** with unidirectional power flow
- **Limited level of digital information availability and control functionality**

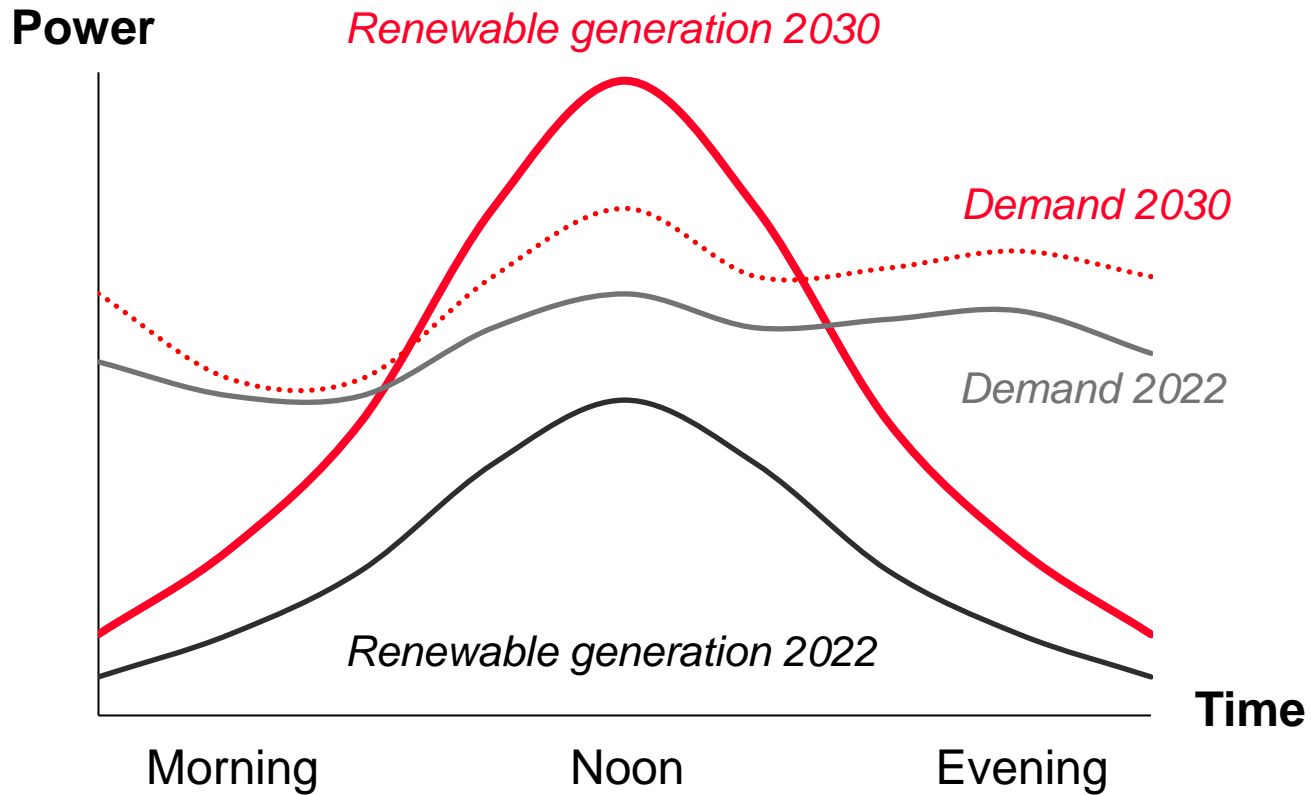
The Power System of the Future will be significantly bigger, more interconnected and much more complex

The Power System Evolution – Future Power Systems

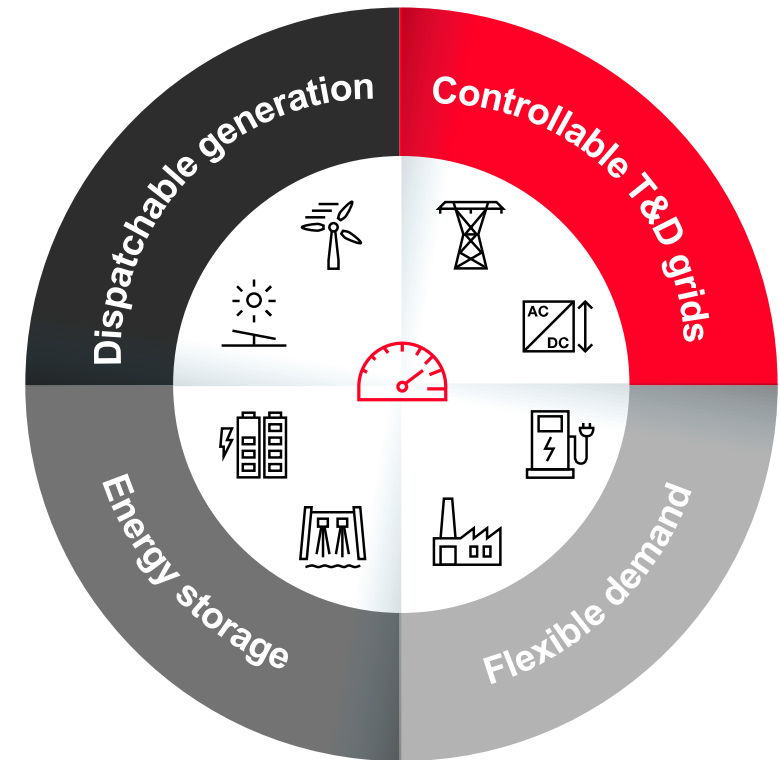


Future Power Systems

Example: Germany – grid flexibility needed today and in the future



Four dimensions of Flexibility



Hitachi Energy has leading technology, unmatched installed base and global experience to deliver at speed and scale for any electrification pathway

Key aspects of global technology and market leadership

Anticipating future needs
customer collaboration
& co-creation

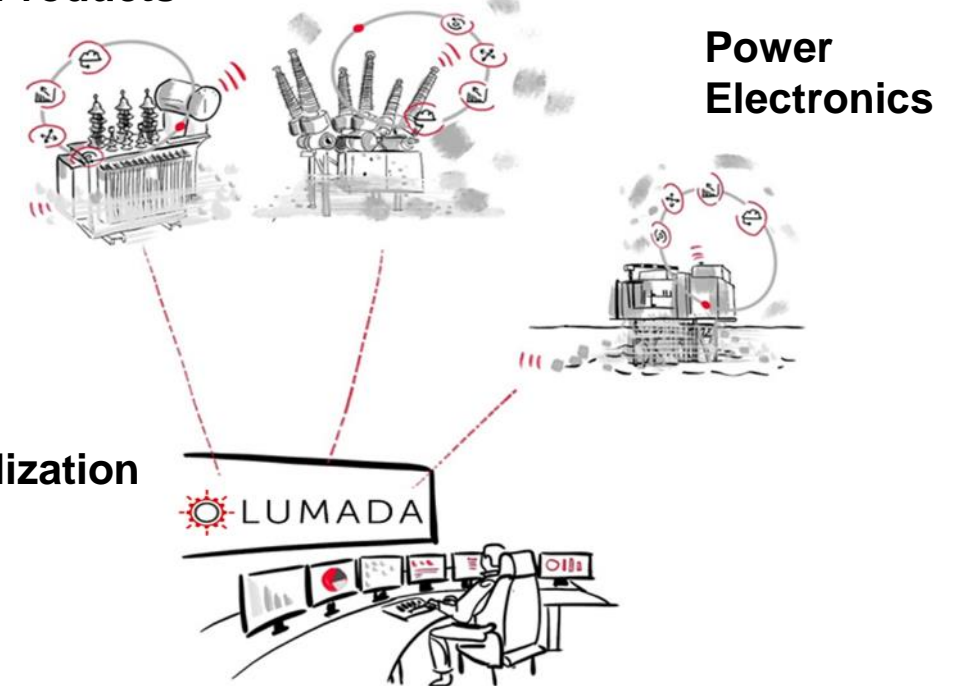
World leading
developments in
core technology areas

Technology partnerships
& collaboration
for complementary
developments

Strategic protection of
Intellectual Property

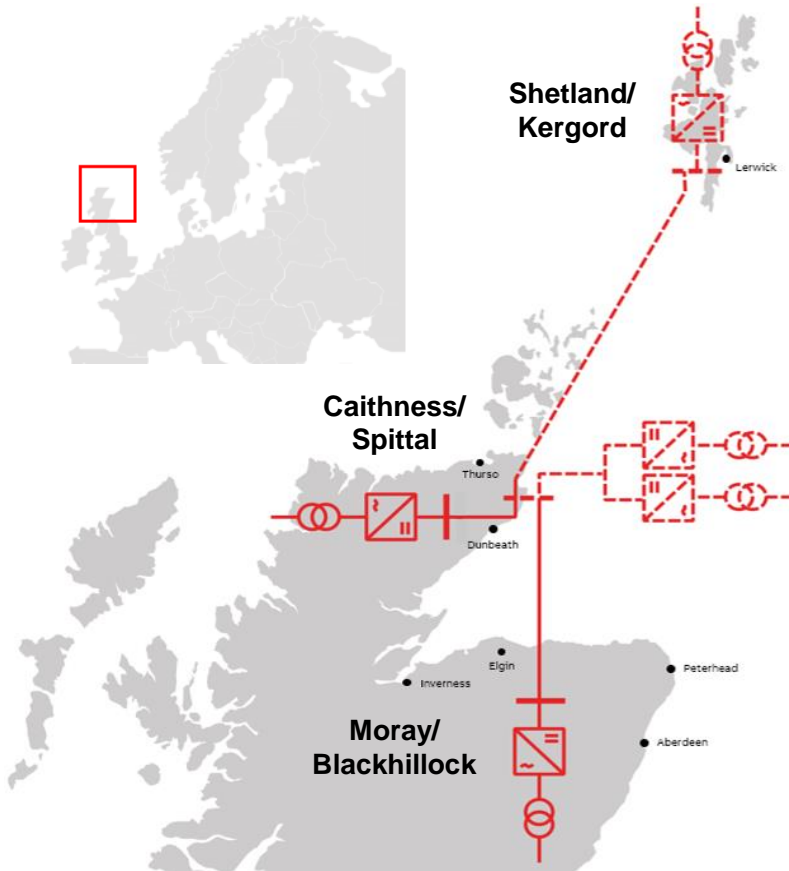
Fundamental technology areas for the Power System evolution

Sustainable Products
& Solutions



Example HVDC: Towards a first regional HVDC grid in Europe

Scotland

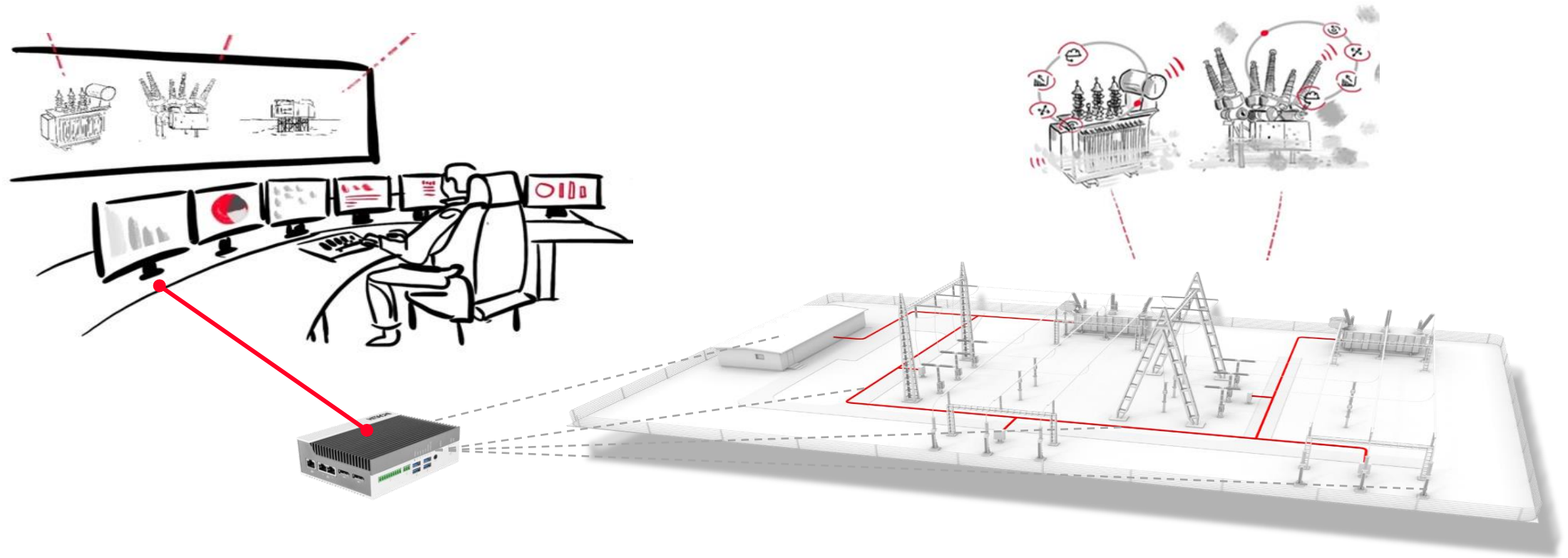


The HVDC¹ converter station at Blackhilllock, Scotland, one of the two stations in the Caithness Moray Link

- **Improving Power Quality within the AC¹ grid in Scotland**
- **Connecting Shetland Islands to mainland Scotland**
- **Ready to connect further offshore windfarms in the future**

3 out of 4 GWs of offshore wind installations are enabled by Hitachi Energy technology

Visibility from the asset to the control room, across the entire life cycle



Plan



Build



Operate



Maintain

Our pioneering sustainable offerings deliver total life-cycle optimization

Products

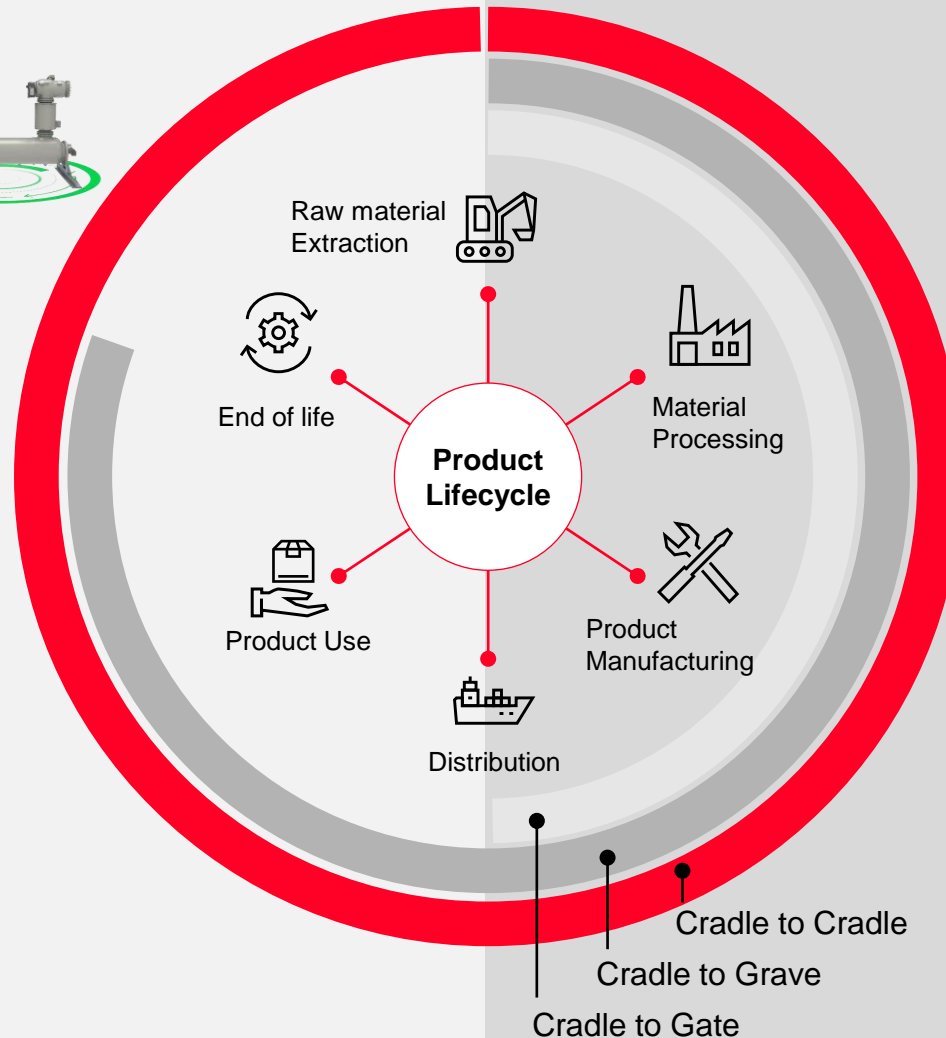
The world's first eco-efficient 420kV circuit breaker



Transformers with enhanced energy efficiency and biodegradable fluids



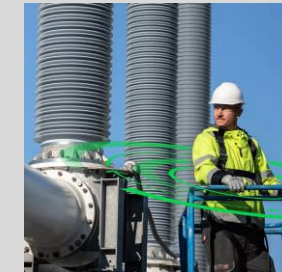
HVDC connection with sustainability-optimized design



Services



Consulting services



EconIQ™ retrofill services



Digital solutions & services

**Leading
technology,
unmatched
installed base,
global experience,
and partnerships
to deliver at speed
and scale**

Key takeaways

- 01** The global power system of 2050 will require four times today's generation capacity and will need to transfer three times as much electrical energy
- 02** This calls for a new energy system approach as the Power System of the Future will be significantly bigger, more interconnected and much more complex
- 03** Sustainable Products & Solutions, Digitalization and Power Electronics are fundamental technology areas enabling the Power System evolution



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