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Discover Hitachi Energy

AMEU 2021

Stuart Michie – Head of Sales and Marketing Southern Africa

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Welcome to Hitachi Energy

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Our Purpose

Hitachi Energy – Advancing a sustainable energy future for all.

We are advancing the world's energy system to be more sustainable, flexible and secure. As the pioneering technology leader, we collaborate with customers and partners to enable a sustainable energy future – for today's generations and those to come.

"At Hitachi Energy, we are championing the urgency of a clean energy transition, through innovation and collaboration. There are many pathways towards a carbon-neutral future – to tackle this global challenge, we nurture diverse global teams bringing authentic passion and enduring ownership.

Claudio Facchin
CEO, Hitachi Energy

The world in 2050

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Climate change extremely urgent and important to limit global warming to

1.5°C

World population reaches

~10bn

(up from 7.8bn people in 2021)

Global demand for steel is projected to

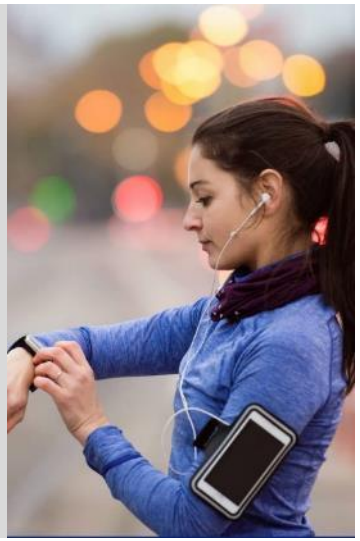
increase

by more than a third through to 2050

Internet of Things expands to

24bn

interconnected devices vs. 10bn connected devices today



Rapid growth in EV sales rises to

62M

units p.a. globally – up from 6.4M in 2021

Global electrification will be more than

50%

of total energy demand – up from around 20% today

Urbanization increases with

68%

of world population living in cities – up from 55% in 2018

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By 2030, our energy system will need to evolve

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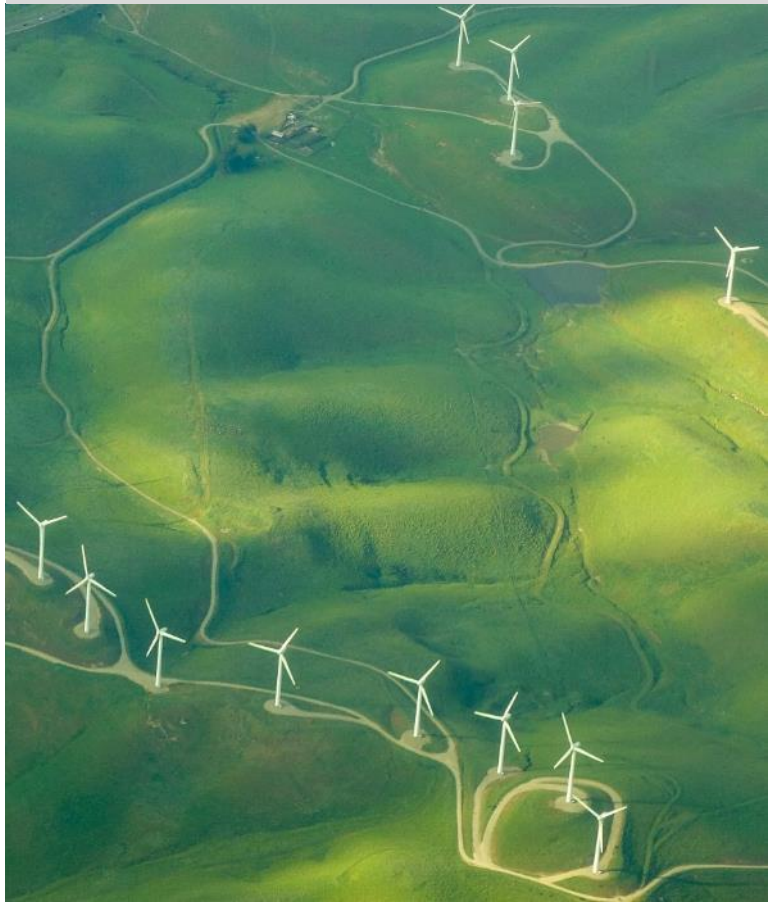
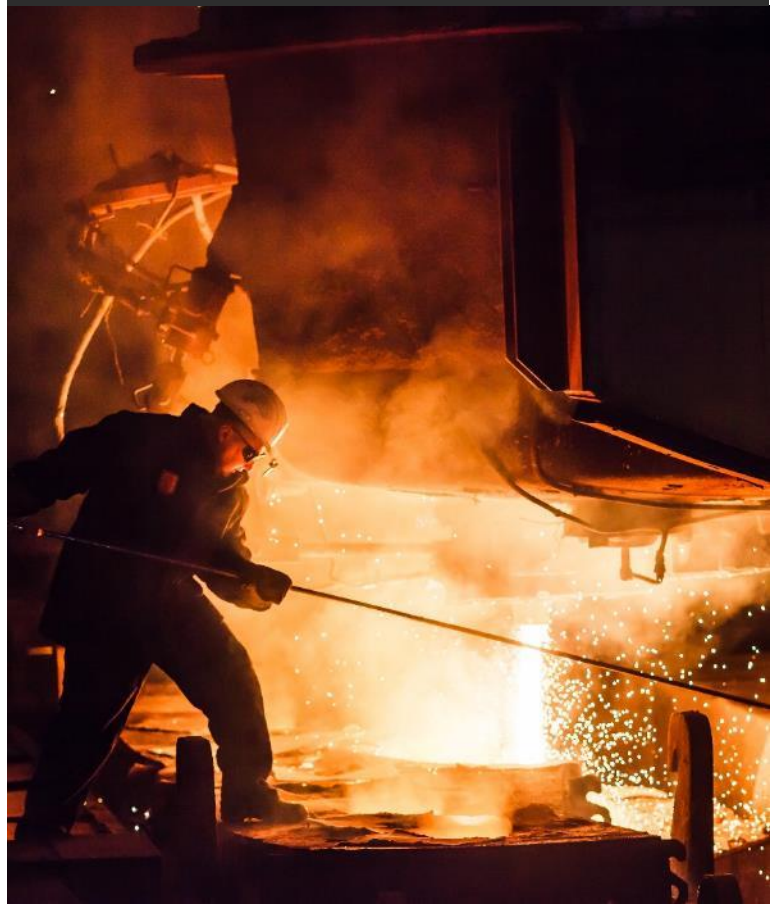
Renewable capacity must grow **4x more** than it is today



Electrical car sales are expected to increase **18x the level today**

In industry, *emissions must drop **20% by 2030** and 90% by 2050



*IEA's Net Zero by 2050 report

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Energy system 2050: towards a carbon-neutral vision

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> Electricity will be the backbone of the entire energy system

01
Accelerated shift from fossil-based to renewable power generation

02
Growing electrification of Transportation, Industry and Buildings sectors

03
Sustainable energy carriers, complementary to direct electrification

Fast facts

- Global electrification will be more than 50% of total energy demand
- Electrification improves energy efficiency
- All market sectors converting towards electrification
- Energy sector-coupling beneficial

So what?

Digital and energy platforms are needed…

…to manage the enormous power system energy transition challenges:

increased complexity
additional capacity

for reduction of CO_2 emissions

Accelerating the transition to a carbon-neutral energy system requires adapting and adopting policies and regulations to enable technology and new business models to support Scalable, Flexible and Secure energy systems

About Hitachi Energy

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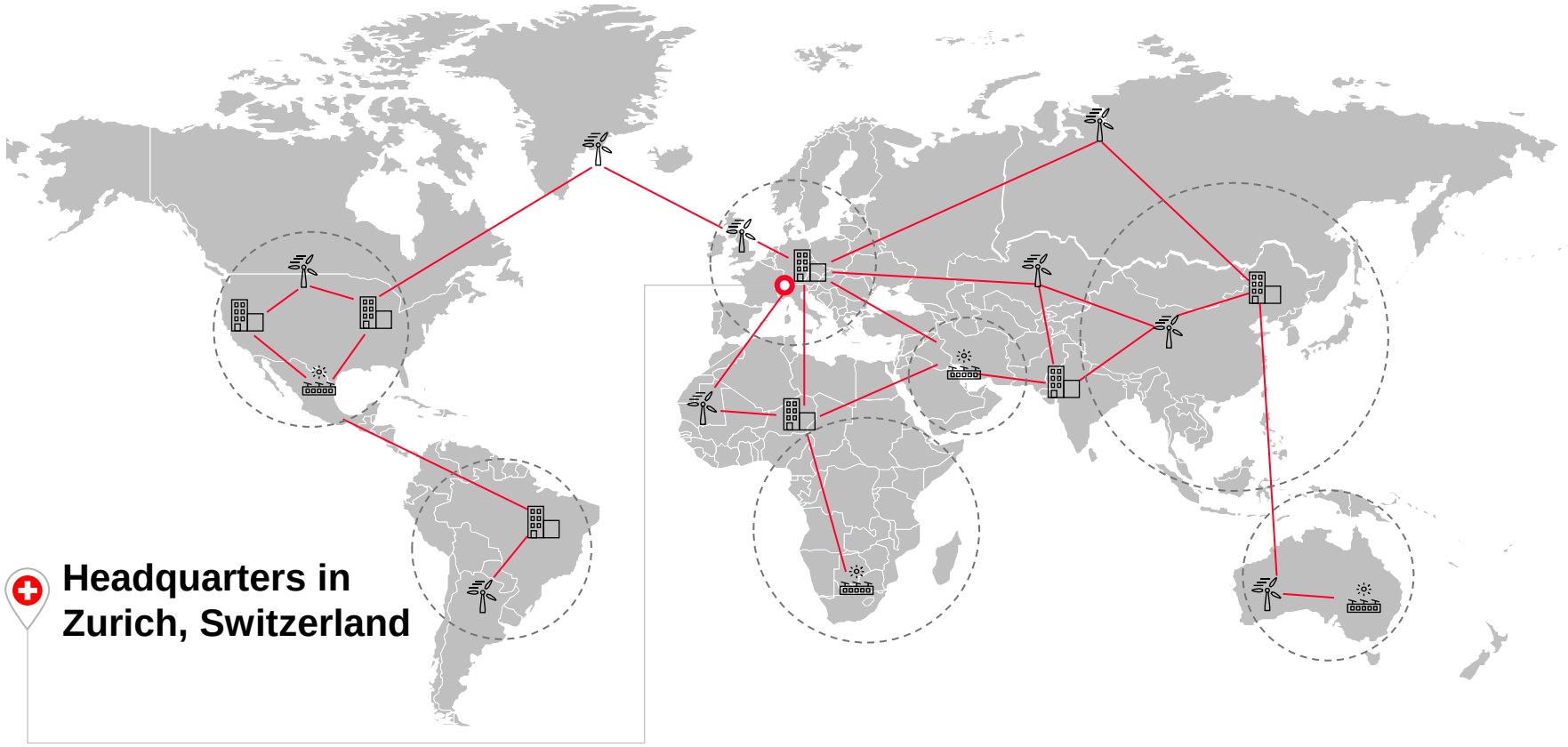


Headquarters in Zurich, Switzerland

38,000 employees

90+ countries with 200 offices

~250 years' heritage combined

5,500 sales employees & field engineers

2,000 engineers & scientists in R&D

Four Business Units

Grid Automation	**High Voltage Products**
Grid Integration	**Transformers**

Customers

- Transport & Infrastructure
- Industry
- Utilities

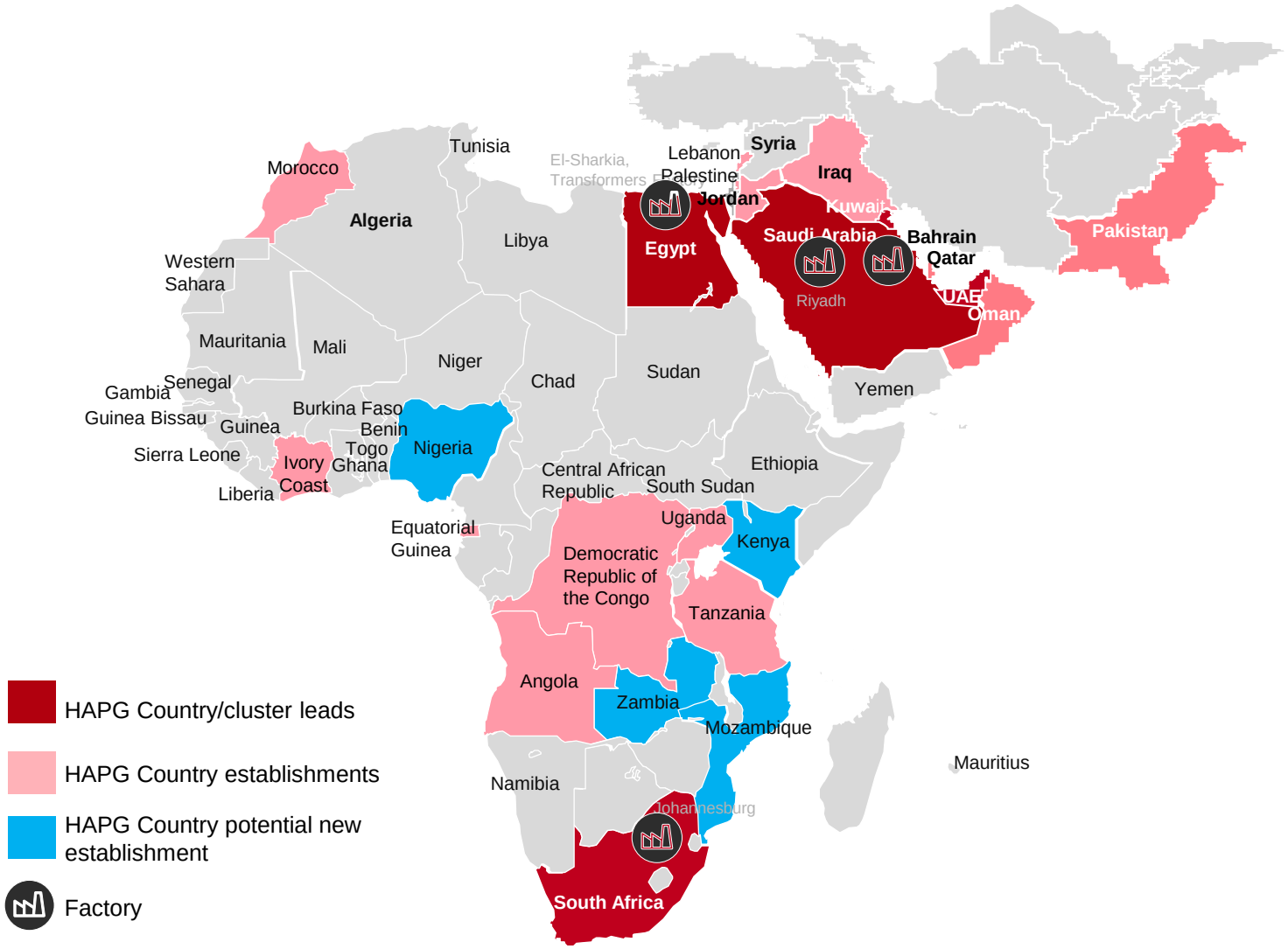
Offering

- Services
- Software & Automation
- Systems
- Products

Geographies

- Asia, Middle East & Africa
- Americas
- Europe

Hitachi ABB Power Grids MEA – regional footprint



~ 150 employees in Southern Africa

2 manufacturing facilities in South Africa

High Voltage Products | Over 120 years of innovation

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Transformers | World’s largest installed base

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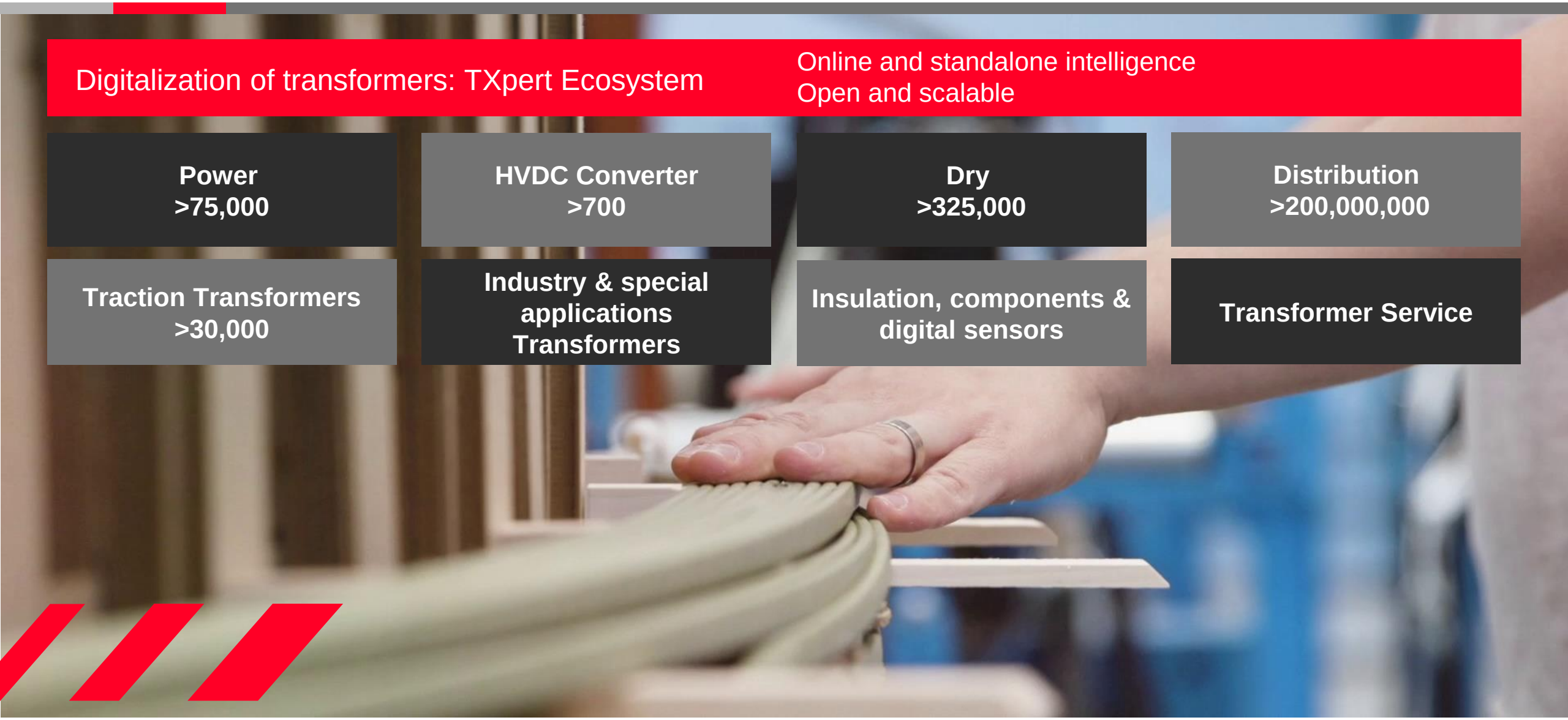

Digitalization of transformers: TXpert Ecosystem

Online and standalone intelligence
Open and scalable

Power >75,000	**HVDC Converter >700**	**Dry >325,000**	**Distribution >200,000,000**
Traction Transformers >30,000	**Industry & special applications Transformers**	**Insulation, components & digital sensors**	**Transformer Service**

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Grid Automation | A pioneering leader since 1905

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- Substation Automation Digital Substation
- Distribution Automation
- Mission-critical Communications
- Services & Digital Solutions
- Grid Edge Solutions
- Asset & Work Management Software
- Network Control
- Energy Portfolio Management

Grid Integration | World's largest installed base

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Delivering value across customers' life-cycle journey

Plan

Unparalleled integrated systems knowledge

90+ years of innovation and 500+ engineers and consultants in grid integration systems

Build

Proficient execution with no compromise on HSE or quality

500+ system packages and solutions delivered every year across continents

Operate & Maintain

Global services on a local basis

60+ local operating offices provide 24/7 support for thousands of customer assets

Global technology and market leader

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Grid Automation

50%
of the top 250 global electric utilities supported by our leading portfolio

~$4 trillion
mission-critical infrastructure assets managed with our software solutions

Grid Integration

Technology HVDC
leader in power quality and grid connection solutions and services

Leader in HVDC* systems with
200 GW installed

High Voltage Products

1 in every 4
high-voltage switchgear installed in the world

More than
1M
circuit- breakers
installed in the world

Transformers

World's largest
installed base of power, distribution, traction transformers

Technology leader in transformer applications for HVDC, renewables and digitalization

Services

Maintaining and modernizing the **world's largest** installed base
More than **200** **service centers and** **1,500** **field engineers** worldwide

Markets we serve

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Utilities

Partnering with utilities for ~130 years from generation, to transmission and distribution

Renewables

Accelerating renewable integration with strong installed base

Industries

Supporting industrial customers to electrify the entire energy value chain

Transportation

Enabling society to meet sustainable mobility demands in air, land, water and rail

Data centers

Providing the data center industry with reliable power connection and eco-efficient solutions

Smart Life

Advancing sustainable energy for industry and society with solutions that reduce waste and CO_2 footprint

Digital transformation – fundamental for the energy transition

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Towards a carbon-neutral energy system

Renewable integration

Flexible energy transmission, distribution and storage systems

Electrification of transport, industry and buildings

Eco-efficient products, solutions and services

Industry specific digital solutions

X

New business models

X

Improved customer experience

Enterprise IT expertise, integrated applications and digital services

Domain Expertise

LUMADA

Innovation

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Hitachi Energy – Advancing a sustainable energy future for all

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Hitachi Energy – Advancing a sustainable energy future for all

We are advancing the world's energy system to be more sustainable, flexible and secure.

As the pioneering technology leader, we collaborate with customers and partners to enable a sustainable energy future – for today's generations and those to come.

Interconnecting regions, countries and continents

Delivering reliable energy to cities and remote communities

Managing energy complexity and enabling smart life through digitalization

EconiQ™ - our promise towards a carbon-neutral future

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Eco-portfolio for reducing environmental impact, increasing energy efficiency, and future-proofing technology investments

01

Reducing environmental impact
Through eco-efficient products and solutions that reduce waste, carbon footprint and improve society

02

Enabling energy and resource efficiency
Reducing operational costs and environmental risks, while improving safety

03

Future-proofing life-cycle investments
Technologies that are designed to meet existing and future energy demands and regulations

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EconiQ™ for High-Voltage Products

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Alternative gas can be used in the widest range of applications to reduce the overall carbon footprint

01

EconiQ™ portfolio: superior environmental performance compared to conventional solution

02

The alternative gas mixture for high-voltage switchgear is the first big step in the EconiQ™ portfolio

03

EconiQ™ SF_6 free solutions create significant customer value

Avoiding the release of $1m^3$ of SF_6 at pressure of 5 bar[1] into the atmosphere is the equivalent to…

400

passenger vehicles being electrified and powered with renewable energy

Creating value for our customers towards a carbon-neutral future

Cost of the Ownership: SF_6 Gas-insulated switchgear (GIS)*

Eco-efficient portfolio for sustainability designed to reduce environmental impact towards a carbon-neutral energy future

* Typical pressure within a 420 kV GIS

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Sustainability optimized throughout the system life-cycle

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RelCare™ improves sustainability by implementing safeguarding practices that protect people, the environment and economies

01

Monitors system condition to improve system reliability, safety conditions and cost

02

Reliability-centered services and AR* to eliminate unnecessary activities and their corresponding environmental impact

03

Optimizes the life-cycle, executing the right actions on the right assets for a higher sustainability performance

Sustainability ↑

↑ Quality Safety	**99.6% less** risk of human errors
↓ Environmental footprint	**0.5 tnCO_2eq** reduction per service activity avoided
↓ Cost	**50% reduction** life-cycle cost
↑ Reliability	**40% reduction** outage duration

Example based on a concrete case with real data; numbers will differ per scenario
*AR: Augmented Reality

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Asset Management

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LUMADA APM
Asset Performance Management

LUMADA EAM
Enterprise Asset Management

LUMADA FSM
Field Service Management







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The energy transition is a challenge bigger than one company

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This is a global challenge that spans industries, countries, societies and companies

Collaboration and co-creation through trusted and sustainable partnerships are key to developing the solutions our world needs

A sustainable energy future is one that is inclusive, equitable and just

We achieve more, together in partnership

A challenge bigger than one viewpoint

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Not just one right way to get things done

Each of us think differently – shaped by our culture, background, identity, experience, and personality

Great innovation harnesses diverse viewpoints and opinions

This diversity of thought is fundamental to our belief that only through a 360° culture of **diversity** and **collaboration** will we get truly **great innovation**

Perspectives

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Hitachi Energy's thought leadership program is called #Perspectives.
The exchange of opinions and ideas between customers, partners and our own experts for advancing a sustainable energy future.

Subscribe Now!

The carbon-neutral future is electric

Read more

Connecting the dots: The carbon-neutral energy system will be highly interconnected

Read more

Accelerated grid development is indispensable for speeding up the European energy transition

Read more

Mobilising finance to accelerate the green energy transition

Read more

Achieving a resilient and sustainable energy future in Alaska

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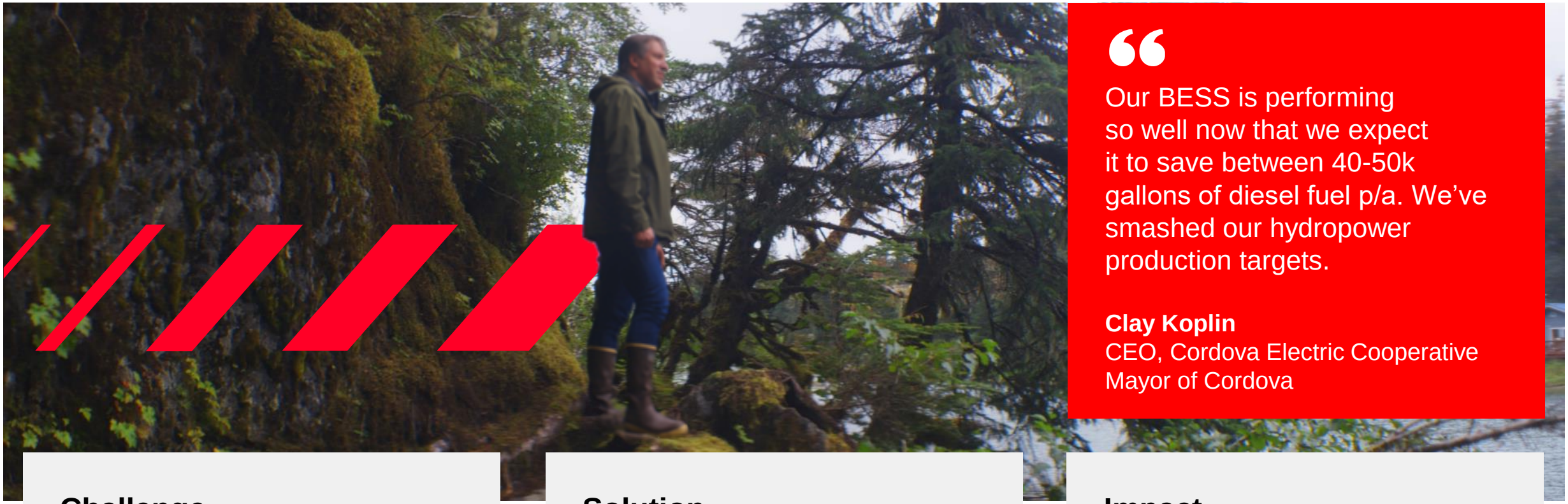

> Our BESS is performing so well now that we expect it to save between 40-50k gallons of diesel fuel p/a. We've smashed our hydropower production targets.
>
> **Clay Koplin**
> CEO, Cordova Electric Cooperative
> Mayor of Cordova

Challenge

Accelerate the move to sustainable energy to support state's largest fishing fleet, and protect the local ecosystem after a major oil spill

Solution

Developed a microgrid to harness available hydropower sources year-round, despite seasonal variability, using a microgrid and battery energy storage system (BESS)

Impact

Maximized renewable energy production, significantly reducing dependence on diesel by 40-50k gallons per year

EconiQ™ breaker contributes to Norway's journey towards carbon-neutrality

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> We are excited to join forces with Hitachi Energy to bring new and innovative EconiQ technology that reinforces our strategy for sustainable operations.
>
> **Atle Isaksen**
> Head of Grid Development, BKK Nett

Challenge

Rebuilding a substations with an eco-efficient sulfur hexafluoride (SF6) alternative to meet the growing electricity demand and support Norway's decarbonization plans

Solution

The eco-efficient EconiQ™ Live Tank Breaker (LTA) is a reliable solution to eliminate 100% of the CO_2 equivalent emissions related to the insulation gas and strengthens the Norwegian grids

Impact

Contributing to Norway's plans to cut at least 50 percent of its greenhouse gases by 2030 with the target to achieve carbon-neutrality by 2050

Enabling Chile to efficiently integrate renewables with digital transformers

> The power transformers in our wind and solar farms are critical, so this technology must be of the highest quality and designed to never go offline unexpectedly. .
>
> **Manuel Tagle**
> CEO, Mainstream Renewable Power, Latam

Challenge

The remote monitoring is especially important in Chile´s electrical system, which can be isolated and difficult to access

Solution

Hitachi Energy' power transformers contribute to the integration of sustainable energy into the grid, across twelve Mainstream's Chilean projects, using digital transformers

Impact

These twelve projects total over 1.5 GW of renewable power capacity, enough electricity to provide for over 1.3 million people, over 7 percent of today's total consumption in Chile


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