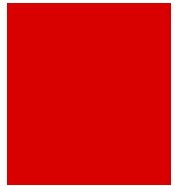# ABB Ability™ Energy Management - OPTIMAX® for Industrials and Commercials

The path to sustainable production in the food & beverage industry – reducing cost and emissions

ABB

ABB Ability™ Energy Management - OPTIMAX® for Industrial and Commercials
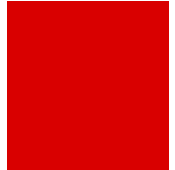
Welcome

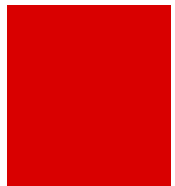## Speakers

Tatjana Milenovic *- Host*

F&B Initiative

ABB

Raymond Liau

Digital Lead Asia

ABB

Joerg Orth

Competence Center Optimization

ABB

Agenda

1	Welcome
2	Safety moment
3	Introduction
4	ABB Ability™ Energy Management Sites - OPTIMAX®
5	A proven experience: ABB references
6	Conclusion
7	Q&A

Today's webinar logistics

A note before we begin

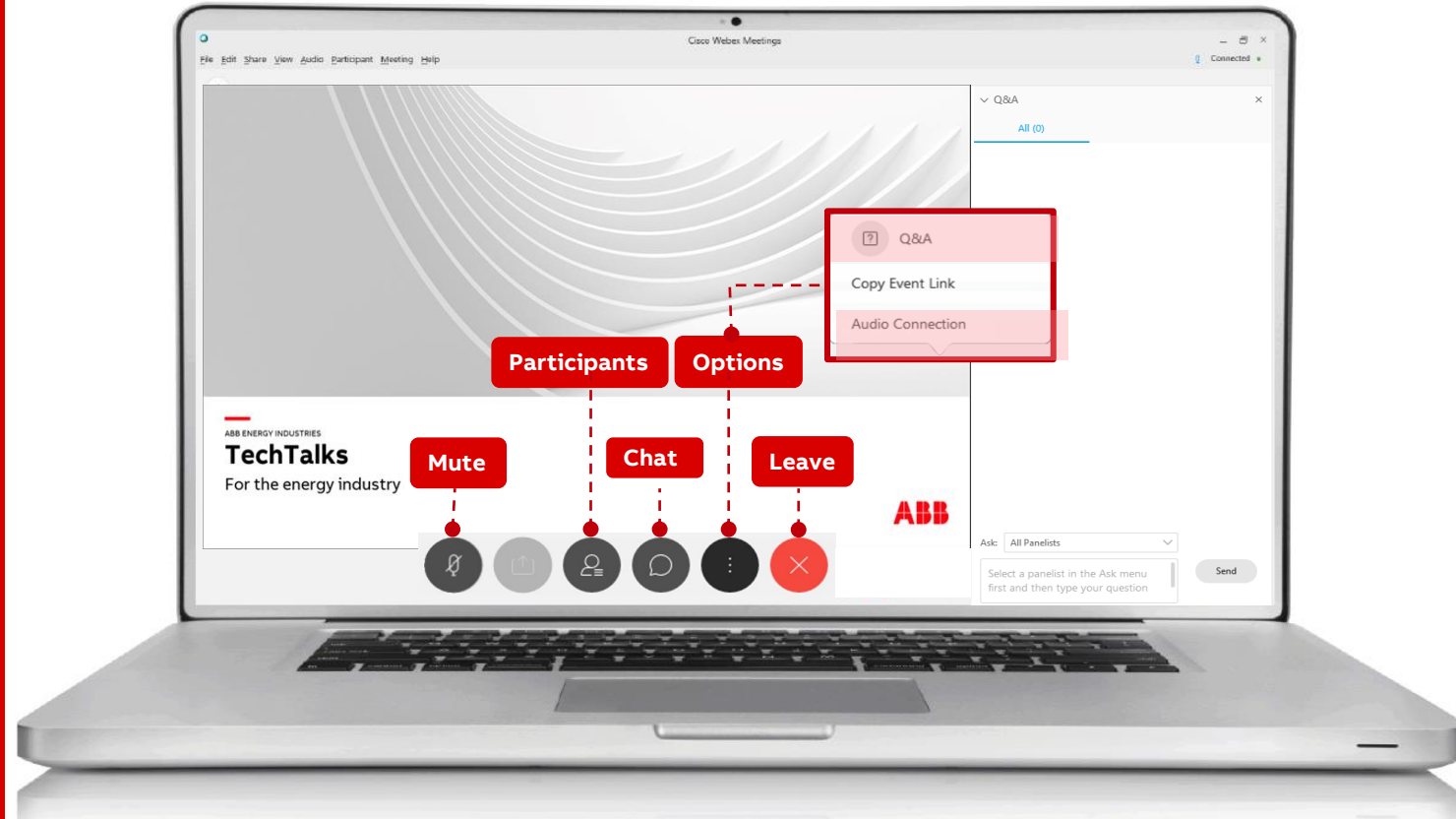- **Submit questions via Q&A box**
- **All attendees in 'MUTE' mode**
- **Event is being recorded**
- **Event will take 1 hour**

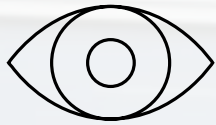# Facing the challenges

Raymond Liau

Do you...

- Have the need to reduce carbon emission and energy cost?

- Have the need to avoid peak demand?

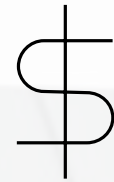- Want to control and optimize the power, steam and heat network?

- ...

ABB

Three challenges to optimizing power consumption
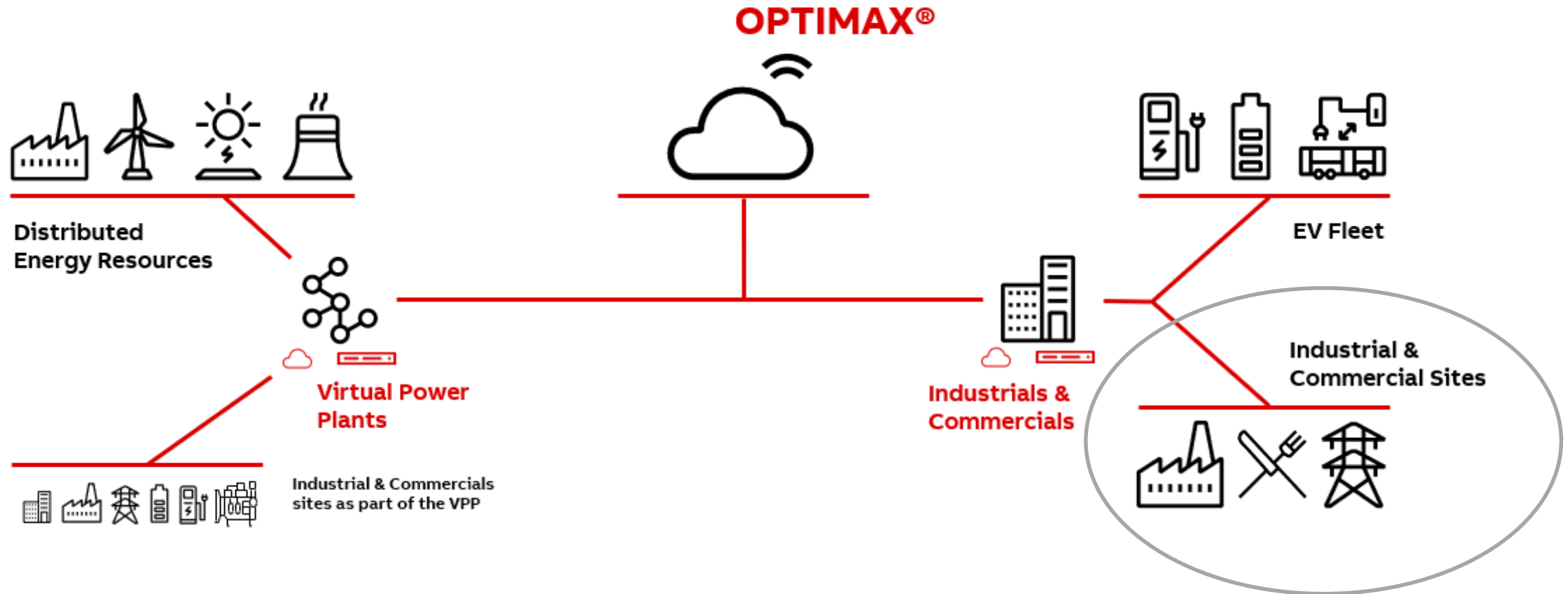
Lack of
visibility

High energy
costs

Impact on
bottom line

Sustainability

ABB

ABB Ability™ Energy Management

Overall value proposition for flexibility, efficiency and independence

OPTIMAX®

Distributed Energy Resources

Virtual Power Plants

Industrial & Commercials sites as part of the VPP

Industrials & Commercials

EV Fleet

Industrial & Commercial Sites

ABB

OPTIMAX® for industrials & commercials

Overview & value proposition

Reduce energy costs and site emissions

- **Costs**: Enables industrial and commercial sites to cut energy costs by 5-10% without impacting operations.

- **Emissions**: Enables industrial and commercial sites to integrate more renewables and minimize use of "costly" CO2-emitting fossil fuel; without risking reliability or grid stability.

Optimize single site; aggregate many sites

- **Maximize** generation consumption to **reduce** energy costs and **minimize** emissions.

- **Monitor** and **optimize** local generation and demand; **enable** market trading flexibility.

- **Integrate** with aggregators' and utilities' trading and billing systems.
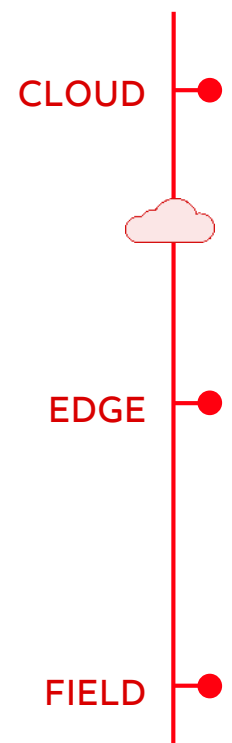
ABB

OPTIMAX® for Industrials and Commercials

Joerg Orth

ABB Ability™ Energy Management for Sites

OPTIMAX® for Industrial and Commercials – What's in it?

CLOUD

EDGE

FIELD

Grid

Diesel Gen

Gas Turbine

CHP

Electric Boiler

Solar Gen

Industrial Process

Building Automation

Logistics / Warehouse

Production Line 1 - n

Storage

EV Charging

ABB

ABB Ability™ Energy Management for Sites

OPTIMAX® for Industrial and Commercials – Overview & value proposition

Delivers energy cost reduction and eliminates emissions

— **Allow** cross-vector optimization (power, CHP, HVAC, water)

— **Forecast** & **optimize** generation, storage and loads

— **Apply** vendor – agnostic communication standards[1]
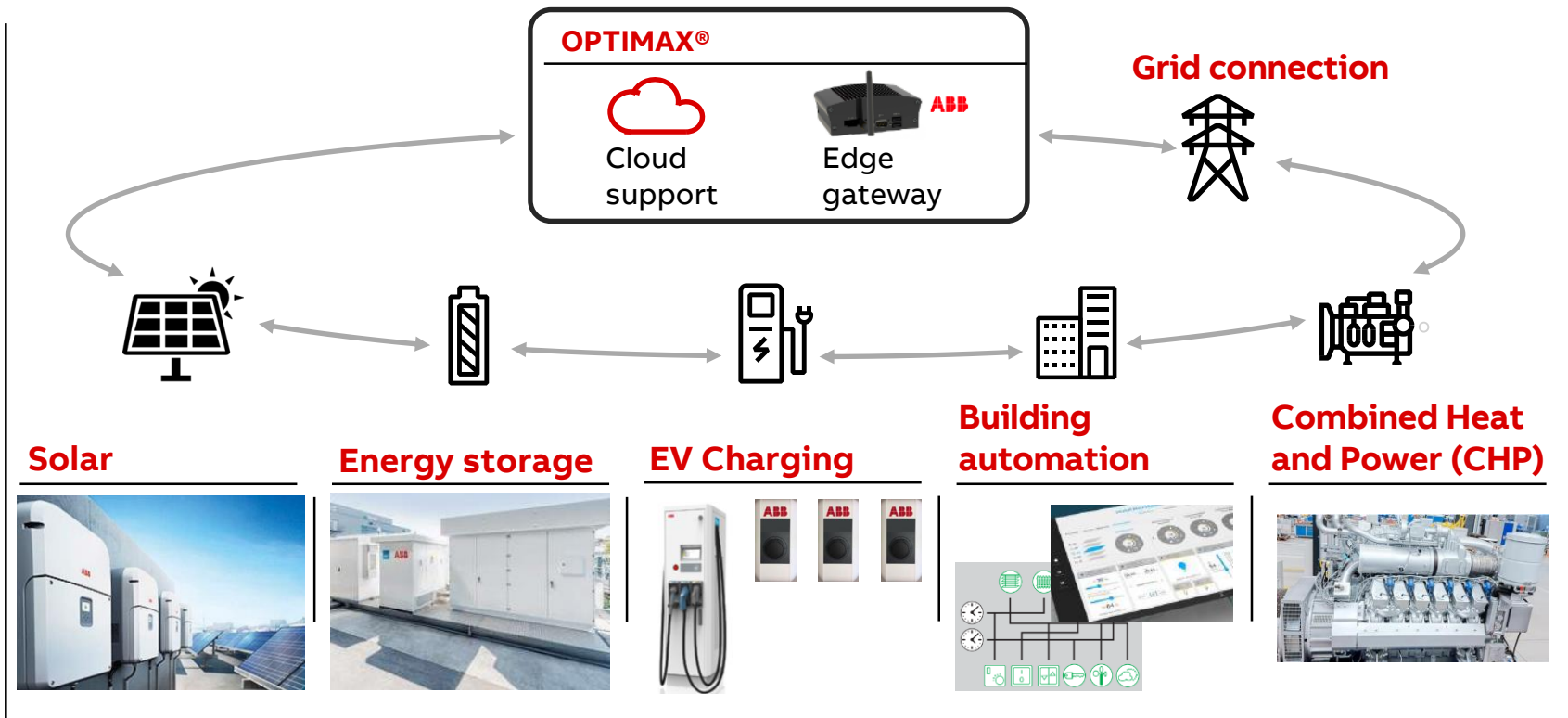
OPTIMAX®

Cloud support   Edge gateway

Grid connection

Solar

Energy storage

EV Charging

Building automation

Combined Heat and Power (CHP)

1. e.g., OPC UA, MODBUS TCP, OCPP, Sunspec

ABB

ABB Ability™ Energy Management for Sites

OPTIMAX® for Industrial and Commercials – Modules

OPTIMAX for industrials and commercials (SiteEMS)

Monitoring & Reporting

– Enhanced user experience and visibility of your energy usage on-site
– PDF reports
– Excel export

Real Time Operation

– Real-time optimization
– Coordinated control at site level

Intra-Day- / Day-Ahead-Opt

– Intra-Day and Day-Ahead Optimization
– Optimal schedules based on forecasts, loads and prices + updated during day

Option

Forecasting

– ML Forecasting
– AI Enhanced Forecasting and Services [1]

Option

Multi-Site Operation

– Benchmarking sites
– Enterprise wide energy optimization

Value Proposition
Additional Use Cases for Production Sites

Energy Optimization

Generate the optimal schedule based on

- Production schedules

- Energy requirements by the processes

- Energy prices

- Generation assets on site

- Transition cost between batches / products

Reduce energy cost up to 10%

Proof Energy Efficiency Improvements

Advanced monitoring and reporting to create visibility

Compare energy (heat, steam, electricity) usage between time frames

- Proof that the EE of production lines have improved over time

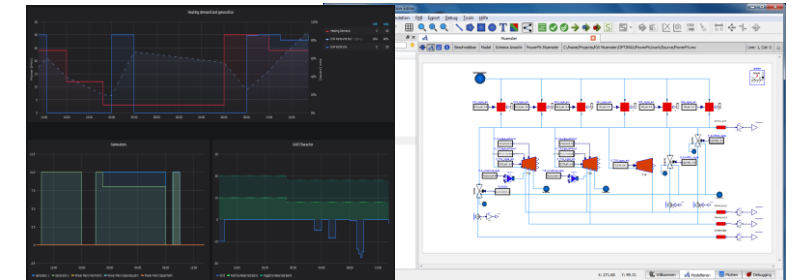- Proof that the EE for producing batches / products have improved over time

Reduce time for reporting

Multi-Energy Optimization

On-site generation uses different primary fuel sources to produce steam, heat and electricity to the process.

Optimize the energy cost to produce the heat, steam, electricity.
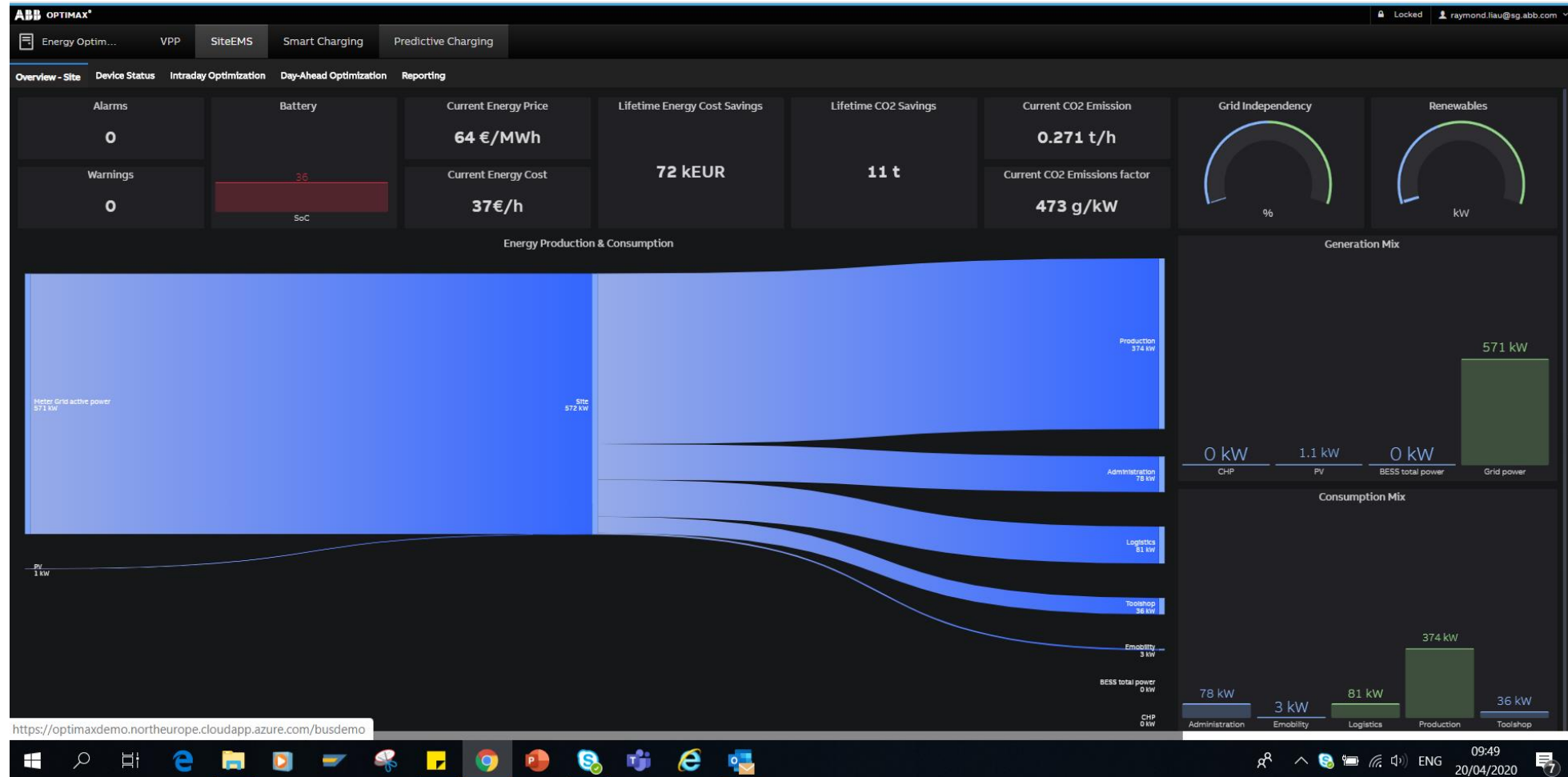

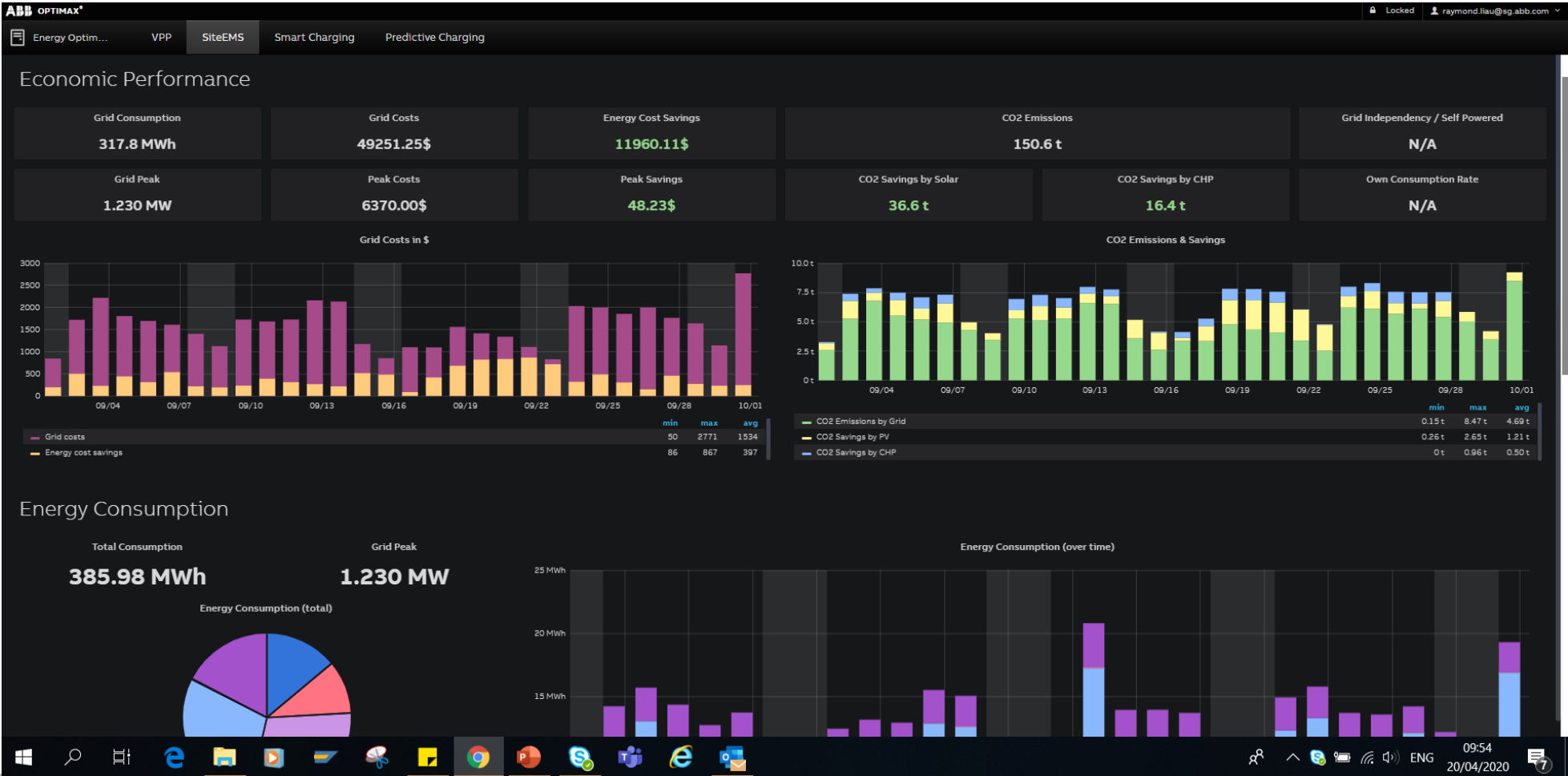**Reduce energy cost up to 10%**

Demo

Joerg Orth

OPTIMAX® for industrials & commercials – user interface

OPTIMAX® for industrials & commercials – user interface

OPTIMAX® for industrials & commercials – user interface
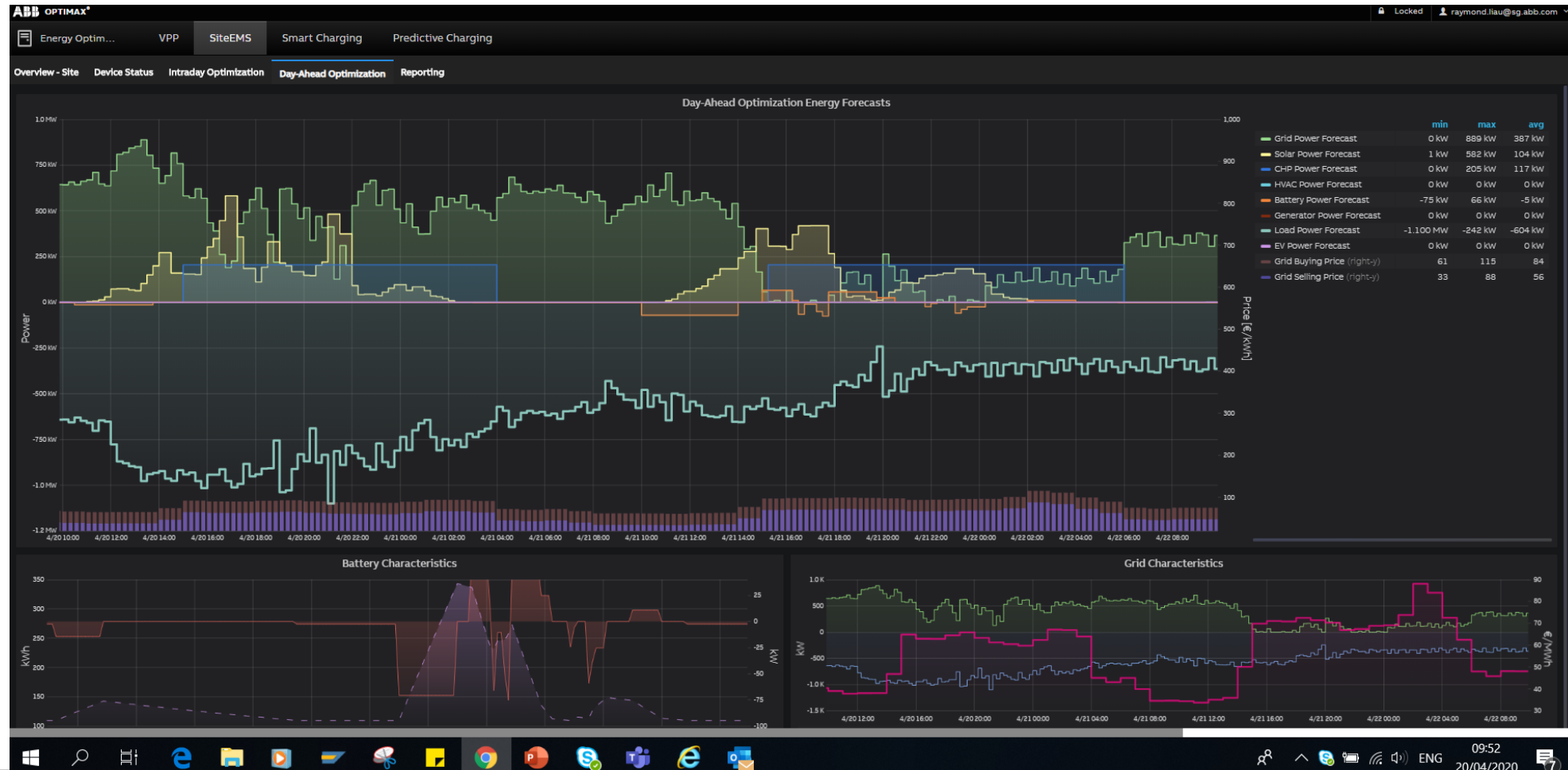
Imagine...

- Optimized emission industrial production

- Seamless integration of power, steam and processes

- The carbon tax does not affect you

ABB

References & Case Studies

ABB – Mission to Zero

Factory

PCC

CHP

BESS

EVSE

Solar

ABB/Busch-Jaeger, Lüdenscheid

BESS: Battery Energy Storage System
CHP: Combined heat and power
EVSE: Electric Vehicle Supply Equipment
PCC: Point of common coupling

ABB

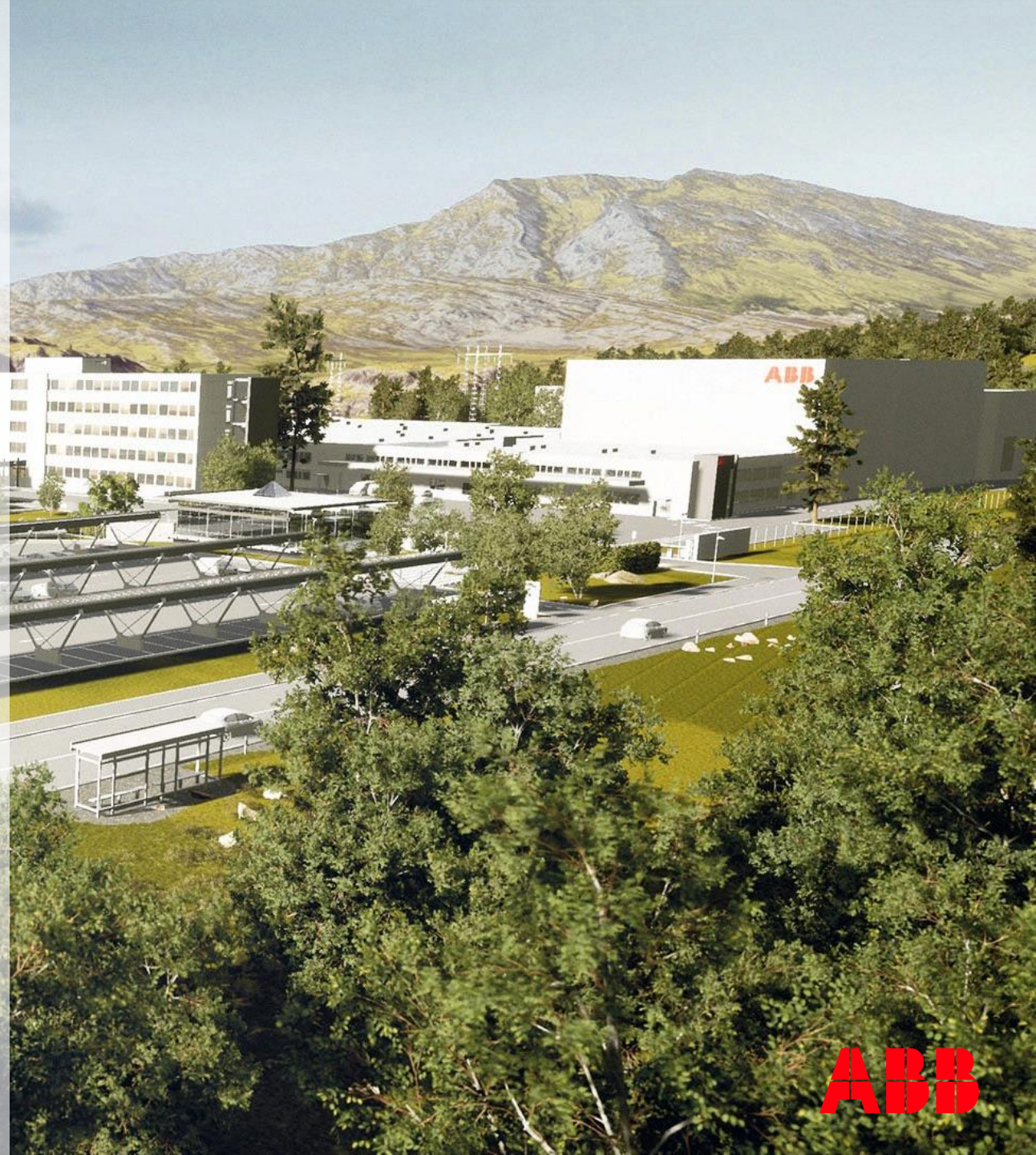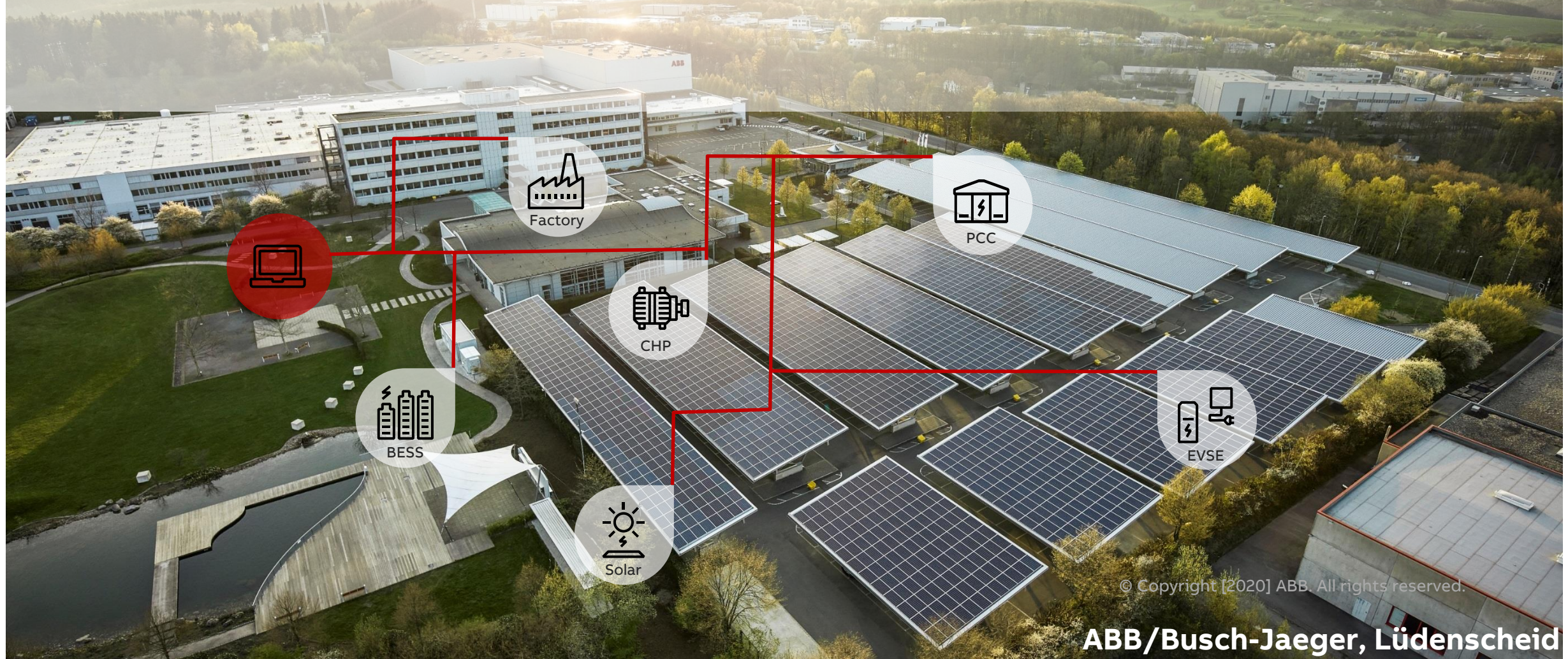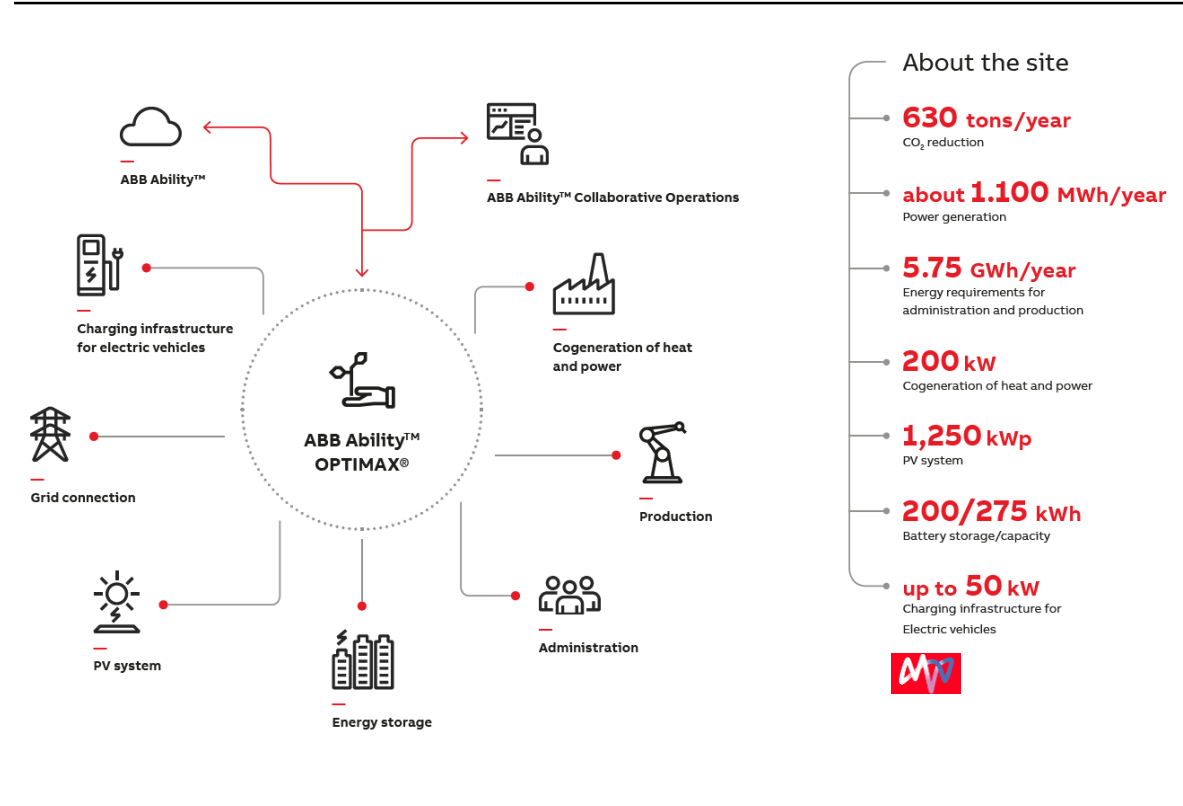# From vision to mission

ABB Factory Busch-Jaeger Lüdenscheid – Mission to Zero

Fact Sheet – Mission to Zero

About the site

630 tons/year
CO_2 reduction

about **1.100** MWh/year
Power generation

5.75 GWh/year
Energy requirements for administration and production

200 kW
Cogeneration of heat and power

1,250 kWp
PV system

200/275 kWh
Battery storage/capacity

up to **50** kW
Charging infrastructure for Electric vehicles

Achieved with OPTIMAX®

Create operational visibility

− Have a clear picture of consumption versus energy prices

− Track carbon emissions

Optimal utilization of the connected assets

− Forecast loads and on-site generation

Participation at energy markets

− Enabled the participation at real-time markets

− Use dynamic pricing schemes from the EaaS provider MVV

| **Saved time** |
| 5 – 20h/m |

| **Reduced CO$_2$** |
| 630 tons/year |

| **Reduced Cost** |
| 4,2% [1] |

| **Increased revenues** |
| 2 – 5% [2] |

https://new.abb.com/mission-to-zero/
1) compared to non-optimized operation
2) Evaluation ongoing

ABB

From vision to mission

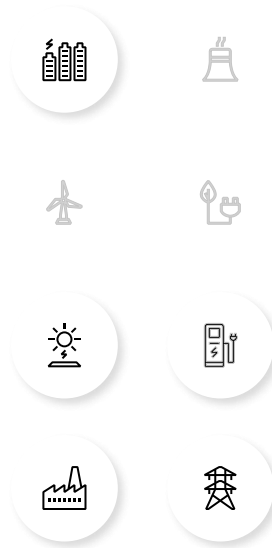## Single site energy management – South East Asia

Customer need
- Max. grid independency
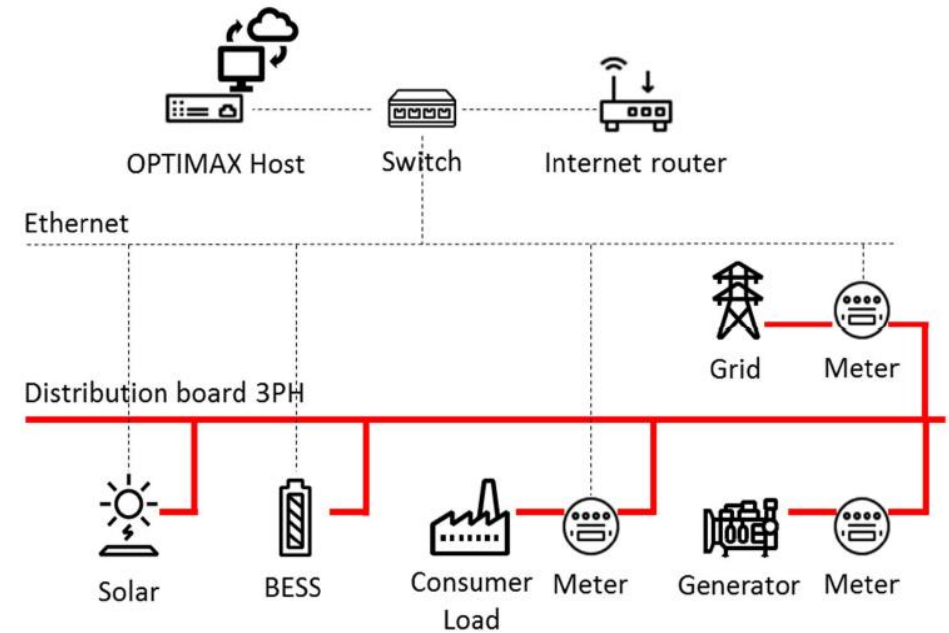- Reduce CO2 emissions

ABB solution
- Control and optimization of energy production, incl. solar, Battery storage, Diesel Generator
- Avoiding peak loads by visualizing critical assets to the Central Control Building in the industrial complex
- Grid compliance

Customer benefits (estimate)

	not optimized	Optimized
CO_2 saving	0 t	25t
Self consumption rate	0%	50 %

25t
Reduced CO2

ABB

From vision to mission

Building complex virtual power pool - Japan

Customer need

– Manage energy consumption to shift peak leveraging source from EV charging

ABB solution

– Effective visualization of overall conditions from multiple energy sources

– Control and optimization of energy production

– Managing objects' detailed conditions

– Monitoring HVAC condition and recovery

Customer benefits

– Avoid peaks

ABB
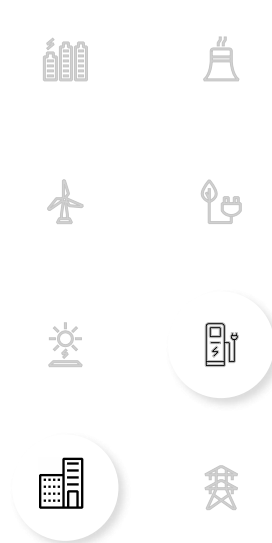
From vision to mission
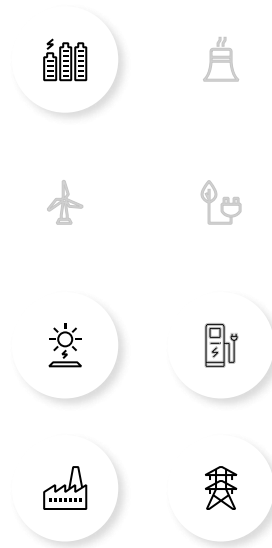
Smart medium sized manufacturing plant

Customer need

- Max. grid independency
- Reduce CO2 emissions

ABB solution

- Control and optimization of energy production, incl. solar, storage, EV charging
- Avoiding peak loads by visualizing critical loads with a traffic lights to the factory operation
- Grid compliance

Customer benefits

	not optimized	optimized
CO_2 saving	0 t	100t (160 trees)
Self consumption rate	49%	74 %

Customer: Holzmanufaktur Liebich
Delivery: OPTIMAX® for Industrial and Commercials

100t
Reduced CO2

ABB

From vision to mission
Smart Farm

Customer need

− Maximize internal power supply by using the existing flexibility
− Connected assets: solar panels, power to heat units, battery storage, EV charging, hybrid tractor & grid connection
− Controllable loads: milk tank, stirrer, building automation
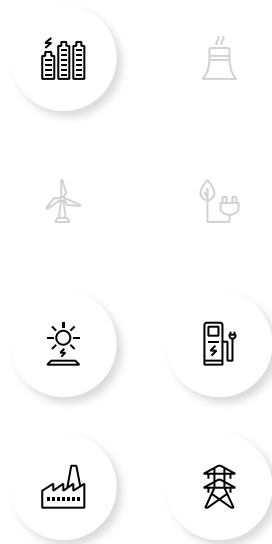
ABB solution

− Optimal operation for reduced peaks and grid consumption
− Merge several companies to participate in the energy market via an EaaS-provider

Customer benefits

	not optimized	optimized
Grid purchases	70 kW	32 kW
Self consumption rate	31,0 %	50,2 %

Customer: AÜW **Location** : Kempten
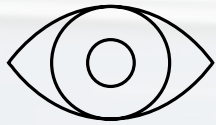**Delivery:** OPTIMAX® for Industrial and Commercials

+60%
Self consumption rate

https://new.abb.com/news/detail/54713/abb-digital-technologies-help-bavarian-smart-farm-participate-in-the-national-energy-trading-market
https://new.abb.com/news/detail/24679/abb-brings-digital-solutions-to-bavarian-farmers

ABB

Take Away
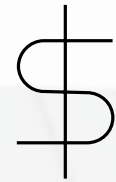
Three opportunities to optimizing power consumption

Visibility

Reduced energy costs

Maximize earnings

Sustainability

ABB

Q&A