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

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

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

## Welcome

### Agenda

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### Speakers

- **Tatjana Milenovic** - *Host*
  - F&B Initiative
  - ABB

- **Raymond Liau**
  - Digital Lead Asia
  - ABB

- **Joerg Orth**
  - Competence Center Optimization
  - ABB
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?
- …
Three challenges to optimizing power consumption

- Lack of visibility
- High energy costs
- Impact on bottom line

Sustainability
ABB Ability™ Energy Management
Overall value proposition for flexibility, efficiency and independence
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.
OPTIMAX® for Industrials and Commercials
Joerg Orth
ABB Ability™ Energy Management for Sites

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

- Grid
- Industrial Process
- Building Automation
- Logistics / Warehouse
- Production Line 1 - n
- Diesel Gen
- Gas Turbine
- CHP
- Electric Boiler
- Solar Gen
- Storage
- EV Charging
**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

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

### Option

- **Multi-Site Operation**
  - Benchmarking sites
  - Enterprise wide energy optimization

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July 14, 2020

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**Value Proposition**

Additional Use Cases for Production Sites

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**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

**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

**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.

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Reduce energy cost up to 10%

Reduce time for reporting

Reduce energy cost up to 10%
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
References & Case Studies
ABB – Mission to Zero

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

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From vision to mission

ABB Factory Busch-Jaeger Lüdenscheid – Mission to Zero

Fact Sheet – Mission to Zero

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

About the site
- 630 tons/year CO₂ 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

Saved time
5 – 20h/m

Reduced CO₂
630 tons/year

Reduced Cost
4,2% ¹)

Increased revenues
2 – 5% ²)

1) compared to non-optimized operation
2) Evaluation ongoing
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)

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<th>Optimized</th>
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<tbody>
<tr>
<td>CO² saving</td>
<td>0 t</td>
<td>25t</td>
</tr>
<tr>
<td>Self consumption rate</td>
<td>0%</td>
<td>50%</td>
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25t Reduced CO2
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
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

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<tr>
<td>CO² saving</td>
<td>0 t</td>
<td>100t (160 trees)</td>
</tr>
<tr>
<td>Self consumption rate</td>
<td>49%</td>
<td>74%</td>
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Customer: Holzmannufaktur Liebich
Delivery: OPTIMAX® for Industrial and Commercials

100t Reduced CO2
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

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<tr>
<td>Grid purchases</td>
<td>70 kW</td>
<td>32 kW</td>
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<tr>
<td>Self consumption rate</td>
<td>31.0 %</td>
<td>50.2 %</td>
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+60%
Self consumption rate

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

Take Away
Three opportunities to optimizing power consumption

Visibility
Reduced energy costs
Maximize earnings

Sustainability
Unlock the value of energy management