VOLTIMUM VIRTUAL 2022 APRIL

Energi- och klimatsmarta byggnader

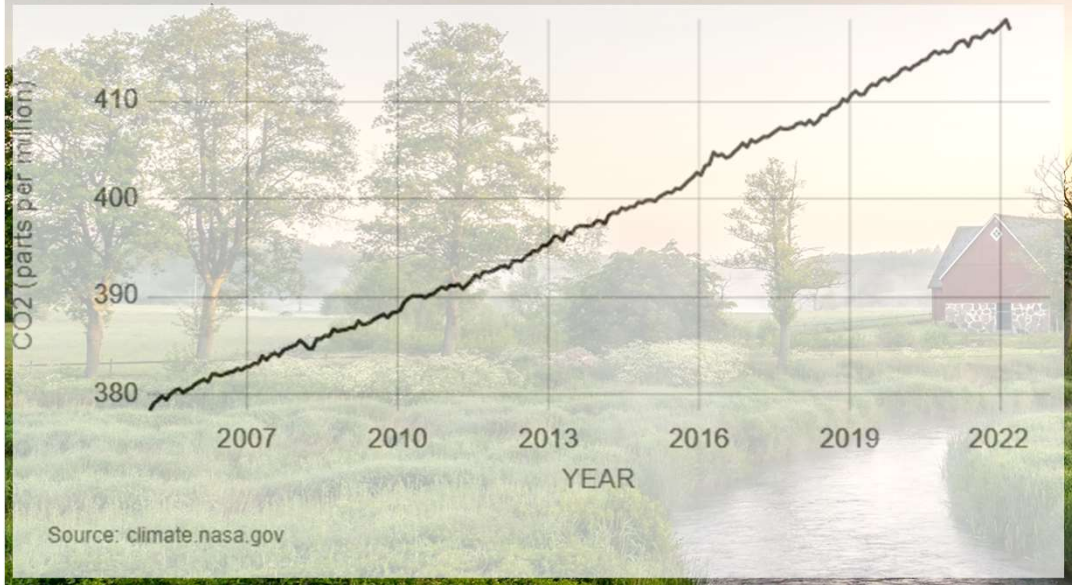
Genom samarbete och ny teknik

Mikael Miglis

- Fortsatta problem

Utsläpp av växthusgaser och total energianvändning fortsätter på oförändrad nivå under 2022. Inga framsteg i målen för biologisk mångfald förväntas.

Koldioxid-utsläpp per person



Global temperatur-skillnad

Sveriges hållbarhetsmål

- ✓ 50% bättre energiutnyttjande
- ✓ 100% förnyelsebar energi
- ✓ Inga utsläpp av växthusgaser
- ✓ dubbla elanvändningen från dagens 160 till 300 TWh
- ✓ Energieffektivisera fastigheter med 30%

”En förutsättning för allt detta är digitalisering”

Nyckeln till att energieffektivisera och att arbeta proaktivt med sitt energisystem är att digitalisera för att möjliggöra ett datadrivet arbetssätt

Fortsatt utveckling i Sverige

→ Solenergiproduktion
→ Vindenergiproduktion
→ Elfordon
→ Nya industrier
→ Smarta fastigheter

Flera anledningar till att digitalisera

Koldioxidfri produktion

Ständiga energiförbättringar

Hållbarhet

Minimerad driftskostnad

Holtab
Self-sufficient microgrid

Challenge & customer needs

Together ABB, Holtab, Renbloc and Greenlytics will turn Holtab's factory in Tingsryd to a smarter factory with the aim of being Net-provider of electricity by 2025.

Digital solutions

The energy system in Holtab's factory will be digitalized and connected to ABB's Energy & Asset Manager. The system will leverage digital solutions based on common architecture and 'Internet of Things' devices connected to dedicated networks and cloud.

After a data collection platform is established, analytics is applied with the target to implement control and optimization to maximize input on CO2 emissions.

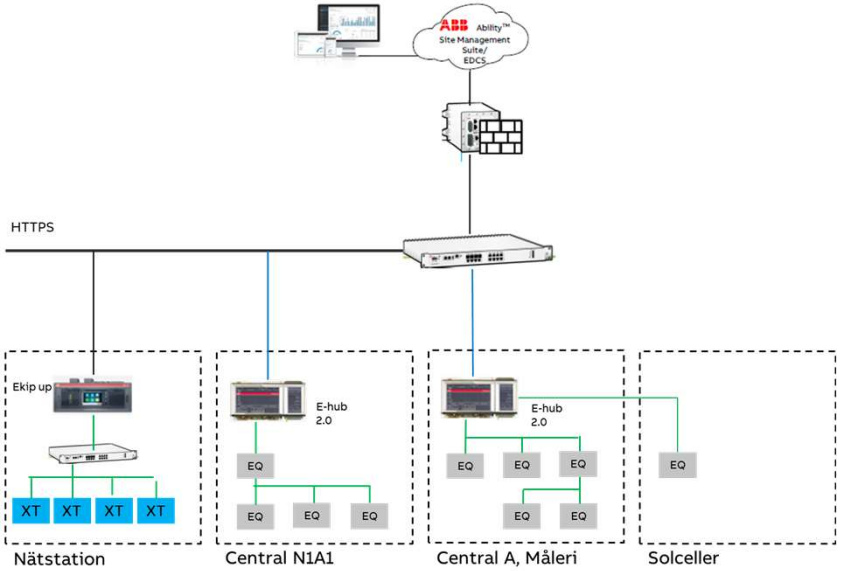
- Energy & Asset Manager
- EQ-meters, EQ matic, Ekip Up & E-hub 2.0
- 3rd party AI-solutions

"Det känns oerhört kul. Vi bidrar till energiomställningen i världen. Vi har blivit klimatsmarta", säger Patrik Persson, vd på Holtab. Holtab har en miljövision kallad "Nettoleverantör till 2025" och solcellsanläggningen var ett första steg mot att nå den.

- ✓ Reducing emissions in Holtab's factory by using Big Data and active control on energy and CO2 emission data.

ABB Ability Energy & Asset Manager

Digitalisering av befintlig anläggning



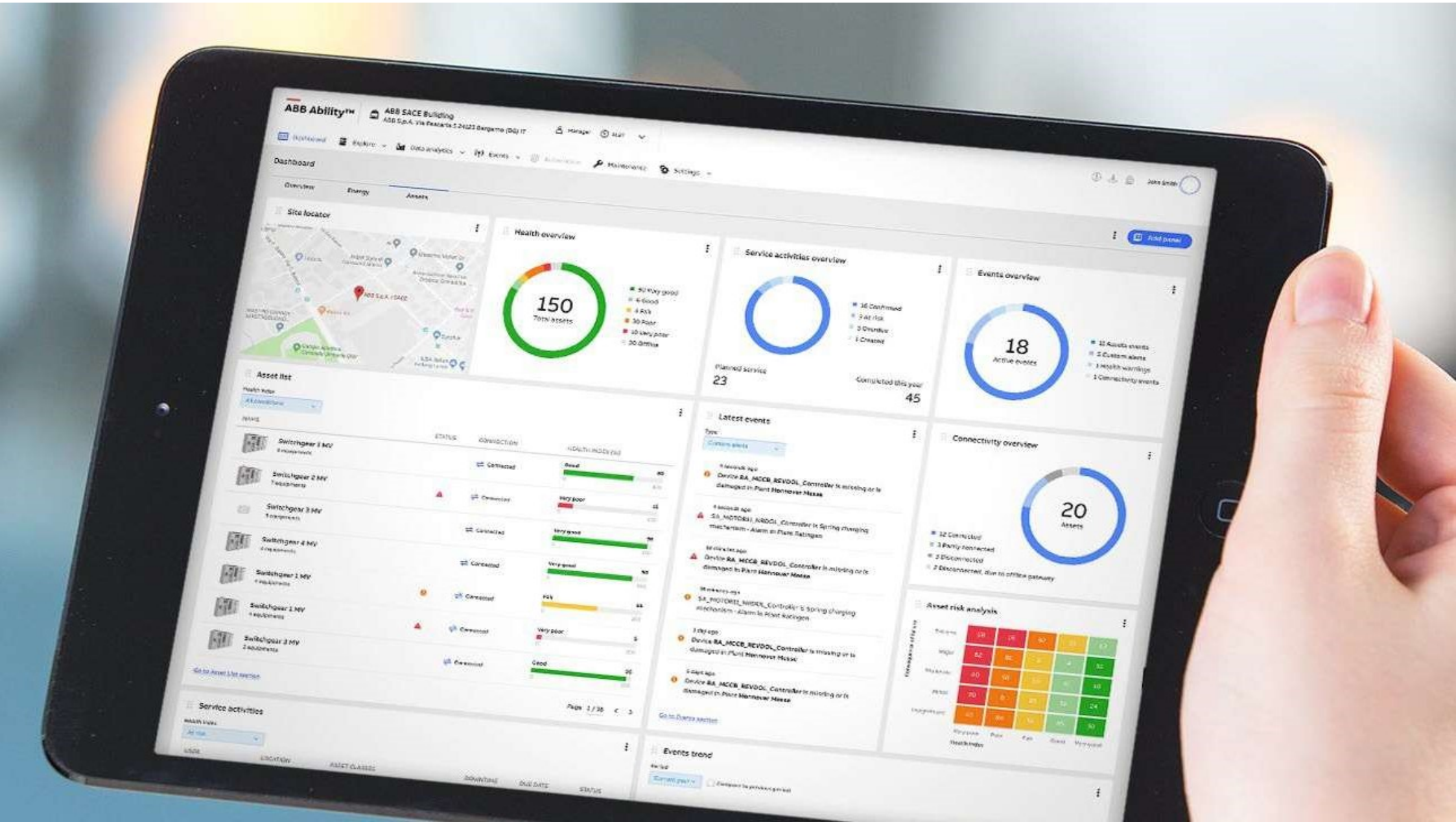
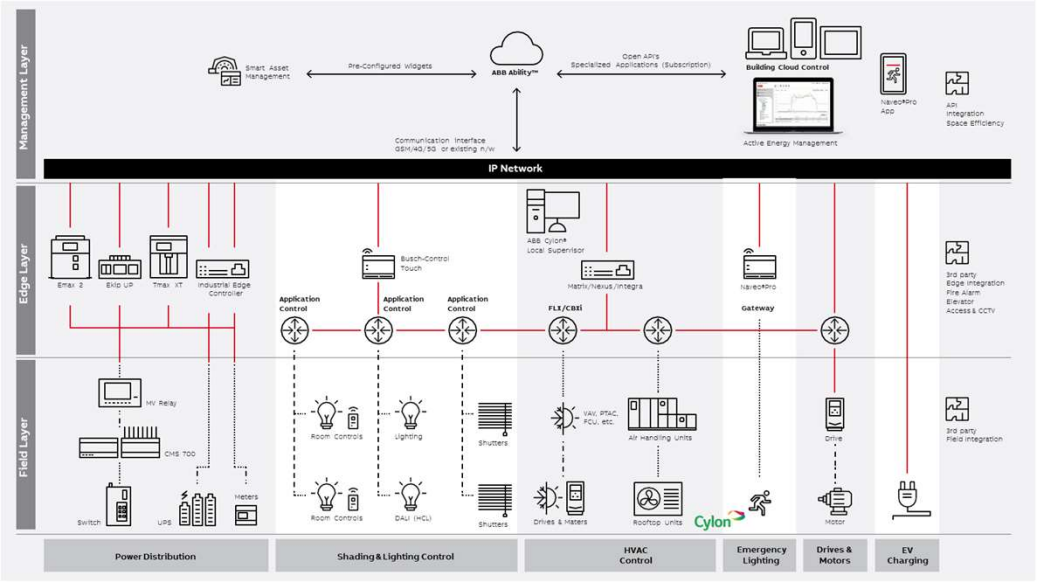


ABB Ability™
ABB SACE Building
Dashboard
Overview
Energy
Assets
Site locator
Health overview
150
Total assets
Service activities overview
Planned service
23
Completed this year
45
Events overview
18
Active events
Asset list
Switchgear 1 MV
Switchgear 2 MV
Switchgear 3 MV
Switchgear 4 MV
Switchgear 1 MV
Switchgear 2 MV
Switchgear 3 MV
Latest events
Connectivity overview
20
Assets
Asset risk analysis
Service activities
Events trend

Energy Management och Renbloc widget

ABB


Management Layer
Edge Layer
Field Layer
Smart Asset Management
Pre-Configured Widgets
ABB Ability™
Open APIs
Specialized Applications (Subscription)
Building Cloud Control
NaviecoPro App
API Integration Space Efficiency
Communication Interface GSM/4G/5G or existing H/W
Active Energy Management
IP Network
Emax 2
EMIP UP
Tmax XT
Industrial Edge Controller
Busch-Control Touch
ABB Cylon® Local Supervisor
Matrix/Nexus/Integra
NaviecoPro Gateway
Application Control
FLX/CBXi
3rd party Edge Integration Fire Alarm Elevator Access & CCTV
MV Relay
CMS 700
Switch
UPS
Meters
Room Controls
Lighting
DALI (HCL)
Shutters
VAV, PTAC, FCU, etc.
Air Handling Units
Drives & Meters
Rooftop Units
Cylon
Drive
Motor
3rd party Field Integration
Power Distribution
Shading & Lighting Control
HVAC Control
Emergency Lighting
Drives & Motors
EV Charging


Power Distribution
Motor & Variable Speed Drives
Lighting & Shading Control
Solution Portfolio Overview
EV Charging
Emergency Lighting
HVAC Control

Power Distribution

ABB Ability™ Condition Monitoring for switchgear – SWICOM
SWICOM is a monitoring and diagnostic unit which provides mechanical and electrical health status of a fleet lineup. It acquires data communicating with IEC 61850 based protection relays and via sensor bus of additional e.g temperature sensors, and converts the data to diagnostic information.

Relion® series protection relays
The Relion® product family is a range of products for the protection, control, measurement and supervision of power systems for IEC and ANSI applications. Relion products have been designed to implement the core values of the IEC 61850 standard.

Power Distribution

System pro M portfolio modular DIN-Rail products
System pro M, is a complete assortment of first-class quality products for controlling and monitoring electricity as well as protection of the end users life, property and for energy efficiency. The portfolio includes miniature circuit breakers, residual current devices, surge protection devices, control, signaling, measuring and smart accessories.

System pro M compact® InSite
System pro M compact® InSite is a solution specifically developed to monitoring and controlling the energy flow in sub distribution boards. The InSite range collects data of devices such as energy and power meters, network analyzers, protection devices like MCBs and RCDs that are equipped with current sensors and the integration of additional digital Input and Output modules. Thanks to its scalability the system can easily be integrated in existing installations without replacing any components.
It can be installed as a standalone solution or integrated into any IT infrastructure, such as the cloud-based ABB Ability™ Energy and Asset Manager.

Power Distribution

EQmatic Energy Analyzer

The new ABB EQmatic Energy Analyzer is a compact solution for monitoring, logging, visualizing and analyzing energy and consumption data from electricity, gas, water or heat meters via KNX, M-Bus or Modbus RTU.

The configurable dashboard page provides a quick overview of most relevant metering data and analytic charts. The web-based user interface is individually configurable to the respective requirements and makes it possible to identify energy thieves and optimize energy costs sustainably. Various export functions (E-mail, FTP) for further processing of the data and connectivity options (Modbus/TCP, RestAPI) for integration into supervisory systems (SCADA, BMS, etc.) are available.

Uninterruptible power supply (UPS)

The UPS system guarantees constant and high-quality energy, without power interruption. ABB offers a complete range of UPS for the protection of applications from low to extremely high voltages. The range includes single-phase UPS, modular three-phase UPS, three-phase monolithic UPS, industrial UPS and voltage stabilizers and UPS for MV/LV transformer substations compliant with CEI-016 standards.

Thanks to the remote monitoring systems, updated and detailed information on UPS operation can be accessed directly via the web, including setup, internal alarms, and operating conditions. The system notifies alarms and critical events via e-mail or SMS.

Power Distribution

Arc Guard System™ TVOC-2
TVOC-2 Arc Guard System™ is a device providing an optical arc flash mitigation with the fastest reaction time. The TVOC-2 detects the light from an occurring arc flash and sends the signal to the breaker within 1 ms. Together with Emax 2 circuit breaker the total arc fault clearing time is less than 50ms.

ABB Ability™ Edge Industrial Gateway
ABB Ability™ Edge Industrial gateway is a powerful control-management tool that simplifies existing gateways. The gateway gathers data from field devices as well as environmental parameters (temperature, water, gas) and feeds the data to the Energy and Asset Manager interface.
Possible to monitor all downstream devices from the cloud via ethernet cable, with modules for Wi-Fi or cellular connection.


20%
LÄGRE
ELRÄKNING
40%
LÄGRE
UNDERHÅLLS-
KOSTNADER
30%
LÄGRE
OPERATIVA
KOSTNADER

Customer success
Sara Kulturhus

Challenge & customer needs

Optimized energy system to decrease costs and carbon footprint of the city of Skellefteå.

Digital solutions

Integration of smart connected energy products, Energy & Asset Manager for monitoring of energy and optimization of energy as a service through Optimax.

- 1 MV-switchgear
- 3 LV-switchgear with smart breakers
- Energy storage
- Energy & Asset Manager
- Optimax

”För att nå hela vägen mot ett 100 procent förnybart energisystem behöver fastighetens interna energisystem integreras och optimeras mot stadens centrala energilösningar med nya smarta algoritmer. Tillsammans med ABB kan vi komma vidare med smarta lösningar som leder oss vidare i vår gemensamma strävan i att bidra till ett hållbart samhälle”, säger Fredrik Jonsson, chef vid Affärsinnovation på Skellefteå Kraft.

- ✓ Simple plug and play solution for digitalized energy systems with ABB Ability™ Energy & Asset Manager.
- ✓ ABB Ability™ Optimax offers tailored solutions for optimization.
- ✓ Optimization as a service.


ABB upgrades landmark buildings
in Zaragoza’s Smart City project
with energy monitoring system
BENEFIT
-ISO 50001 compliance
-20% energy savings