

EXTERNAL

2022

ABB Data Center Solutions

Smart, scalable, sustainable

- 01.** Who We Are
- 02.** Market Demand and Key Trends
- 03.** Our Portfolio
- 04.** Our Offerings
- 05.** Service
- 06.** Summary
- 07.** Our Team

—

Who We Are

Well positioned across global markets

Employees

~105,000

Countries

~100

Revenues

~\$26 bn

Europe

~\$9.6 bn

Americas

~\$7.9 bn

AMEA

~\$8.4 bn

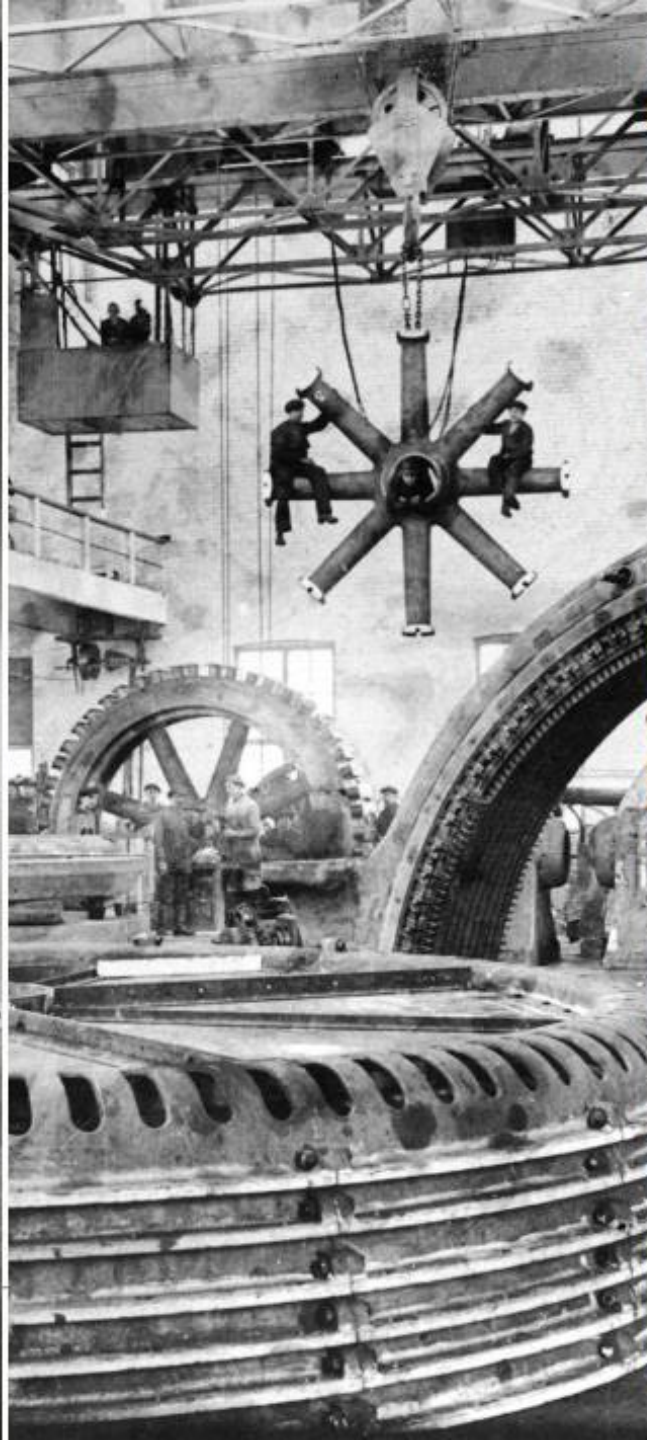
ABB is a leading global technology company that energizes the transformation of society and industry to achieve a more productive, sustainable future.

By connecting software to its **electrification, motion, process automation and robotics & discrete automation** portfolio, ABB pushes the boundaries of technology to drive performance to new levels.

2020 figures

ABB

ABB has been pushing the boundaries of technology for +130 years



ABB

Our Business Areas

Electrification

Motion

Process Automation

Robotics & Discrete Automation







Providing solutions that guarantee operational efficiency and reliability

ABB Data Center Solutions


In the midst of a transformative digital revolution, guaranteeing speed, reliability, and energy efficiency in data centers is crucial to satisfy strict and challenging demands.

As a technology leader in the field of data centers, **ABB provides innovative and sustainable solutions to help solve the industry's most pressing challenges.**



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Market Demand and Key Trends



The COVID-19 pandemic accelerated the adoption of digital technologies and platforms.

Market demand

COVID-19 pandemic accelerated adoption and use of digital technologies

Since 2010 ...



Internet users worldwide have **doubled**



Global internet traffic has grown **12-fold** or 30% per year

Because of the **COVID-19 pandemic**



Global internet traffic surged almost **60%**



Bolstered use of digital media, communications, and networking platforms, with an estimated **79 ZB** consumed in 2021.

Future growth



Number of internet users worldwide is projected to increase from 3.8 billion in 2019 to **5 billion by 2025**

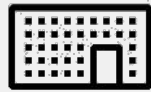


Internet of Things (IoT) connections is expected to double from 18 billion in 2020 to **37 billion by 2025**

Industry demand

Big data paves the way for massive growth in the data center industry

Increasing value



The global data center market is expected to grow at a **CAGR of over 2%** from 2019 to 2025.



Data center market value is projected to increase to **\$143.4 billion by 2027**.

Key growth markets



Increased data consumptions driving demand for **additional capacity and infrastructure**



Agile digital transformation pushing need for **scalable modular facilities**

Key industry challenges



Growing shortage of skilled workers may impair operational productivity



Continued call to **monitor and reduce carbon emissions**

Key trends

Increased market demand, data processing requirements, and ever-increasing reliance on data centers are driving the key trends in the industry.

01.

**Resiliency /
Uptime**



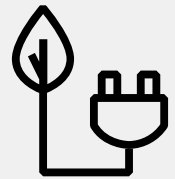
02.

Speed & scalability



03.

Sustainability



Key drivers

Resiliency / Uptime



Challenge: The average cost of a single data center outage is \$730K** and continues to rise



Trend: Pressure to invest in infrastructure redundancies and recovery systems to meet reliability and sustainability goals



Solution: Intelligent solutions to achieve energy efficiency and uptime while promoting manpower safety

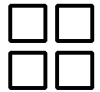
01.

Key drivers

Speed and Scalability



Challenge: Growing demand requires improved speed of deployment – cutting data center lead times from several years to 18 months or less



Trend: “Pay as you grow” - The need for speed and a fast return on investment drive the need for scalable and / or modular solutions



Solution: To meet the speeds required many data centers are leveraging modular, prefabricated and pretested solutions



02.

Key drivers

Sustainability



Challenge: Data centers consume 1-2% of the world's electricity and consumer demands are growing



Trends: Many data centers have aggressive sustainability goals towards carbon neutrality and even becoming carbon negative



Solution: Energy efficient solutions, intelligent energy consumption and cutting-edge technology are key to meeting sustainability goals





Our Portfolio

Data center IEC portfolio

LV Power Distribution

- LV switchgear
- LV Switchboards
- Electronic relays & controls
- Busway
- Arc flash protection
- LV MCC
- LV Power and lighting panels
- Meter, monitoring & signaling

Power Protection

- Uninterruptable Power Supplies (UPS)
- Power Distribution Units (PDUs)
- Remote Power Panels (RPPs)
- Automatic Transfer Switches (ATS)

Installation Products

- Cable tray
- Fiber tray
- Cable and wire management
- Grounding and bonding systems
- Mechanical and compression wire termination
- Fittings

Cooling system components

- Variable frequency drives
- High efficiency motors
- Enclosed breakers & switches

ABB Ability Digital Data Center Operations

- Data Center automation
- Electrical power management system
- Asset management
- Smart building solutions
- Condition monitoring

MV Primary & Secondary Distribution

- AIS & GIS MV switchgear
- AIS & GIS Ring Main Units
- Protection relays
- Protection & safety
- Control systems

Service & support

- Installation & commissioning
- Consulting services (engineering studies)
- Retrofits and upgrades
- Digital upgrades

Other capabilities

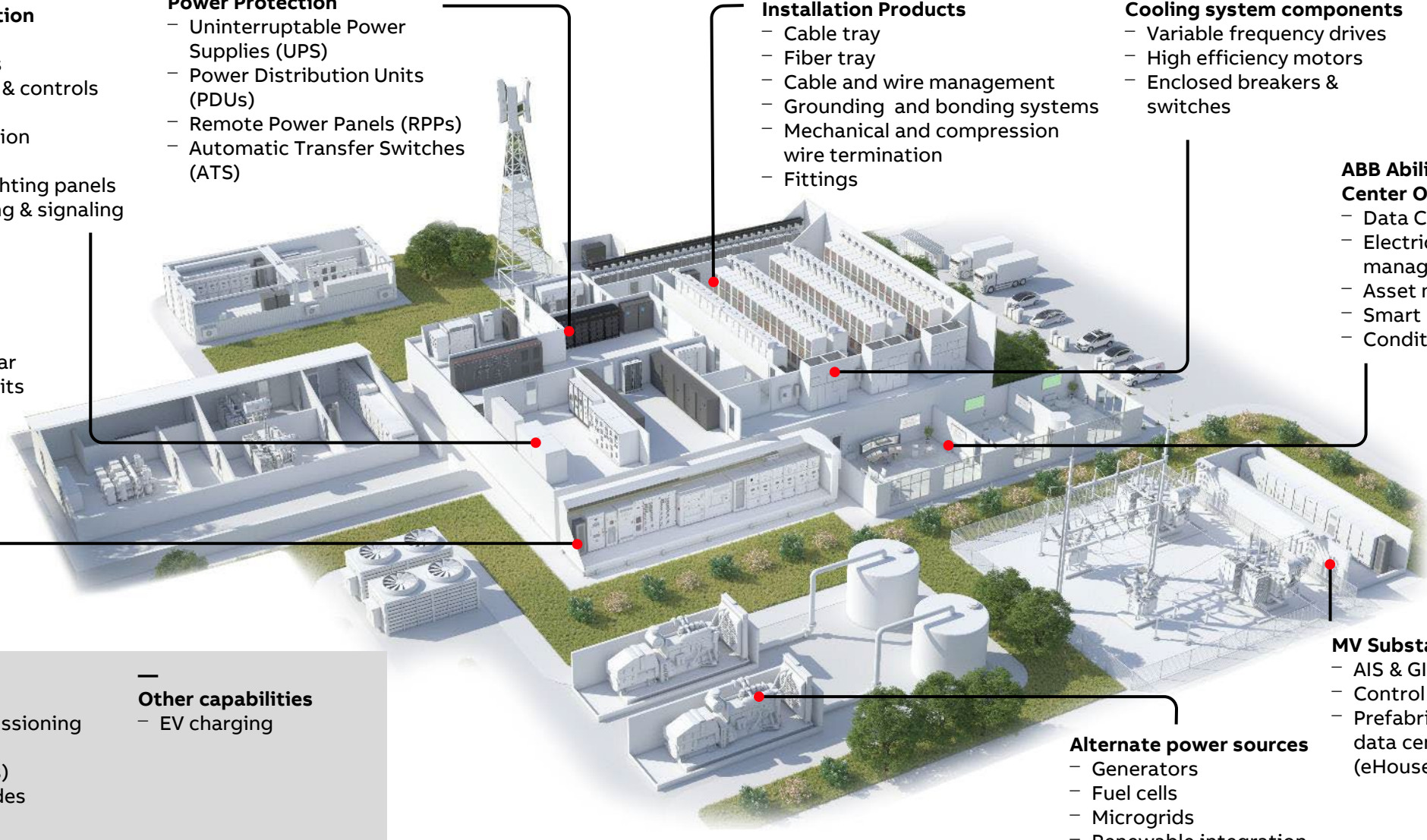
- EV charging

Alternate power sources

- Generators
- Fuel cells
- Microgrids
- Renewable integration

MV Substations

- AIS & GIS switchgear
- Control systems
- Prefabricated modular data center solutions (eHouses & skids)



Data center ANSI portfolio

LV Power Distribution

- LV switchgear
- Electronic relays & controls
- Busway
- Arc flash protection
- LV MCC
- LV sub distribution
- Meter, monitoring & signaling

Power Protection

- Uninterruptable Power Supplies (UPS)
- Power Distribution Units (PDUs)
- Remote Power Panels (RPPs)
- Static transfer switches (STS)
- Automatic Transfer Switches (ATS)

Installation Products

- Cable tray
- Fiber tray
- Cable and wire management
- Grounding and bonding systems
- Mechanical and compression wire termination
- Fittings

Cooling system components

- Variable frequency drives
- High efficiency motors
- Enclosed breakers & switches

MV Primary & Secondary Distribution

- AIS & GIS MV switchgear
- Protection relays
- Protection & safety
- Control systems
- Paralleling switchgear (PSG)

ABB Ability Digital Data Center Operations

- Data Center automation
- Electrical power management system
- Asset management
- Smart building solutions
- Condition monitoring

MV Substations

- Outdoor breakers
- AIS & GIS switchgear
- Control systems
- Pre-fabricated modular data center solutions (eHouses & skids)

Alternate power sources

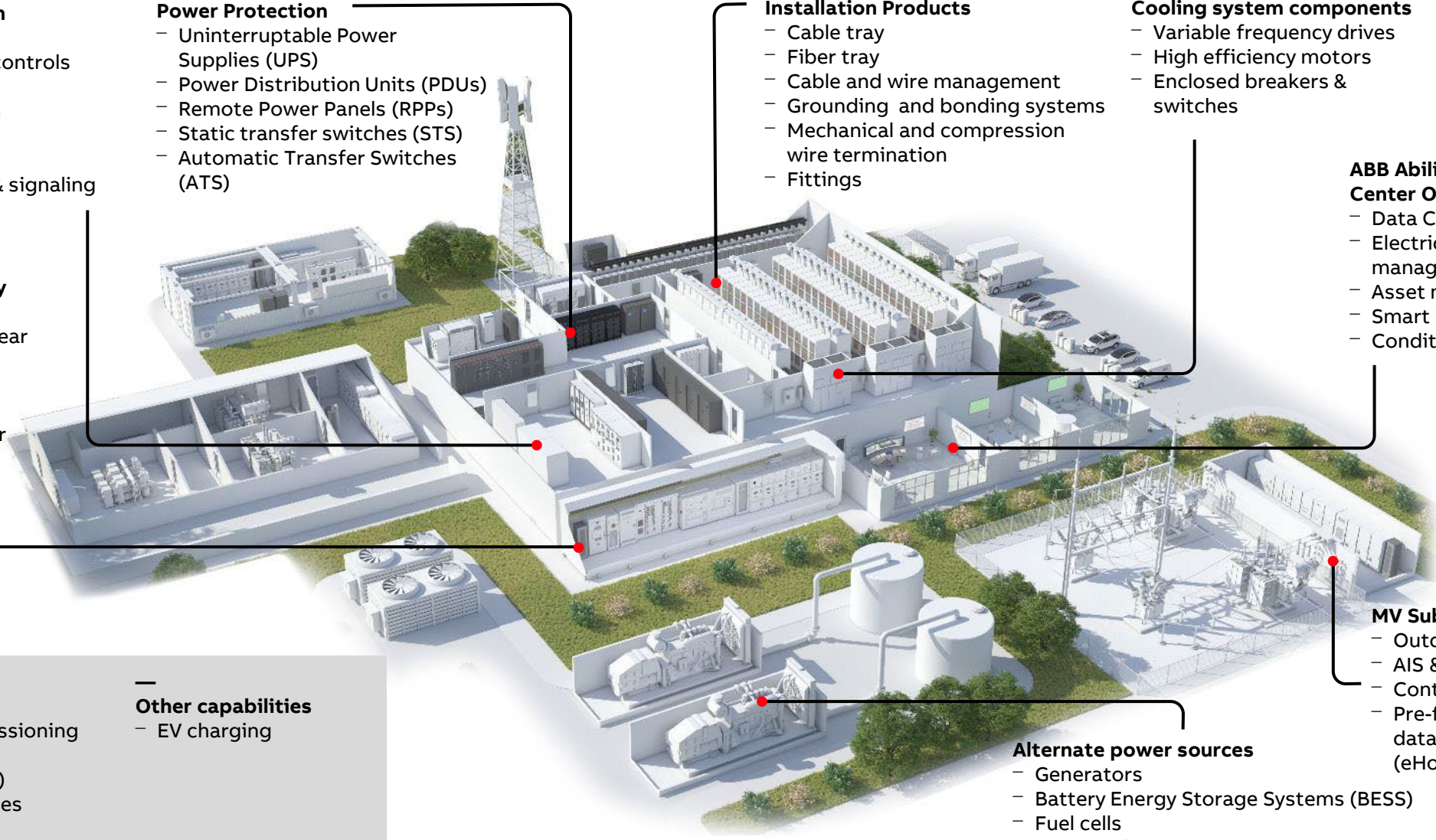
- Generators
- Battery Energy Storage Systems (BESS)
- Fuel cells
- Microgrids
- Renewable integration

Service & support

- Installation & commissioning
- Consulting services (engineering studies)
- Retrofits and upgrades
- Digital upgrades

Other capabilities

- EV charging



4

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Our Offerings



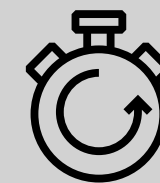
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Preparing for future growth requires a deep market understanding, a long history of providing support, and a shared commitment to sustainability.



SMART



SUSTAINABLE



SPEED & SCALE

Challenges in the data center industry driving digitalization

Smart and timely insights help data centers address these pressing concerns.

01.

SUSTAINABILITY AND EFFICIENCY

Smart solutions provide greater information and visibility required to anticipate and avoid potential system failures while keeping sustainability goals on track.



02.

RELIABILITY AND UPTIME

Intelligent devices can detect and communicate various critical issues, that may affect the health and efficiency of electrical and IT equipment.



03.

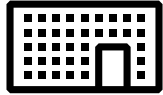
EFFICIENT RESOURCE UTILIZATION AND SAFETY

Condition monitoring procedures can now be done proactively and remotely via digital and AR-based solutions, upholding both efficiency and manpower safety.



Digital solutions providing visibility and control across the value chain – when and where it truly matters

Facility monitoring & control



Building management



Energy management / sustainability



Resource utilization

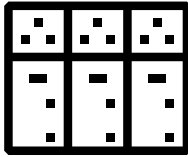


Asset management

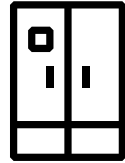


Infrastructure management

Digital equipment & systems



System visibility



Advanced monitoring & diagnostics



System supervision

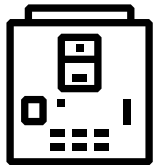


Predictive analytics



Advanced protection & control

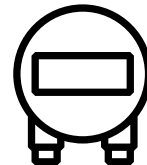
Digital enablers & components



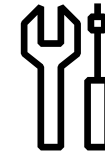
Component visibility



Protection & control



Measure & monitor



Asset condition



Connectivity

Digital solutions for Data Centers

DIGITAL BUILDING PLATFORM



Energy & Asset Manager



Power management systems



DCIM
(Data Center Automation)



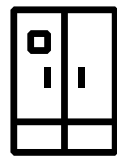
Building Management Systems
(Cylon)

IP Network

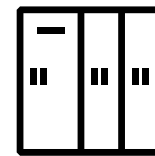
DIGITAL EQUIPMENT



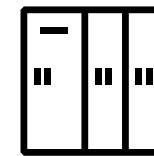
Power distribution unit



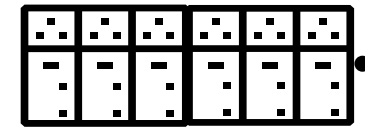
UPS



LV Digital Switchgear

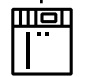


MV Digital Switchgear



MV Primary Switchgear

DIGITAL COMPONENTS



LV Breaker



Meter



Battery Monitoring System & Batteries



Controls



LV Breaker



Arc Flash Protection



Meter



MV Breaker



Arc Flash Protection



Meter



Relay



MV Breaker



Arc Flash Protection



Meter



Relay

DIGITAL ENABLERS



Trip Unit



Sensors



Rectifier



Inverter



Sensors



Bypass (alarm)



Trip Unit



Sensors



Sensors



Sensors



Data Center

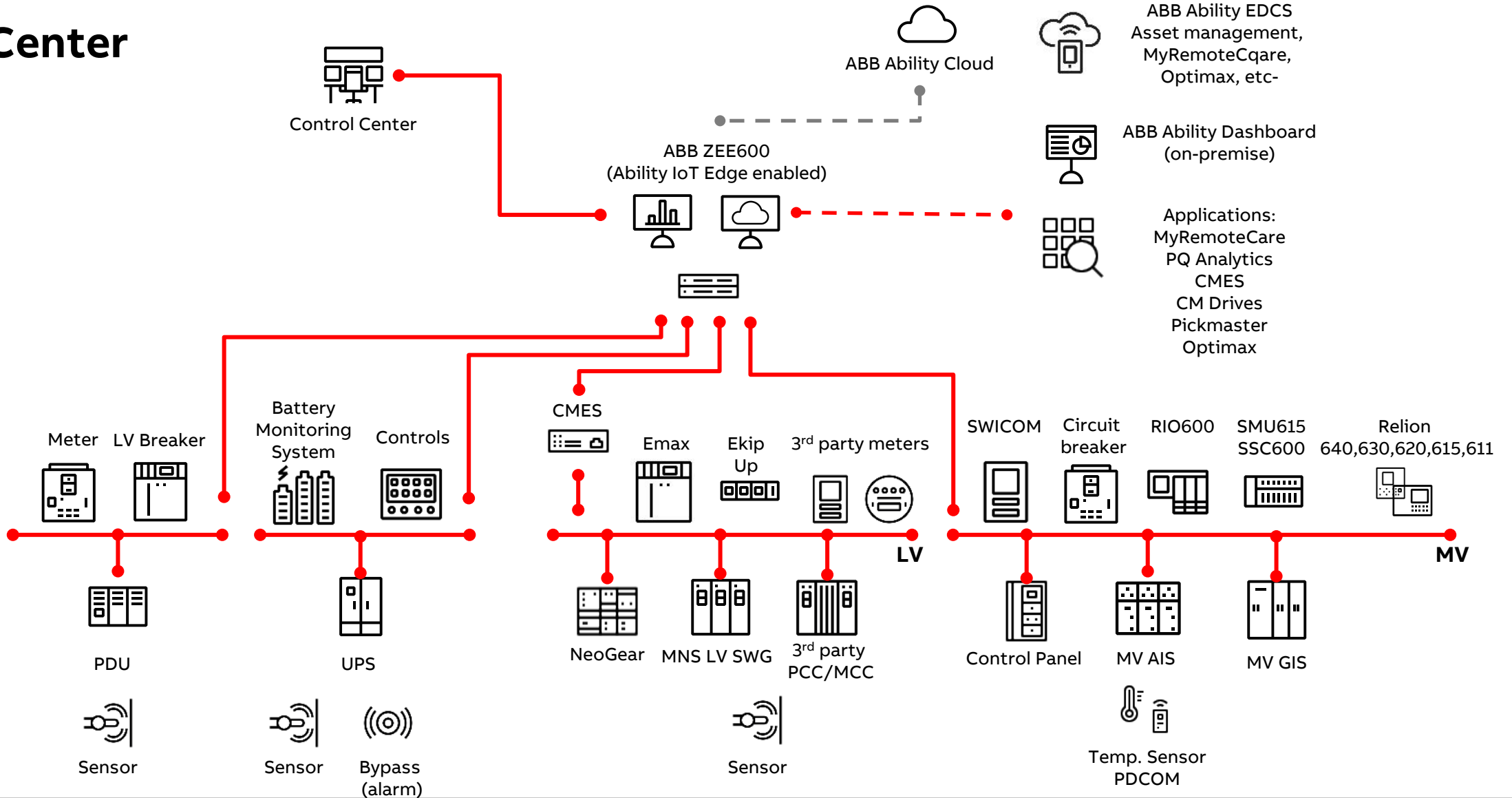


ABB Ability™ Data Center Automation (DCA)

Digital Ready - Industrial Controls for Mission Critical Data Centers



Industrial grade & Inherently Integrated

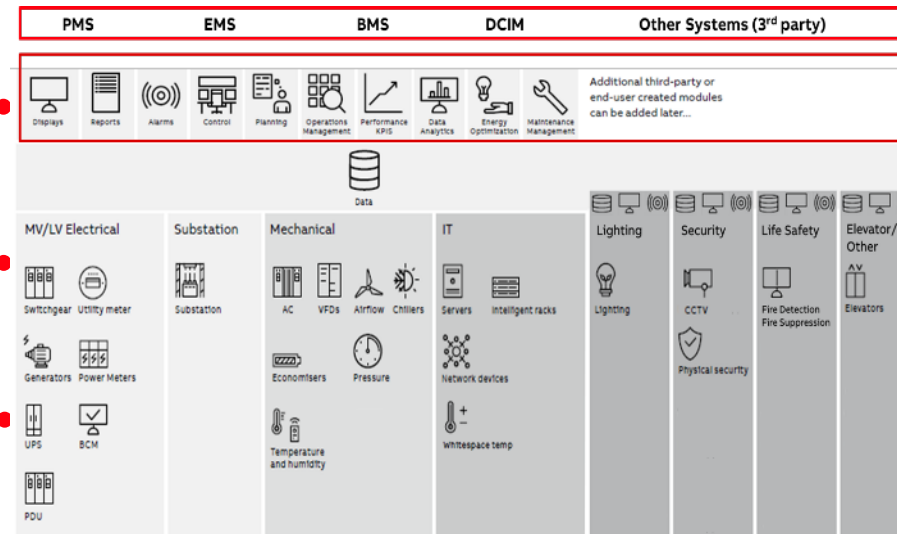
“Control, Monitoring and Optimization for your Mission Critical Infrastructure, with mechanical (BMS), electrical (EPMS/EMS), SCADA and DCIM capabilities in a single, industrial solution”

- Highly scalable, fault tolerant and modular providing a true single Pane of Glass
- Redundant & Truly Hot Swappable hardware
- Scaling from 100 to 1,000,000 I/O Signals
- Cyber Secure – System hardening, whitelisting
- High MTBF , Low TCO
- Vendor agnostic that Connects to everything
- Provides Seamless data exchange for Digital AI/ML based Deep Analytics & Optimization

Digital Ready
Secure data access, for
AI/ML based Analytics
and Optimizations

Modular and
Highly scalable
in functionality
and size

Cyber
Secure



Secure Data access via
MQTT, OPC/UA
BACnet, SNMP, MODBUS,
IEC61850

Industrial grade
hardware with
higher MTBF &
lower TCO

Truly vendor
agnostic
Connects
everything

ABB Ability™ Energy and Asset Manager for Data Centers

Scalable Monitoring Solution

Standard solution to fit all needs

ABB Ability™ Energy and Asset Manager is a predesigned solution by ABB for data centers

- Uniform, scalable rapid deployment
- Simplicity of installation
- Increase energy efficiency
- High reliability
- Shift from calendar based to preventive maintenance to save resources
- Remote monitoring of multiple data center fleet
- Real time PUE monitoring

Market requirements

33.6%
Outages are due to on **premises power distribution failures**

Up to **20%** of **total electrical energy** is wasted by distribution losses

50% reduction in **project time** for a new data center

Up to **35%** of space is occupied by **power distribution equipment**

ABB solutions

Minimize electrical **distribution losses to 5%**

95% reduction in **design time** for electrical distribution of a new data center

Up to **40%** **footprint reduction** for electrical distribution equipment

Discover ABB solutions for data centers serving 5G, Smart Cities and IoT technologies



Smart insights

Benefits of digital data center solutions



Simplicity: Digital systems are easy to monitor and maintain. Require little to no operational downtime to install.



Savings: Condition monitoring of crucial electrical components pave the way for simpler troubleshooting and energy savings, lowering total cost of ownership.



Speed: Reduction in hardware and wiring improve speed of manufacturing and installation



Safety: Monitoring and replacement of components can be done remotely, reducing personnel exposure



Sustainability: Digital solutions provide intelligence to minimize electrical distribution losses and monitor energy usage

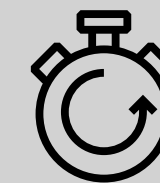




SMART



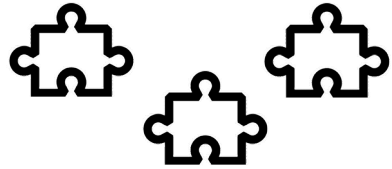
SPEED & SCALE



SPEED & SCALE

Packaged solutions that improves speed to deployment

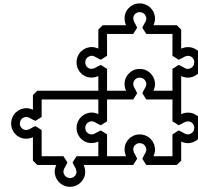
Packaging solutions



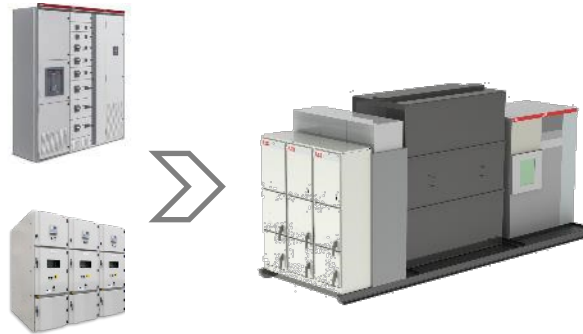
Product packages



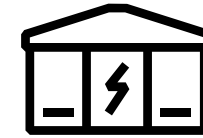
Integrated and prefabricated solutions



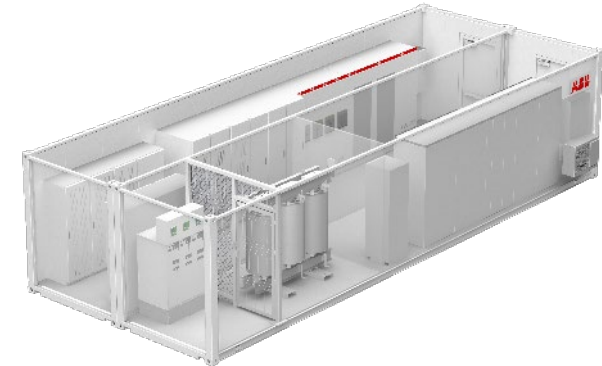
Custom eHouses, Skids



Predesigned, pre-engineered and integrated solution



Pre-defined eHouses, Skids and packages



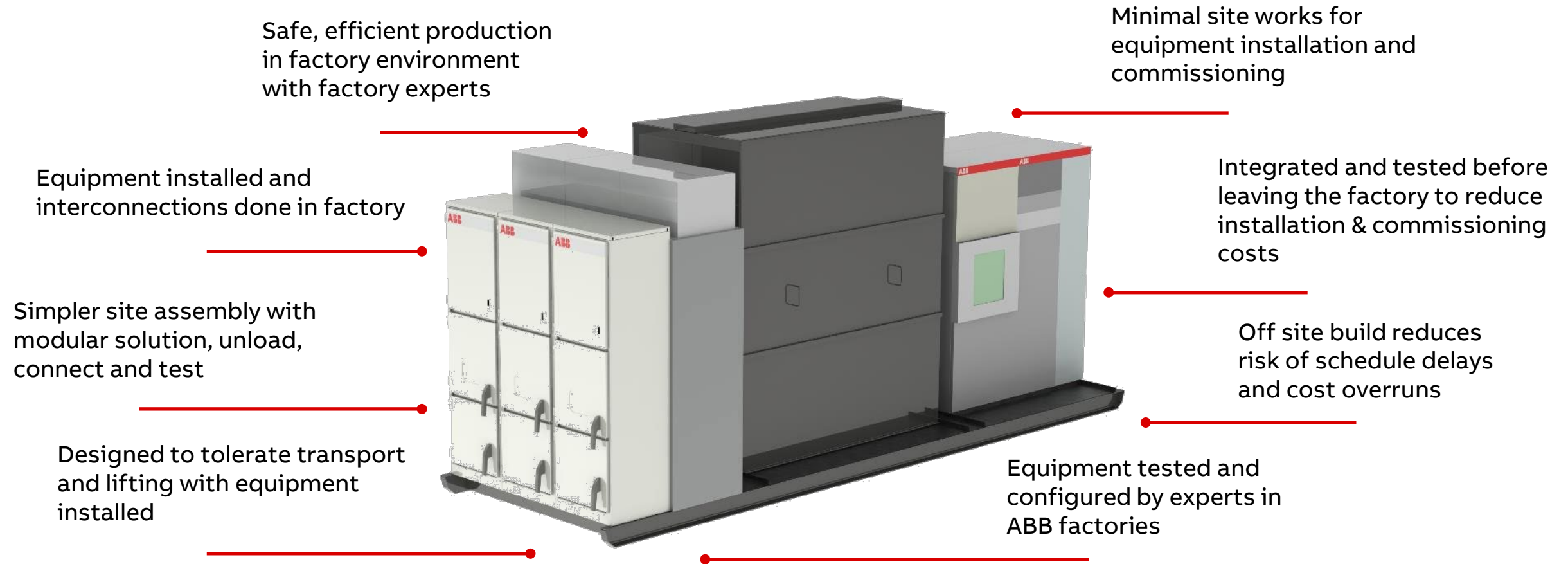
Integrated and prefabricated solutions

Prefabricated custom eHouses designed for speed and scalable operations



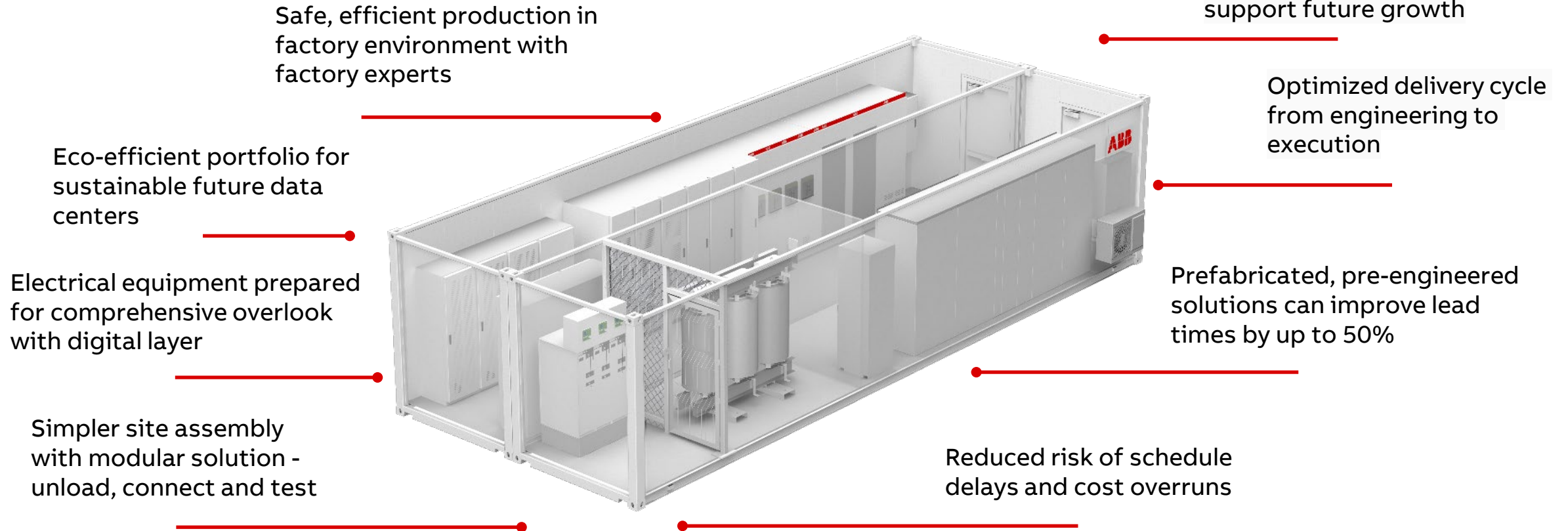
Integrated and prefabricated solutions

Prefabricated, custom Skids



Improve speed to deployment

Prefabricated, pre-engineered integrated solutions

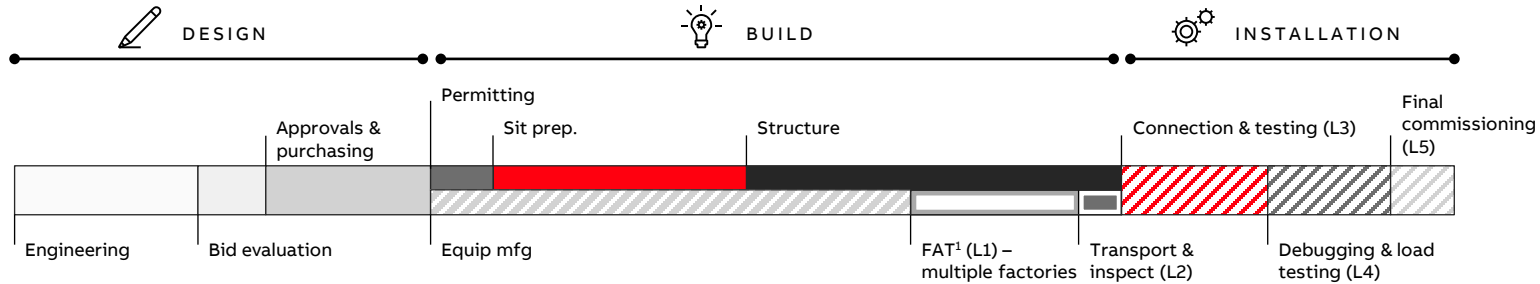


Improve speed to deployment with prefabricated solutions

Power module

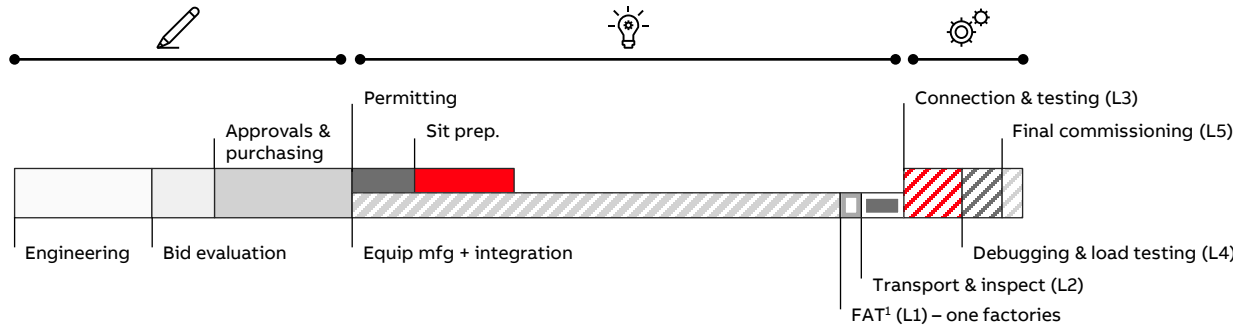
1

Traditional on-site build "stick built"



2

Prefabricated off-site eHouse or skid

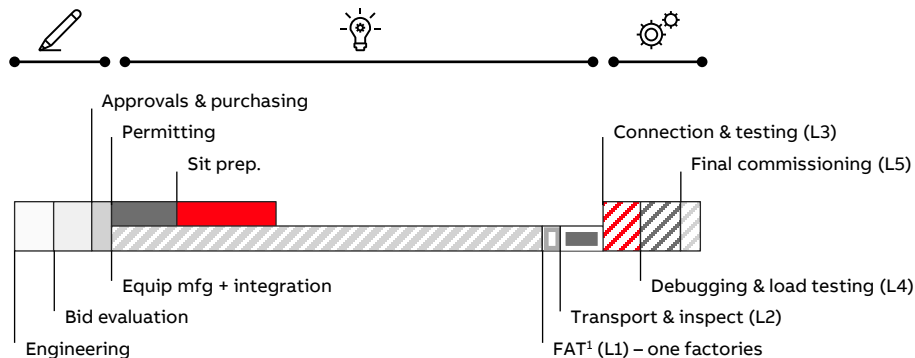


30%

improvement over traditional

3

Predesigned, prefabricated off-site eHouse or skid



50%

improvement over traditional

20%

improvement over prefabricated

1. Factory Acceptance Testing

Impact of speed and scalability on revenue

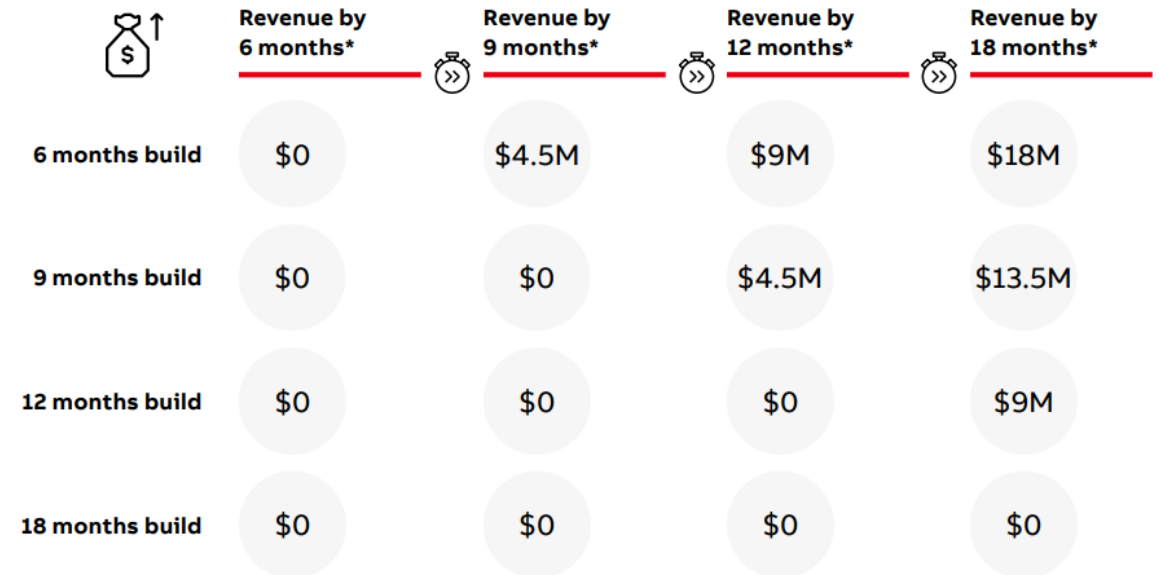
Colocation example

Factors that improve speed to deployment:

- Concurrent build and manufacturing
- Turnkey modular and scalable solutions
- Pre-engineered - reduced need for engineering and approvals
- Prefabricated - reduced integration and siteworks need
- Plug and play - reduced commissioning and troubleshooting need

Mitigate the risks of:

- Labour shortage
- Cost and time slippage
- Logistics challenges



*Based on a 10MW lease at \$150 per kW per month

Start earning revenue as soon as possible!

Additional data center scalable solutions that support “pay as you grow”

Smart metering and monitoring

Digital, plug and play solutions that monitor the entire electrical system to achieve optimal energy efficiency



Communication

Devices that interact and collaborate to identify system inefficiencies



Power solutions

Solutions that ensure consistent energy at all times



Speed and scalability

Preparing for future growth



Improved speed of deployment through prefabricated and pretested solutions, cutting data center lead times from several years to 18 months or less



“Pay as you grow” model to pace capacities and expenses as the facility develops



Medium voltage solutions which offer longer life spans and relatively lower equipment failure rates that can be optimized for future growth

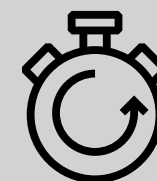


Service level agreements that provide professional collaborative assistance, both onsite and virtually





SMART



SPEED & SCALE



SUSTAINABLE

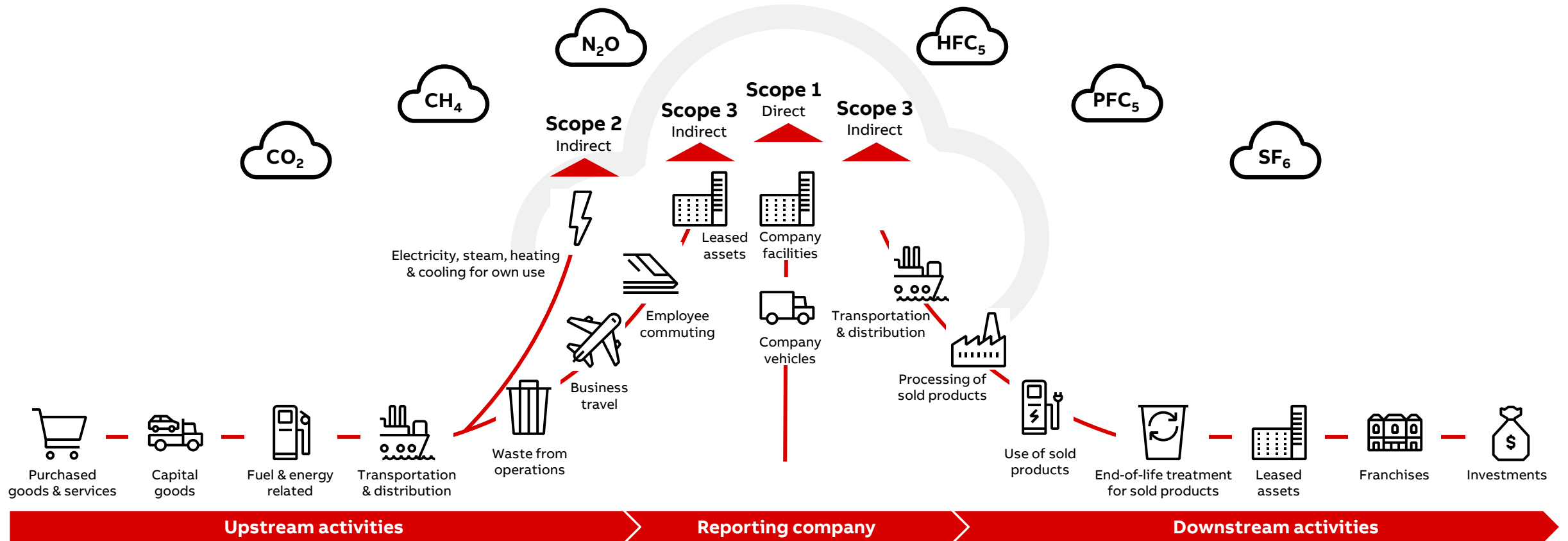
Sustainability in data centers

To realize sustainability in data centers, facilities must define and implement definitive ways to achieve energy efficiency, and energy conservation – for its customers, society, and the planet.



Sustainability overview

Green House Gas (GHG) emissions are typically categorized according to scope 1 (direct), scope 2 (indirect, internal) and scope 3 (indirect external)



Sustainability in data centers

How to reduce GHG emissions

Responsible sourcing



Source of energy

- Renewable generation (PPA)
- Reduction of fossil fuels
- Grid participation

Efficient consumption



Optimized topologies

- Design, engineering – sustainability by design
- Workloads and utilizations
- State of the art technologies
- Stranded capacity, “lightened redundancy”

Lifecycle responsibility



Asset performance

- Energy efficiency & energy management
- Circular economy & end of life management
- Routing, supply chain vendors re-use/re purpose (retrofit/fill)

How ABB supports data center sustainability - Energy efficiency

Challenges

There are two main challenges when it comes to the energy efficiency of a data center: to build an energy efficient data center and to be able to maintain or improve data center efficiency over the years

ABB solution

- ✓ High-efficiency **power distribution solution** can decrease distribution losses down to 5%
- ✓ Best-in-class efficiency and proven DPA technology for maximized availability in **back up power**
- ✓ Devices with embedded meters allow ease of implementation of 1% accuracy **measurements and monitoring** on all data center levels to ensure energy efficiency improvements based on accurate and detailed information

Up to

20%

of total electrical energy goes to distribution losses (UPS, cables, transformer, etc.)

Reduce to

5%

Electrical distribution losses

97.4%

UPS efficiency on a system level in a double conversion mode

1%

Accuracy measurements and monitoring on all data center levels

HiPerGuard

Medium Voltage UPS based on ZISC architecture



Uninterruptible Power Supply (UPS) that provides a continuous and reliable power supply of up to 24 kV for mission critical facilities.



Leading efficiency UPS - 98% at 50% to 100% loading – reduces CO₂ emissions by 1,245 tons throughout the lifespan of the product.



Scalable power from 2.25MW up to 22.5MW in parallel allows load growth with less stranded capacity, minimizing CAPEX.



Event analysis and waveform capture. Remote monitoring and diagnostics. ABB Ability™ to increase productivity and safety at lower costs.



Additional revenue streams - system energy storage reserve available for grid support services or peak shaving.



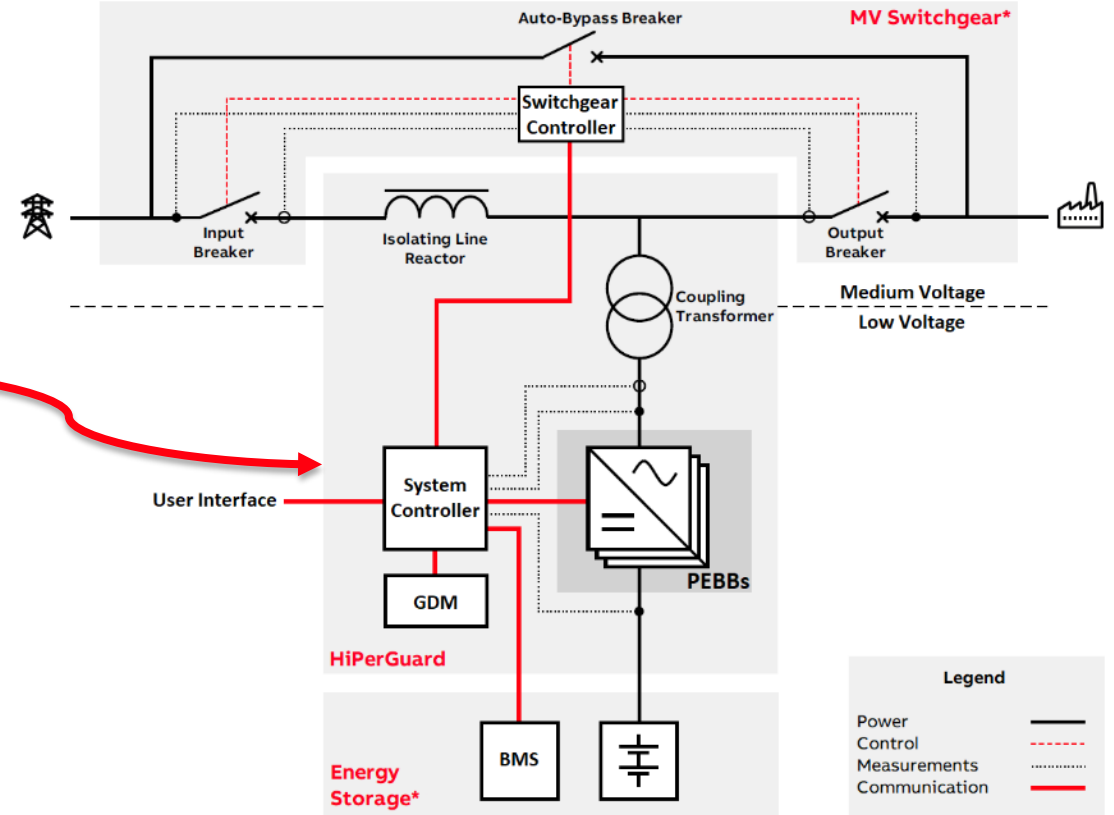
Up to 10 years - intervals between intrusive maintenance.

ABB's industry-first medium voltage Uninterruptible Power Supply



HiPerGuard MV UPS

Overview



*MV Switchgear configured to suit project and not shown in this presentation

*Energy Storage configured to suit project and not shown in this presentation

HiPerGuard MV UPS

Why HiPerGuard?

High Availability

Up to 10 years intervals between intrusive maintenance.



High Power

Scalable power from 2.25 MW up to 22.5MW in parallel allows load growth with less stranded capacity, minimising CAPEX.



High Performance

IEC 62040.3 Class 1 load protection providing load isolation from the network with sub-cycle response load conditioning



High Efficiency

Leading efficiency UPS – 98% from 50 to 100% loading.



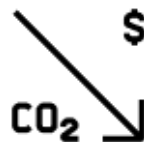
Grid Support

Of the system's energy reserve available for grid support services or peak shaving.



1,245 TONNES

CO2 emissions are reduced by 1,245 tons throughout the lifespan of the product.



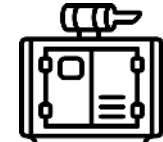
Saving Whitespace

Protecting the entire facility from the outside, reduced cabling, saving valuable whitespace



Versatile Backup

Supporting use of all backup technologies: slow paced generators, turbines, turbo generators, fuel cells etc.



MegaFlex DPA

Low Voltage UPS based on ABB's decentralized parallel architecture - DPA™



Flexible, scalable power From 250 kW to 1,500 kW or 1,250 kW N+1



Sustainable power technology Best-in-class efficiency of 97.4% in double conversion mode and > 97% with variable load



Maximized power density Up to 45% footprint saving



Simple and safe installation Wire-free power frames and slide-in power modules for safer connection



Maximized availability using proven DPA technology Each module is independently functional with inherent redundancy between UPS modules



Concurrently maintainable power modules for continuous uptime Plug-in design make it easy and safe to hot swap



Design life of up to 15 years Reduces the cost of system replacements over the product lifespan

**Meet the best and most reliable UPS
on the market**



ABB MegaFlex DPA IEC UPS

The best in power protection for your critical infrastructure

1500 kW

Smart, scalable and flexible power on business demand

97.4 %

Market-leading efficiency in double conversion mode. Rising to 99.4 percent efficiency in VFD ECO mode

45%

Footprint savings inside the high-density computing rooms



15 years

Design life reducing the cost of system replacements over the infrastructure lifespan

30%

Reduced energy losses

427 tons

CO₂ emissions reduction over the product lifespan

Sustainable by design

Labels

We commit to provide all the data to achieve Green Building Certification (LEED or BREEAM) in the categories:



Sustainable sites
reduction of CO2 emissions



Energy and Atmosphere
smart energy management reducing energy consumption and waste



Material and Ressource
predictive maintenance reducing material waste and operating cost



Eco-friendly innovations

PrimeGear ZX0 non-SF6 gas insulated switchgear

Background

In 1997, the Kyoto protocol identified SF₆ as one of the six main greenhouse gases (GHG), with a global warming potential 23,900 times that of carbon dioxide and atmospheric residence of up to 3,200 years.

ABB solution

- ✓ **PrimeGear Zx0**, an eco-efficient gas insulated switchgear that is **100% SF6-free**
- ✓ Offers compact low-pressure design with 25% less footprint
- ✓ With enabled monitoring and diagnostics to track asset health
- ✓ Can withstand wide range of temperatures and climactic conditions



Operational efficiency with low global warming potential

NeoGear™

Join the switchgear revolution



Modular low voltage switchgear with performance options up to 400/415 V, 3200 A and 80 kA



Up to 20% less heat dissipated saves energy and lowers cost thanks to excellent cooling efficiency



Revolutionary design eliminates hazardous exposure to live busbar parts (Arc ignition protected zones) and keeps maintenance personnel safe



Withdrawable and plug in functional units for motor protection or energy distribution



Integrated data collection and data analysis with ABB Ability™ Condition monitoring for electrical systems for onsite access through secure browser technology

Set the new standard for the switchgear safety



Eco-friendly innovations

Sustainable back-up power

Background

With millions of people consuming and transmitting massive amounts of data, data centers are required to have measures in place to avoid outages and downtime.

ABB solutions

- ✓ **Battery energy storage solutions** that are pre-engineered and factory tested and designed with durable equipment to maximize product longevity
- ✓ **Modular microgrids** that offer cost-efficient distributed power generation while maximizing the use of renewable energy sources
- ✓ **Hydrogen fuel cells** that will provide clean energy without adverse environmental impacts



Operational efficiency with low global warming potential

Sustainability

Steps towards reduced CO2 emissions



Digital power and energy management solutions to monitor and reduce energy consumption while optimizing operational productivity



Optimized system design for efficient consumption and reduced footprint



Green technologies for back-up power such as Battery Energy Storage and Fuel Cells



Lifecycle responsibility enabling upgrades and retrofits and eliminating “rip & replace”



ABB climate ambition

Our 2030 commitment

We enable a low-carbon society

Scope
3

6,500¹

Upstream



- Impact mapping & actions
- Engage with major suppliers
- Supplier framework & Supplier Code of Conduct including environmental aspects

Scope
1+2

670

ABB

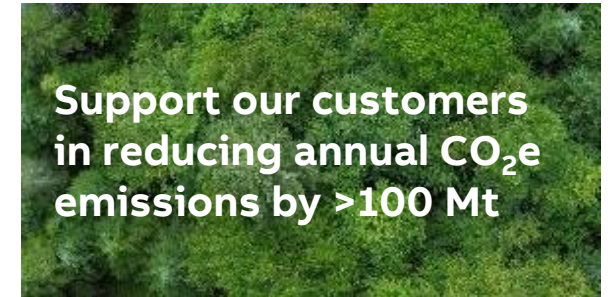


- Reduce our Scope 1 and 2 CO₂ emissions by at least 80 percent through:
- Renewable electricity
 - Non-emitting fleet
 - Energy efficiency

Scope
3

> 100,000

Downstream



- Initial cases for a no-regret target
- Third-party validation
- New business cases to trigger more action & impact over time

5

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Data Center Services

Services for electrification products and solutions

Overview



Service solutions, extensive legacy offering and spare parts support successful **life cycle management** with the customer



Service offering covers circuit breakers, protection relays and switchgear **in solar, EV-charging, low and medium voltage** applications and advanced **digital services for predictive maintenance**



Service Centers in **more than 52 countries** with additional reach in several allocated countries



~2600 certified service experts worldwide

Services for electrification products and solutions

Our offering - to support the entire asset lifecycle



myIB for mapping installations
myABB for customer access to data

ABB Service Solutions

My Site Condition and Risk Assessment



Electrical Plant Assessment to evaluate the status of the equipment and the relative risk of failure and/or malfunctioning to prevent damage to people and production stops

Network Analysis



Short Circuit Calculations, Arc Flash Studies. Advise on how the network is performing and the relative optimization

Training, Procedure Developments and Engineering Studies



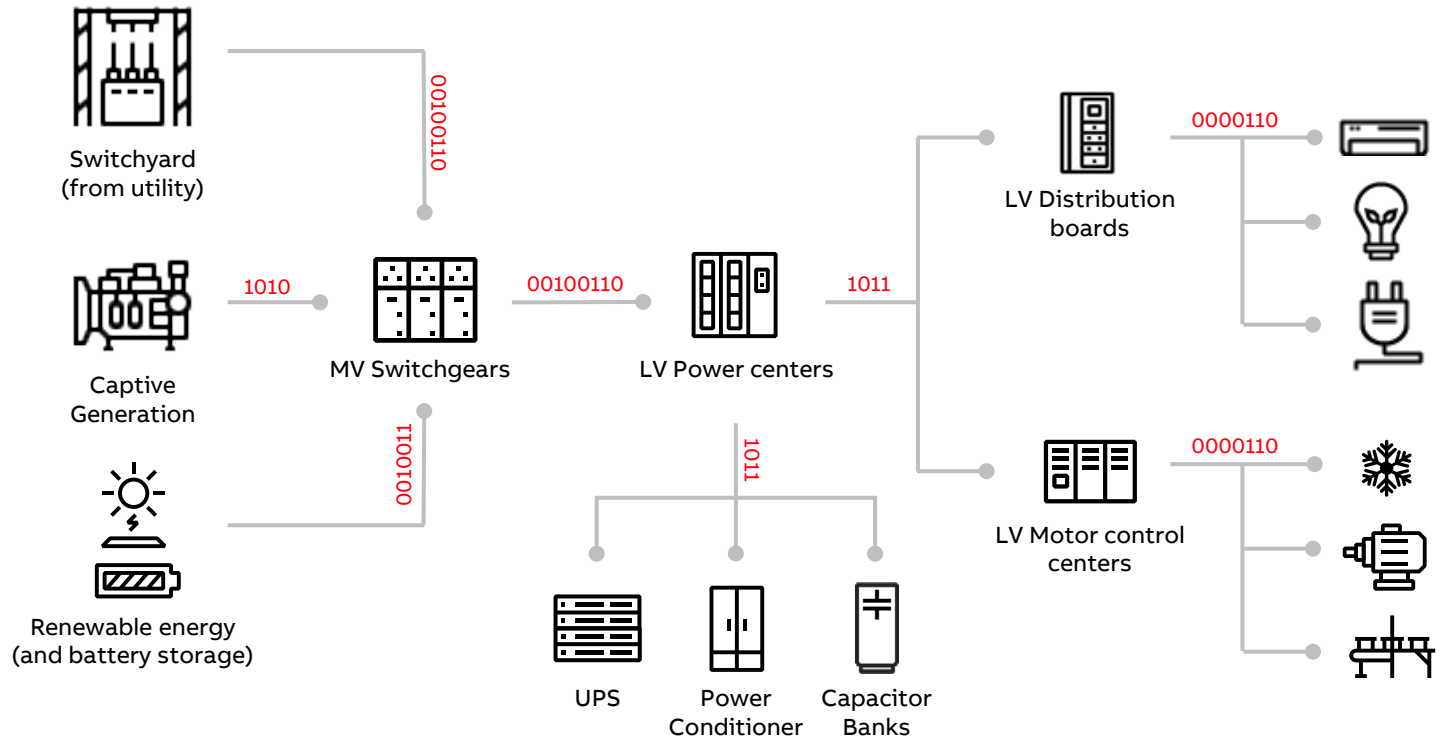
Complete and modularized program to assist the customer in any phase to develop his own competence as well as advising on how to maintain and optimize the plants

Installation and Commissioning



Full assistance in all phases (can be combined with trainings)

Discover how to upgrade your electrification system, reduce the costs and increase efficiency of your plant



Example of a Food & Beverage electrification system

Providing reliable service and employee safety via Augmented Reality

Address system and equipment issues with immediate first level support

Collaborative Operations for electrical systems - CLOSER



Fast and efficient first level support
via interactive operations and troubleshooting guides



Easily understood guidance
through an immersive augmented reality experience



Connection with an ABB technical expert
if further assistance is needed, through Remote Assistance for electrical systems - RAISE

Remote Assistance for electrical systems - RAISE



Continuous Operations
simplifies service assistance by reducing downtime, increasing equipment effectiveness and improving safety



Ease of use
Collaboration between ABB Experts and Field Operators is facilitated via augmented reality technology



Sustainability
Reduced CO2 environmental impact resulting from limited travel requirements.

Reliable and professional technical support on demand

Collaborative Operations for Electrical Systems – CLOSER

Getting started in 4 steps

1 Download the app

Look for “ABB CLOSER” in [Google Play](#) or [Apple App Store](#)



CLOSER

2 Log in or register

Enter your ABB credentials or – if not yet registered – sign up through the dedicated link



3 Check the disclaimer

Read the disclaimer carefully as it concerns safety, ABB’s first priority



4 Get fast and easy support

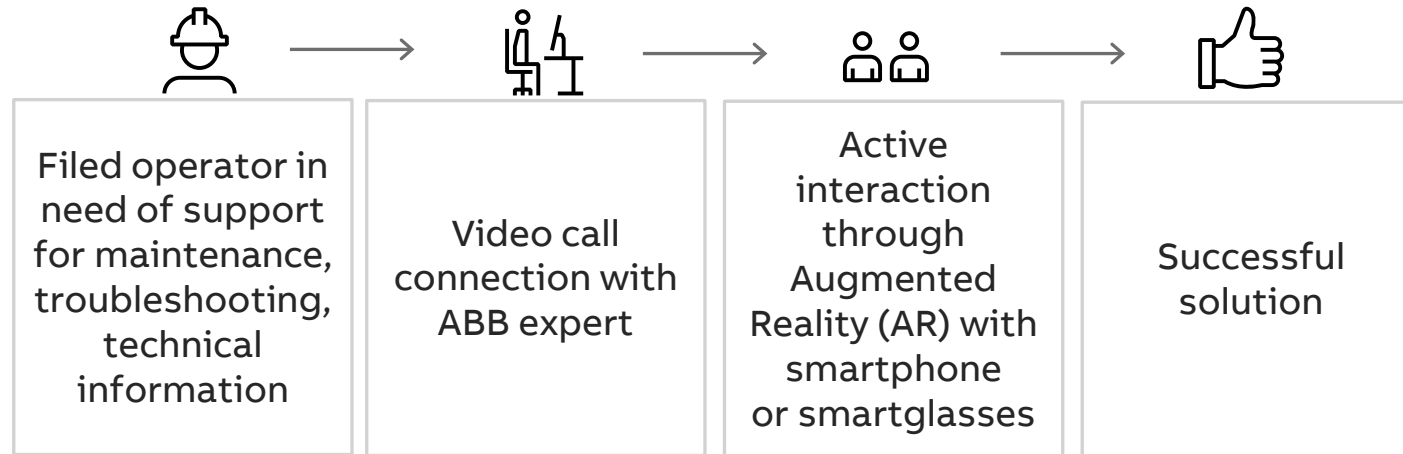
Select the product and review operational and troubleshooting procedures for each product section



Remote Assistance for electrical systems - RAISE

Idea

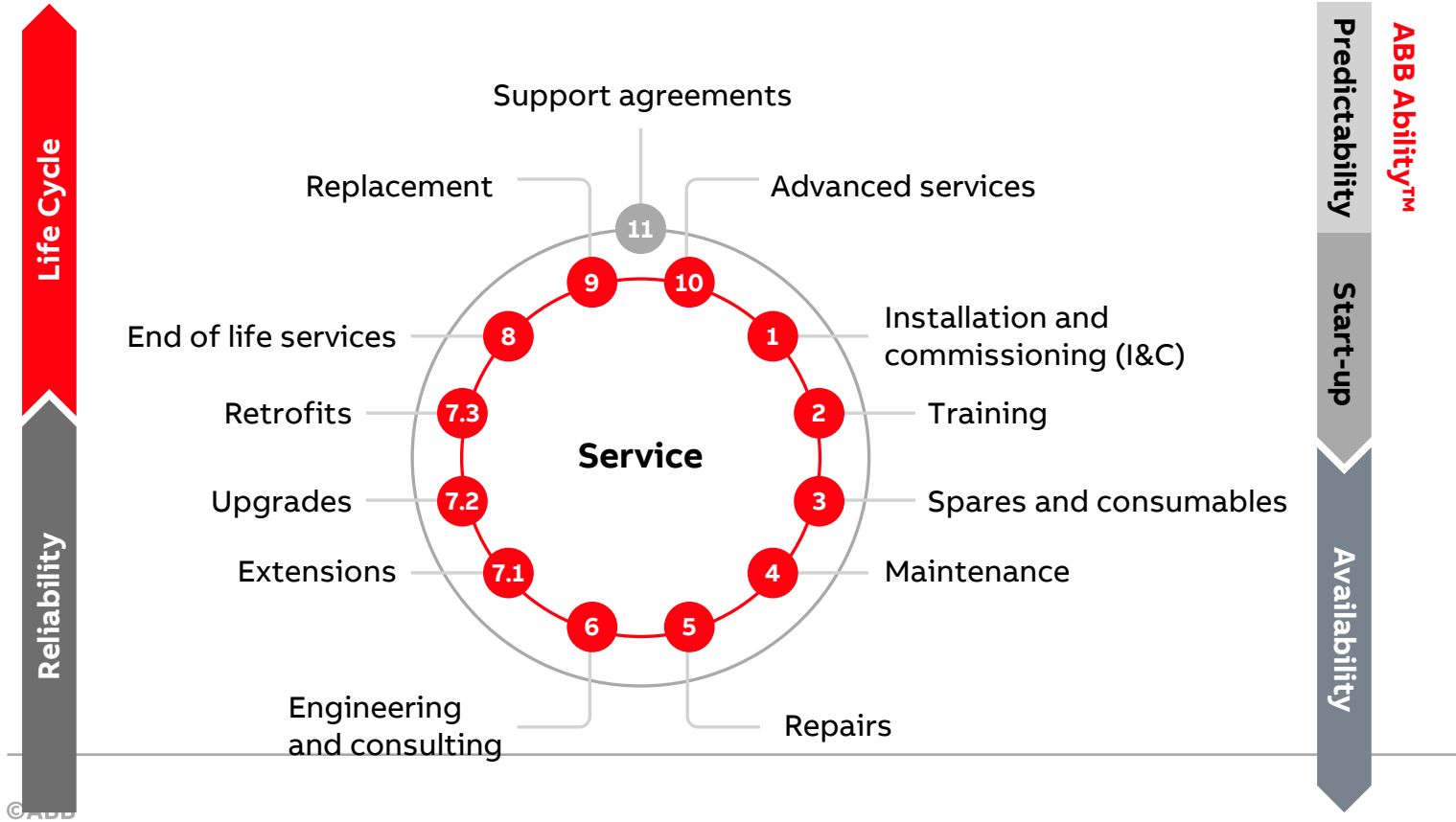
Remote Assistance is a live video sharing service solution that improves interaction by allowing ABB Experts to remotely interact with field personnel and “see what they see”



Augmented reality to bring ABB expertise and knowledge when and where you need it

ABB Service

Global Support Structure with dedicated teams in +52 Countries



We drive services for safe, smart and sustainable electrification

Support your entire asset lifecycle availability, reliability and predictability

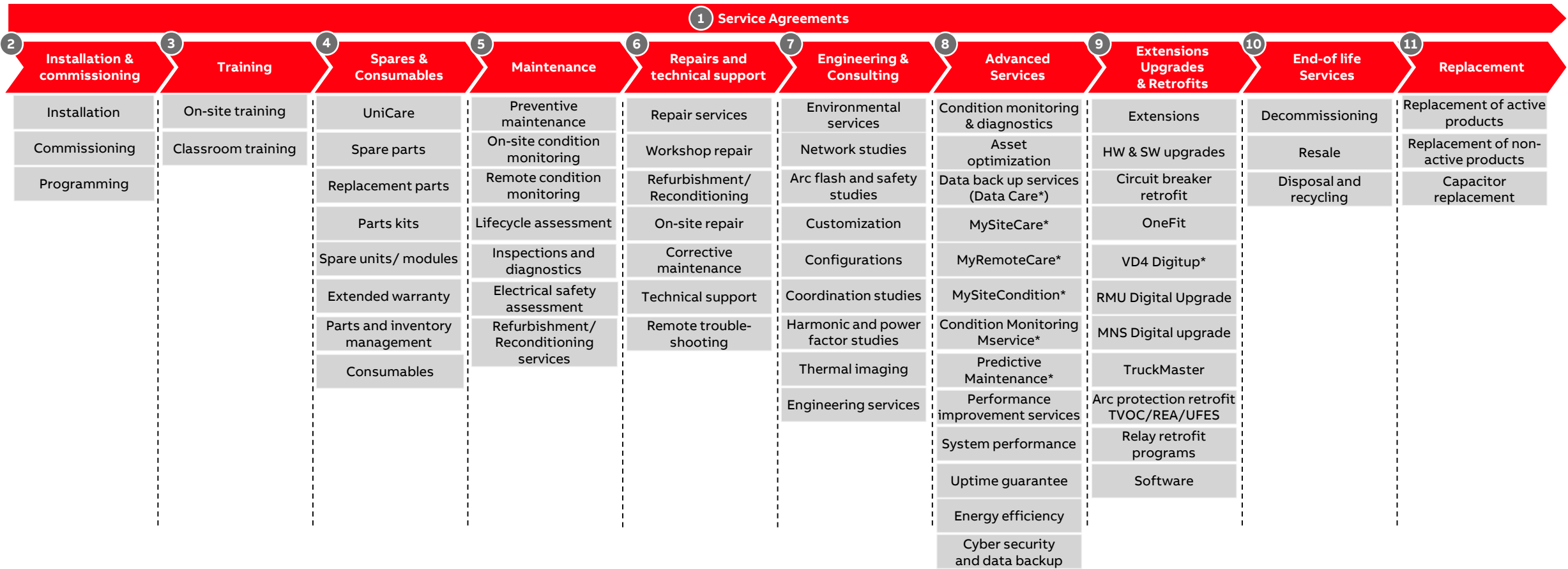
Trusted partner in ensuring **your safety locally and remotely**

30% of failures caused by environment or insulation – addressable with **new devices**

Modular functionality with scalable options to **match your site and budget**

Services for electrification products and solutions

Various services with dedicated products for keeping the power on



Distribution Solutions

Service sites 2020



Europe

United Kingdom: Coleshill
Switzerland: Baden
Czech Republic: Brno
Germany
Ratingen (MV)
Ladenburg (LV)
Finland: Vaasa
Italy: Dalmine
Norway: Skien
Poland
Lodz
Bielsko Biela
Russia: Moscow
Turkey: Kocaeli
Netherlands: Rotterdam
Belgium: Zaventem
France: Cergy Pontoise
Spain: Sant Quirze del Valles
Sweden: Västerås
Denmark: Fredericia
Greece: Metamorphossi
Ireland: Tallhagt
Estonia: Jüri

Middle East, Asia & Australia

Australia: Moorebank
China: Xiamen
Egypt: Cairo – 10th of Ramadan City
Indonesia: Tangerang
Qatar: Doha
India
Nashik
Korea: Cheonan-si
Malaysia
Subang Jaya
Saudi Arabia: Al-Khobar
Singapore: Singapore
Thailand: Samutprakarn
South Africa: Modderfontein
Taiwan: Taipei City
UAE
Abu Dhabi (MV)
Dubai (LV)

Americas

Canada
Brampton,
USA
Florence, SC
Mexico: San Luis Potosi
Peru: Lima
Brazil: Sorocaba
Chile: Santiago
Argentina: Esteban Echeverria





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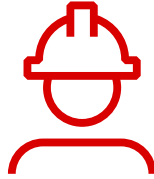
**Why partner
with ABB**

Why partner with ABB for your data center requirements



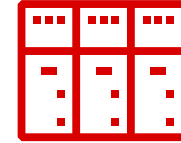
Ensure supply

ABB's global footprint provides a vast network of suppliers and factory locations



Local support & service

Locations in 100+ countries and over 100K employees



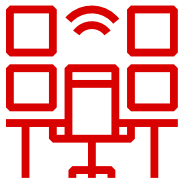
Complete portfolio

Solutions for GB, IEC, and ANSI standards and ability to harmonize across all standards



Domain expertise

100+ years electrical / utility connection knowledge to ensure data center design meets local codes and standards



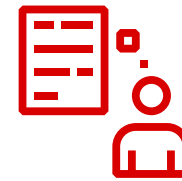
Lifecycle management

Ensure long-term management of the electrical system with ABB's digital solutions



Reduce risk

Cutting-edge technology built to the highest quality standards



Ease of doing business

One stop shop with a common project manager and harmonized terms, payment schedules and warranty



Avoid costly schedule delays

Library of pre-engineered solutions, optimized for footprint, scalability and ease of deployment



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Our Team

ABB Data Center Organization

Group Solution Leader- Data Center
Brian Johnson (US)

Solution Accounts Management

Google – Ted Ioannou (US)

Amazon – Ray Prince (US)

Microsoft– John Smith (US)

Apple & Facebook – Doug Whitmer (US)

Intel & Equinix – Randy Smith (US)

Alibaba – Joseph-Zhen Bei (CN)

Global / Strategic Accounts Responsibility

Regional Solution Sales Leaders

Brian Davis – Americas (US)

Kent Chow – AMEA (SG)

Robin Koeken – Europe (NL)

ChunHua Xiao – China (CN)

All Market/Country Solution Sales Managers Responsibility

Solution Enabling Functions

Business Development Leader
 Dave Sterlace (US)

Solution Generation Manager
 Danel Turk (EE)

EUR Bus Development Specialist
 TBD

ME Bus Development Specialist
 TBD

APAC Bus Development Specialist
 TBD

Solution Marketing Leader
 Pam Cannon (US)

Marketing Specialist
 Terje Tammemaee (EE)

Marketing Specialist
 Angela Isidro (PH)

Solution Specific Functions

Division Solution Leaders

ELDS –	Danel Turk ai
ELSP –	Aleksander Grbic
ELSP (PP) –	Daniel Rodrigo Pozo
ELSB –	Nico Ninov
ELIP -	Brian Barr
EL Service –	Lee Todd
IAPI –	Madhav Kalia
MO –	Frank Grundholm

- Division Solution leaders report into their business line and are responsible to ensure :
- Close support on supply/demand.
 - Up to date business line value propositions to support overall segment proposition.
 - Major pursuit support and business line sales interface.
 - Business line portfolio management.

Data center solutions contacts

Leaders by geography

Region	Europe	China	AMEA	Americas
Region leaders	Robin Koeken	ChunHua Xiao	Kent Chow	Brian Davis
Country/territory leaders	Michael Lindenthal – AT Joergen Bjerg – DK Timo Kontturi – FI Hatem Bouzidi – FR Karl Kimmig – DE Vjekoslav Vorih – HR Tom Fitzgerald – IE Meir Shai - IL Vincenzo Velardi– IT Freek van Alphen – NL James Madden – UK TBD – NO Rafal Krakawski – PL Vitaliy Morozov – RU Luis-Antonio Gaité – ES Niklas Lindblom – SE Daniel Oppliger – CH Onur Ozdemir – TR	Hank-Fuihan Wong – HK Joseph-Zhen Bei – CN Beck-PeiChao Zhang – CN Tim-Longhai Liang – CN Dick-Yan Ma – CN Susan-XiaoSong Liu – CN Alina-LiNa Zhang – CN ZhaoYang Ji – CN David Zhou – CN Cindy-Ying Yao – CN Chen Tian – CN Chandler-Qiang wu – CN Frankie-Jun Zhang – CN Chunhua Xiao – CN	Yacine Matouk – DZ Narain Chandwani – AU Subrata Dey – BD Mohannad Akram – EG Vaibhav Patwardhan – IN Joedy Joedy Lim – ID Shuya Morita – JP Abdella Ammar - MA Marcus Wan – MY John Sebastian – PH Jobran Mrad – QA Shahrukh Ashhar – SA Wong Kai Koon – SG Bradley James – ZA Park Soon Yong – KR Jeff Chou – TW Parinthon Pakdeenork – TH Biju Philip – AE Hien DoanVan– VN (a.i.)	Mark Breno – BR Hector Velandia – CO Matias Duran - CL Leonard Apps – CA Humberto Alarcon – MX Brian Davis – US
Colocation segment leaders	James Madden TBD		TBD	Randy Smith – US West* Marla Linton – US Mid* Glen Chofay – US East*

ABB