ABB in data centers
Comprehensive products and systems for your most critical infrastructure
The data center is the most crucial asset for nearly any 21st century enterprise. Therefore, its infrastructure never should be merely pieced together from commercial-grade components. Rather, the data center must be viewed as a coordinated, optimized facility that is built to be an intelligent, highly efficient and immensely reliable operation.

That is why data center designers and developers all across the globe recognize the benefits of relying on ABB as a key partner for their most critical equipment and systems. They benefit from ABB's decades-long record of industrial success in power and mission-critical process automation, which lays an unsurpassed foundation for the comprehensive packaging of data center infrastructure and service for the decades ahead.

While other companies may assemble data center systems from components designed for commercial and office sites, ABB offers inherently reliable, robustly designed and environmentally compatible products and systems tailored to meet the needs of any data center.

The value of ABB systems to the data center operator is evident not only in the quality of individual products but also in ABB's focus on developing and implementing whole systems, from power delivery and distribution to micro-grids and automated monitoring and control of the entire data center.

This holistic approach ensures that, end to end, the data center’s systems are optimized and extensively automated through intelligent facility management software. As a result, operators more readily attain performance goals through data centers that simplify maintenance, enhance reliability, increase safety and reduce the possibilities of human errors.

Data center operators require solutions designed to fit their specific needs, and therefore a supplier with extensive capabilities and engineering know-how can be a valuable partner. ABB serves this role by offering expertise in four critical areas:

**Power distribution**
ABB optimizes high-, medium- and low-voltage switchgear, advanced circuit breakers, high-efficiency transformers, solid-state transfer switches, digital controls and other products to ensure data centers remain online and operate efficiently.

**Intelligent grid connections**
ABB Decathlon® automates power and energy management; allows intelligent asset and capacity planning; and incorporates alarm management, remote monitoring and other key data center functions.

In each of these arenas, ABB keeps moving, inventing, growing and answering the requirements of forward-thinking data center owners and operators.

**Critical power**
ABB provides critical power systems that are built around modular uninterruptible power supplies (UPS) and gensets. UPS modules are used for continuous power protection and can be serviced quickly without disturbing operations. For emergency back-up power, ABB technology enables dozens of gensets to be strung together, eliminating the need for expensive paralleling switchgear.

**Data center infrastructure management**
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This holistic approach ensures that, end to end, the data center’s systems are optimized and extensively automated through intelligent facility management software. As a result, operators more readily attain performance goals through data centers that simplify maintenance, enhance reliability, increase safety and reduce the possibilities of human errors.
Decathlon® is built on proven industrial control systems that ensure reliability through redundancy and renowned quality, with the flexibility to scale. Decathlon benefits include:

- System availability and performance
- Capacity planning and management
- Resource forecasting and energy planning
- Facility and IT automation
- Troubleshooting and root cause analysis
At the center: Power distribution

ABB’s wide-ranging experience in the industrial sector has been fundamental to its reputation for extremely reliable, robust and environmentally responsible data center power distribution systems. ABB has built power distribution architectures for almost every conceivable industrial application, with implementations around the world, and can design, coordinate, implement and commission a full range of data center distribution systems and subsystems in a single package.

The foremost goal in power distribution is to provide the highest reliability with improved energy efficiency and cost savings. In recent years, the growth of big data, digital devices and digital sources pouring petabytes of data into data centers has elevated concerns about energy efficiency and carbon footprints to unprecedented levels. From its background with industrial enterprises, ABB has far-reaching experience and can help address these issues. While the increasing emphasis on cost, environmental sustainability, energy and cooling efficiency may be new to the data center segment, it is not new to ABB.

Innovations for the data center address these challenges. For example, ABB’s intelligent switchgear offers concurrent maintainability: individual elements of the switchgear panel board can be maintained while the system continues to operate without taking the data center offline, thereby maximizing efficiency and improving reliability.

ABB helps enterprises uncover new ways to achieve a given performance level within a particular standard design, and by looking at the entire power distribution chain, ABB optimizes the whole system. Optimization becomes difficult or impossible when engineering companies assemble isolated pieces and subsystems acquired from multiple vendors who do not maintain a holistic view of the operation of their products in relation to others in the center. ABB provides all the data center’s power distribution systems and subsystems, ensuring one cohesive design to optimize cost while maximizing performance.

ABB’s power distribution systems are built on a long history of reliability, robustness, sound design and safety with utility and industrial customers. Moreover, ABB manufactures these top-quality systems globally, and has expert teams that understand local codes and standards in every geography.

Additionally, ABB is making strides to advance direct current (DC) products that, when used appropriately alongside alternating current, can be a powerful tide for simplifying data center operations, dramatically reducing equipment and energy costs and building a data center environment that is both safer and greener. In fact, ABB has installed the world’s most powerful DC data center in Switzerland at the Green Data Center Zurich-West facility, which earned Europe’s notable Watt d’Or award for the scale of the energy savings achieved through its pioneering use of DC technology.

In these and other areas, ABB research has adopted an open-minded approach to look beyond the current state of data centers and to prepare for ongoing change with relentless innovation.

Intelligently connecting to the grid: From substations to smartgrids

With more than a century of experience with the utility industry and in connecting the world’s industries to power sources, ABB is an expert in substations and grid connections; and its technologies for air-insulated (AIS), gas-insulated (GIS) and hybrid switchgear provide a high degree of reliability, safety and ease of maintenance.

In advancing its grid initiatives, ABB has successfully implemented bi-directional microgrids as well as utilized renewable resources like wind, solar and photovoltaic. For data center applications in development, this would allow power flow to the data center from the external grid and direct excess power to the grid from the data center’s assets such as renewable resources and even conventional emergency generators. This approach also enables delivery of power to and from distributed systems, creating a multidirectional grid.

With these considerations in its designs, ABB can offer advanced micro-grids that enable data centers to use local generation sources and energy storage systems—such as flywheels, fuel cells and battery storage technology—to ensure reliable supply of electricity to the center. This capability allows the data center to be islanded from the utility company and to supplement the grid itself, transforming the data center into a revenue generator.
The whole enterprise: Data center infrastructure management

ABB Decathlon® data center infrastructure management (DCIM) is an approach to optimizing entire enterprises that is inherently different from building management systems (BMS), which are less comprehensive.

ABB Decathlon is built on precise, powerful, proven industrial control systems, ensuring reliability through redundancy and renowned quality, as well as a flexibility to scale for the most ambitious vision. By relieving data center managers of time-consuming tasks and furnishing them the system intelligence required for decision-making, Decathlon automates energy and cooling management; asset and capacity planning; alarm management; remote monitoring; and other key data center functions.

Decathlon enables data center administrators to predict future needs at any point and to analyze real-time pricing and capitalize on opportunities for demand-response load shifting. Decathlon also can execute trades and takes advantage of dynamic pricing to ensure the data center is obtaining the most efficient rate for electric power.

Decathlon also is introducing alternative sources of emergency power into the data center including fuel cells, flywheels, battery storage systems and photovoltaics.

ABB Decathlon® data center infrastructure management

Decathlon® aspect directory

Monitoring and secure control

Command center

Portable client

Web portal

External interfaces

Mechanical

Electrical

IT and O/S

Application management

Other

Application modules

Asset library

Asset management

Remote monitoring

History and reporting

Control and automation

Core functionality

Asset and capacity planning

Remote monitoring

History and reporting

Control and automation

User interfaces

Power management

Building management

Asset and capacity planning

Decathlon® Secure Cloud

Global Energy Intelligence

Ensuring continuous operation: Critical power

For continuous power protection, ABB offers uninterruptible power supply (UPS) installed inside the data center itself. The ABB modular UPS offers exceptionally high efficiency and flexibility. Safe-swap modularity means servicing is fast and can be carried out while the data center is in full operation. Simply unplug one module and replace it with another in minutes, without interrupting operations. UPS is always available and can be scaled up to provide megawatts of power. Designers no longer need to over-specify configurations because modules can be added as needed. The result is flexible capacity that produces the lowest total cost of ownership.

A vital portion of the optimized data center infrastructure systems offered by ABB is its emergency generator (gensets) solutions. The genset is a core around which the entire emergency power system is engineered, incorporating switchgear, controls and other technologies.

ABB’s Conceptpower DPA 500 is the only modular UPS on the market that can easily scale up to provide 3 MW of clean, reliable power.
ABB core offerings
Providing high quality for your most critical components

ABB supplies a wide range of equipment and complete systems for data centers around the world. Working with a single partner to supply all your most critical systems and components provides a substantial advantage to data center operators in terms of reliability, maintainability and scalability. ABB customers gain the benefit of a totally optimized infrastructure, with every system designed to be efficiently integrated with its counterparts.

Industrial design provides mission critical reliability
Components for every segment of the marketplace

For design and engineering firms, OEMs, and enterprise data center owners and operators, ABB can be an exceptionally valuable partner. Our offerings are available to all segments of the marketplace, supplying everything from substations to LV circuit breakers for electrical energy to motors and drives for cooling. When you consider a partner for data center supply, consider ABB.

Low voltage equipment
AC and DC systems designed for safe, reliable and low life cycle cost power distribution

Medium voltage equipment
A wide range of air and gas insulated switchgear from 1-40kV

High voltage equipment
A full range of products up to 1200kV providing reliable, efficient, high quality power

Low voltage components
A full line of high quality products from breakers and switches to modular DIN-rail products

Motors
ABB offers direct drive and belt- or gearbox-coupled motors for use in HVAC and pumping applications

Variable frequency drives
LV AC and DC drives and MV AC drives for application specific functionality and control for motors

Distribution substations
With 100 years experience, the world leader in turnkey air and gas insulated substations

Power transformers
A complete range of power and distribution transformers for indoor or outdoor use

Dry transformers
Environmentally safe, suitable for indoor and outdoor use, available up to 10/25 MVA

Cyberex® from Thomas & Betts
Products include digital static transfer switches (STS), power distribution (PDU), RPPs and UPS

MNS motor control center
Up to 4,000A horizontal bus and 1,600A vertical bus, designed to address the causes of arc flash

Safety components
Products include protection relays, arc-flash detection and prevention and surge protection

Uninterrupted power supply
ABB offers highly efficient, scalable, modular UPS systems up to 3MW

Generators
A full line of standby, primary and peak-sharing generators are available from Baldor (3 to 2,250 kW)

Decathlon® DCIM
Decathlon gives visibility and support into all mechanical, electrical and IT systems

Power quality
Solutions include harmonic filtering, power factor correction and active voltage conditioning

Measurement products
Instrumentation products and analytical solutions to actuate, measure, record and control

Construction products from Thomas & Betts
Products include grounding, bonding and connections, framing and cable support
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