Go the extra mile – For sustainable buildings

Green Building Products
Services
Solutions
Discover Eaton’s power management for your building

As a leading power management company Eaton is ideally positioned to tackle one of the most important challenges of our time: reducing the costs and ecological impact of our world’s growing energy demand. Since 1911 we have been supporting our customers by always offering new ideas on how to use energy as safely, efficiently, reliably and in the most eco-friendly way possible. And buildings are no exception.
Responsibility meets business wherever Eaton is at work

Eaton monitors, shapes, secures and distributes power for thousands of products – day in, day out across the globe. With the commitment and ideas of more than 70,000 employees (20,000 in Europe alone) we keep our customers’ business on the right track for the future.

As a technology provider we are aware of our special ethical responsibility to society and the environment. We want to deliver the best possible solutions for our customers – but not at all costs. We are very aware of our responsibility to the planet and are not only interested in reducing our own emissions and energy and water consumption but also in helping customers and partners make their own ecological footprint smaller.

New technologies for a greener future

Nowadays it is expected that companies like Eaton contribute to minimizing our impact on the environment with innovative products and technologies. We know this and see our company as a pioneer in our industry.

Effectively reducing greenhouse gases is just one of many aspects, yet it plays a particularly decisive role in sustainable buildings.

The urgency of rethinking things and “going green” will lead to radical changes. And this doesn’t just have to do with business interests. We are talking about our future. We are already taking steps today to develop technologies that even improve our environment. This may not be the easiest way, but it is the right one for our time.

High quality standards are the key to success

There are high expectations when an international company follows ethical principles – especially when all of a company’s business segments and activities are involved.

An important part of Eaton’s success has to do with corporate responsibility based on ethical and ecological principles. These values are inherent in every one of our products and in our environmentally friendly, pioneering green building solutions.

Electrical Sector

Sustainable power management, flexible energy distribution and good power quality ensure that electrical power can be used safely and efficiently in buildings and industrial installations of all types and sizes while at the same time noticeably reducing the environmental impact.

Automotive and Truck

New types of automatic transmissions make handling large trucks safer and more economical. We are entering a new era in utility vehicles with our revolutionary, Green Hybrid Drive systems.

Hydraulics

Eaton holds a leading global position in the development of pioneering hybrid drive and hydraulic systems for buses, utility vehicles and construction machines.

Aerospace

With an advanced design that makes it extremely light, the 5,000 HP hydraulic system for the Airbus A380 saves weight, lowers fuel consumption and reduces emissions.

Powering Business Worldwide:
We monitor, shape, secure and distribute power for the most innovative products and technologies of our time.
The construction industry remains the largest consumer of energy in the EU. With 36% of greenhouse gas emissions coming from this sector, it not only carries great responsibility but also enormous potential for climate protection. Thus, pioneering sustainable building offerings save energy and protect the environment and investments. This is why Eaton incorporates responsibility for the climate and environment, reliable innovations and customer value into a holistic Green Building strategy.

In March 2007 the European Commission set clear targets for the reduction of energy consumption and emissions. These targets are to be met by 2020:

1. Reduction in energy consumption by 20% compared to 2005 by raising energy efficiency
2. Increase in the share of renewable energy to 20% of total energy consumption (11.5% above the share in 2005)
3. Reduction of greenhouse gases by 20% below the 1990 level (or 14% below 2005 emissions)

Eaton is also an active member of the World Business Council for Sustainable Development (WBCSD), a global association of companies that commit to be leading business advocates on sustainable development,

to participate in policy development to create the right framework conditions,

to develop and promote the business case for sustainable development,

to contribute to a sustainable future for developing nations and nations in transition.
Responding to emerging building efficiency drivers

Rising environmental and sustainability awareness and the need to manage the carbon footprint are affecting the building industry. Climate change is a fact, and so are political regulations, i.e. the Energy Performance of Buildings Directive (EPBD) initiated by the EU. In addition, energy costs are rising mainly due to the rapid increase in energy consumption. More and more construction companies, owners and operators react to these triggers that are going to change their business effectively.

Eaton has understood – we are committed to making building electrical distributions and applications even more efficient, productive, safer and environmentally sound.

Green solutions – A key factor in climate protection

Sustainable technologies in buildings are indispensable for reaching ambitious European climate protection targets. The technologies exist – it is merely a matter of deployment. Studies* suggest that through systematic application the:

- total costs of energy could be reduced by 30 to 50 %,
- CO₂ emissions by 35 %,
- amount of waste generated by 70 %, and
- water consumption by 40 %.

With the right concepts buildings can contribute to meeting the EU 20-20-20 goals for climate protection already today. Eaton helps architects, consultants, system integrators and installers meet these targets.

Sustainably designed buildings are more profitable

The electrical infrastructure in particular is a decisive factor for the unique value of a building and ultimately the return of investment.

Going green by investing in Energy Management Systems is not expensive, but profitable from the first day on as studies* show it:

- reduces total building operating costs by nearly 10 %,
- raises the value of the property by 7 %,
- increases additional costs only at a relatively low level of 5 %.

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Green Building – The sensible and profitable choice

Regardless whether residential buildings, office centres, public or industrial buildings, climate policy calls for and economic viability demands power supply and distribution that is both eco-friendly and sustainable.

Green Building Solutions from Eaton make a significant contribution to minimizing critical cost factors in the planning, construction and use of a building. Operating costs go down and value goes up for faster return of investment.

And this is how we make the business of our partners and customers greener, too.

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More and more Eaton products meet the highest demands for sustainability and efficiency. They carry the Green Leaf symbol for excellent environmental compatibility.

- Green Building Solutions
- SF₆-free Medium Voltage Switchgear
- Variable Frequency Drives
- Power Xpert® Meters and Software
- 9395 UPS system
- Blade UPS

Numerous awards attest to the global recognition of our “Doing Business Right” approach:

- One of Ethisphere Magazine’s “World’s Most Ethical Companies” for the fifth year in a row
- No. 1 in Newsweek’s Green Rankings 2010 for industrial firms and No. 16 for all companies
- One of CRO (Corporate Responsibility Officer) magazine’s “100 Best Corporate Citizens” since 2007

Find out more: www.eaton.com/greensolutions

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Enter the Green Building and discover the Eaton Effect

Our systems and solutions add the factor of sustainability to buildings of all sizes and purposes. What makes a Green Building green? Integrated and responsible resource management during the planning, construction and use of buildings. Discover how Eaton minimizes our impact on the environment and reduces costs at all levels.
Photovoltaic Solutions
Safety and efficiency in the utilization of renewable energy

Energy Management Systems
Functional and industrial buildings
Power Xpert®
Transparent cost cutting control of energy flows, energy demand and power quality at any time

Residential and small commercial buildings
xComfort Building Automation
Intelligent wireless systems for convenient, energy-saving control of building services

Uninterruptible Power Supplies
Market leader in Power Quality solutions with maximum efficiency and minimum power loss

Busbar Trunking Systems
Cost-cutting, resource-conserving power distribution

Medium-Voltage Switchgear
Particularly eco-friendly switchgear systems all featuring a SF₆-free design

MV-to-LV Switchgear (M2L)
Cost and space-saving integration of medium and low-voltage power distribution systems

Power Factor Capacitors and Filters
Demand-oriented power distribution to appliances and systems with changing loads

Variable Frequency Drives and Soft Starters
Energy-saving management and control of motors, appliances and systems

Life-Cycle Extension Services
Optimized life cycle of all components with an integrated recycling concept

EV Charging
Solutions for efficient and eco-friendly Electric Vehicle Charging in commercial buildings

Discover our Green Building Solutions in these three fields of application:

Power Distribution
From medium voltage to point of use, Eaton’s comprehensive range of products and services for planning, installation, operation and the evolution of a powerful and flexible building infrastructure offers solutions that save energy, are transparent and are future proof.

Power Management
Innovative systems for integrated metering, monitoring and management of energy in residential and functional buildings combined with smart building automation and local energy generation for exceptional efficiency.

Power Quality
Market-leading, particularly economical UPS systems for power quality without fluctuations, malfunctions or failures along with solutions for optimized, climate-friendly utilization of reactive energy.
Climate-friendly innovations from medium voltage to the point of use

At Eaton climate protection and resource conservation begin at the control panel, with eco-friendly solutions for every building. Our innovative medium-voltage systems are completely free of the greenhouse gas SF₆. Integrating medium and low-voltage distribution systems saves both space and energy. And busbar trunking systems distribute Green Energy throughout the entire building and are particularly economical.

Completely SF₆-free switching for a greener future

Sulphur hexafluoride (SF₆) emissions are a major contributor to climate change. The global warming potential of a similar amount is 22,800 times higher than CO₂. In addition, SF₆ has an estimated atmospheric lifetime of up to 3,200 years. Yet the production of this highly active greenhouse gas continues across the globe. Eaton is a true pioneer in the incorporation of SF₆-free medium-voltage switchgear systems in buildings.

The new Xiria series proves that less is simply more with exceptionally small vacuum interrupters and fully enclosed housings protected against environmental influences. No lubricants are used, so it is maintenance free. The modules are “Smart Grid ready” from remote signalling and measuring to full remote operation.

Compact and energy efficient – new MV to LV switchgear

Our MV to LV switchgear design (M2L) is more compact, air and epoxy-resin insulated and generally equipped with vacuum circuit breakers and load break switches. Decentralizing energy distribution saves money during installation and operation. Bundles of low-voltage cables are replaced by a single medium-voltage cable running to M2L distribution stations. This design is space saving, maintenance friendly and prevents line losses thus saving energy.

On track: Flexibility and resource conservation

Busbar trunking systems are better than cable-based solutions right down the line: They offer completely flexible configuration, faster installation and can be easily adapted to meet changing demands. This makes them the most economical alternative for a perfect ecobalance in any commercial building environment.

Eaton Xiria – Sustainable benefits

- Reduction of greenhouse gases thanks to SF₆-free design
- Less energy loss thanks to vacuum interrupters
- Particularly safe thanks to IEC-compliant arc fault protection
- Eco-friendly and safe dry-type transformers

Eaton MV to LV switchgear – Sustainable benefits

- Reduction of greenhouse gases thanks to SF₆-free design
- High integration and reduction of LV cabling results in noticeably less power losses
- Eco-friendly and safe dry-type transformers

Eaton Busbar Trunking Systems – Sustainable benefits

- Power distribution with constant voltage and without energy loss
- Simple, resource-friendly installation and reconfiguration
- Minimal consumption of valuable materials, extremely durable
Eaton is the only supplier of a complete SF₆-free switchgear product range carrying the SF₆-free logo

- Xiria Ring Main Units – making power distribution SF₆-free and environmentally-friendly due to maintenance-free air-insulation and rock-solid vacuum switching
- Power Xpert® FMX switchgear – not only SF₆-free, but also particularly impressive in a Green Building with its reduced maintenance requirement, compact design, recyclable materials and exceptionally energy-efficient operation
- Power Xpert® UX is an innovative and compact air insulated switchgear system featuring the latest in withdrawable vacuum circuit-breakers.

In addition, these series are Eaton Green Solution certified and carry the Green Leaf symbol.

SF₆-free and energy-saving by design – the new, innovative MV switchgear generation

Whether it is the new Xiria, the Power Xpert® FMX or Power Xpert® UX switchgear systems – all lines combine compact design, improved reliability and safety, adding energy-efficiency to all applications. Xiria’s IEC-compliant arc fault protection makes it extremely safe. The mechanisms are protected in fully enclosed housings making them maintenance free and suitable for all conditions. The FMX (Fixed breaker) and UX (Withdrawable breaker) set standards for connectivity and user friendliness. Both are designed for applications up to 24 kV. The FMX system in all phases being able to conduct a 25 kA shortcircuit current (the UX system up to 50 kA) for 3 seconds.

MV to LV switchgear (M2L) – Maximum energy efficiency in the smallest of spaces

Eaton’s new M2L distribution station combines medium-voltage switchgear, transformers and low-voltage distribution boards in a single, compact housing. This allows the local conversion of medium voltage into low voltage with precision and minimal power losses. Now only a single system is installed exactly where the respective voltages are required. Bringing together both worlds in one system makes long running low-voltage cables a thing of the past while simplifying installation and maintenance. This has a positive effect on energy costs because medium voltage cables are much more energy efficient than low voltage cables.

Power Xpert XP busbar trunking systems – reliable, efficient power distribution up to 6,300 A

XP busbar trunking systems from Eaton feature an economical, safe concept and an innovative sandwich-type design for an unmatched range of applications from 500 to 6,300 A and master every installation challenge. Power loss is much lower compared to cable under the same specifications. The use of valuable and expensive resources such as copper and steel is kept to a minimum, not least because hardly any materials are wasted in the installation. This is how busbar trunking systems help save energy and reduce damaging emissions. All components are thoroughly tested and meet IEC standard 60439-2.
Reducing costs by extending life cycles in the most eco-friendly way

You can expect more than just efficient and sustainable products from a company that incorporates sustainability into all areas. Eaton offers services that go beyond products portfolio to accompany, support and make every component of a building's infrastructure a bit more climate and resource friendly even after installation. The goal: conserve resources and lower costs by considerably increasing reliability and extension of service life.

Our objective is to increase service life

We provide you with full access to a complete package of customer-oriented and application-specific service strategies. Our services guide the entire life cycle of electrical systems with continuous and attentive support for buildings and systems of all sizes, regardless of where your property is located. The goal is to considerably increase the service life of all components. We implement a variety of measures and services to achieve this goal, including maintenance, modernization, reconditioning, retrofit services and replacement strategies.

Sustainability and responsibility

We also offer comprehensive technical and logistical services for the entire electrical infrastructure. From the onset, our project management includes the use of sustainable products, local resources and the responsible disposal of dangerous materials and waste.

Resource-conserving modernization – The Green Option

We support our customers in all areas of environmentally-sound modernization and recycling of old systems. We substitute harmful materials and substances detrimental to the climate such as oil, PCB, SF₆ or asbestos that are still found in old electrical systems in an eco-friendly way. Together with customers and partners, our experts find an economical and safe solution for every challenge. The result is a building that even meets future requirements for efficiency and environmental protection regulations.

Eaton Retrofit Services – Sustainable benefits

• Low investment costs
• No construction or installation expenditure
• Most resource-conserving form of upgrading
• Short replacement times

Eaton Lifecycle Extension Services – Sustainable benefits

• The cost-saving and resource-conserving alternative to replacing systems
• Tailored solutions with maximum cost effectiveness
• Resource conservation thanks to increased service life
Eaton Replacement Services

When switchgear systems are getting on in years – or rather decades – the spare parts, manufacturers and the relevant service expertise are often no longer available. Generally speaking the demands on safety and performance have changed, and the standards and norms are more advanced. In cases like this replacing of the systems is the best solution to ensure that the entire power system once again meets the demands on safety and performance. Replacement has the added advantage that the functionality, safety and energy efficiency meet the latest requirements and, consequently, the current operating and future service costs go down.

Eaton Refurbishment

Key components are replaced as required with new equipment whenever they are available in order to substantially prolong the life cycle of the whole system. Every effort is made to recycle the old equipment in Eaton’s internal recycling process. Our “Green Overhaul” of existing systems that can still be used is one way we help save that much more energy and continue to utilize valuable resources in both our own facilities and together with our customers on site.

Eaton Retrofit for Lifecycle Extension

In some cases existing systems can be upgraded without a replacement. If suitable retrofit components are available these can be used to overhaul specific parts and replace relevant functional modules with their newer, more efficient counterparts to achieve maximum savings. This leads to shortened servicing times, and the existing electrical infrastructure and cabling does not need to be replaced or supplemented.
Building management becomes a profitable asset

Whether commercially or privately used, important electrical systems are not clearly monitored in most properties. What’s missing in today’s building energy monitoring concept is a view of the system as a whole. Eaton offers this transparency with Power Xpert®, the first system to treat the power supply as a key strategic factor. And for homes and small commercial buildings there is the xComfort system that actively monitors and conveniently automates building services from heating and ventilation to lighting and electric circuits.

**Power Xpert®** – Comprehensive power management with building-wide transparency and maximum savings

Power Xpert® is the power monitoring system for large buildings. Modular solutions turn the building’s electrical infrastructure into an intelligent network that enables transparent, company-wide analysis and rapid response.

Power Xpert® recognizes and analyses potential malfunctions due to insufficient power quality and prevents damage from occurring along with the associated costs. The energy consumption and the efficiency of the entire management system are also always visible, in real time and for one or more buildings within a system. The analysis software provides relevant information such as trend analyses, benchmarks and automatically generated reports so the operator can use the full energy-saving potential. This turns the power system into a strategic asset protected by innovative hardware, software and communication systems.

**xComfort** – Intelligent wireless technology for energy-saving buildings that are climate friendly

Smart and wireless – With xComfort Building Automation every house becomes an energy-saving home. Control modules like the Room Manager manage energy in all rooms. Utility costs go down, living comfort increases: Air quality sensors support proper ventilation, shutters know the position of the sun, the heating system adjusts accordingly to wind and weather and even responds to text messages when outside of the house. This unleashes the full energy-saving potential in low-energy houses, passive houses and in the modernization of old buildings. Continuous monitoring and optimized switching of heating, windows, ventilation and shutters make xComfort an environmentally-friendly, energy-saving system. The flexible, expandable xComfort range unleashes a home’s true energy efficiency potential!

**Eaton Power Xpert® – Sustainable benefits for functional buildings**

- Detailed overview of power consumption and power quality
- Intelligent extrapolations and reports for troubleshooting and cost optimization
- Improved reliability and optimized service intervals
- Alerting when deviations occur
- Early detection of malfunctions, damage prevention, downtimes and follow-up costs

**Eaton xComfort – Sustainable benefits for residential and small commercial buildings**

- Energy-saving coordination of heating, ventilation, solar, heat pump and air-conditioning systems – for a perfect indoor climate
- Active monitoring and controlling of all electrical systems – in the whole building or even a single room
- Ideal control of low-energy and passive houses
- Improved CO₂ balance noticeable even in old buildings
- Centralised power-on/power-off switches – large saving potential
- Permanent monitoring of energy consumption
- Zero-potential switches for energy saving and healthy sleep
Power Xpert® – Power distribution monitoring and analysis

Eaton’s Power Xpert® incorporates the building’s electrical infrastructure in an integrated system with Ethernet link-up. All energy flow, requirement and consumption data are recorded together in the system. This gives you an overview of all energy-relevant events in your system. It allows you to see how they are related and immediately draw the right conclusions. Thus Energy consumption is reduced and the quality of the energy supply increases; bottlenecks and other problems are detected early, failures are eliminated quickly.

Eaton metering modules link buildings to the Smart Grid

The new XMC metering and communication modules are specially designed for circuit-breakers, support voltages from 35 to 500 V and currents between 1.5 and 630 A and complement the Power Xpert® application range with their smart metering functionality. For the first time it is now possible to securely track the entire energy transfer within a system, for example between energy distribution and the motor control centre. Energy distribution in buildings becomes a part of the Smart Grid, an intelligent, bidirectional energy network with total transparency with regard to requirement and consumption.

xComfort – The heart of the Green Home

The Home Manager is the control centre of the xComfort system. It takes over control tasks in low-energy houses, passive houses and even modernized old buildings using modern wireless technology. It not only monitors all operating states of the building infrastructure system but also keeps track of interfaces and sensors. Maintenance and analysis take place via text message, mobile phone or the Internet. Actuators, switches, dimmers, sensors, analogue and binary inputs are available for nearly every application. These links between wireless systems and the controlled appliances ensure that all xComfort features can be used transparently. All communication with and between the modules is wireless.

Future-oriented power management in the Smart Home

In the near future every consumer will be able to become a supplier as well. More and more electrical energy is being fed into the public power grid from renewable sources such as solar and wind power. Feed stations require intelligent, electronic metering technologies that dependably register, document and control energy flows. The Smart Meter from Eaton does exactly this and provides an overview of every consumed, produced and supplied kilowatt-hour. It’s even possible to calculate electricity consumption on a daily basis. The functionality can be integrated seamlessly with complete flexibility into the xComfort wireless system.
Harnessing the sun’s power safely and efficiently

The sun provides 15,000 times the amount of energy required worldwide – reliably and free of charge. Photovoltaic systems collect this valuable energy in solar cells that convert sunlight into electrical energy. Eaton sets standards with its fully developed, complete range of innovative components for emission-free energy generation that is becoming increasingly profitable and sustainable.

Harnessing the sun’s power safely and efficiently

The sun offers enormous energy potential – carbon neutral and free of charge. Solar energy is becoming increasingly important, especially in supplying power to buildings even in northern latitudes. Eaton has the problem-solving skills and provides the technologies to safely and reliably harness and feed this energy into the power grid from both home systems and solar parks. Eaton offers the full range of balance of system products with state-of-the-art components and services for private and commercial applications.

All of the expertise from a pioneer in photovoltaic systems

For years we have been contributing to the development of photovoltaic systems with numerous innovations. Our photovoltaic product range features components that are carefully matched to one another, from switching equipment, inverters and the “PV fireman’s switch” that safely disconnects the PV system from the voltage source during a fire, to the user-friendly, wireless xComfort building automation system. Linking your solar panels to the wireless xComfort network, will enable a real-time monitoring of the photovoltaic system and its output and will furthermore reduce costs and impact on the environment. Building owners can effectively consume their own produced energy and less from the utility grid.

Reliable support for manufacturers and partners

We also offer our experience as a reliable partner in the planning, installation and operation of photovoltaic systems together with systems integrators, manufacturers and panel builders.

Eaton Photovoltaic Systems – Sustainable benefits

- Reliable power supply without utility costs thanks to unlimited solar energy
- Sustainable, emission-free conversion of solar into electrical energy
- Safe voltage conversion by a reliable product range
- Convenient energy management for maximum efficiency of own generated energy
- Convenient and continuous monitoring and controlling of energy generation and feeding into the grid
- Reduction of cost and impact on the environment by utilising xComfort based load management
Eaton’s solutions for safely harnessing solar energy

High-performance inverters efficiently and dependably guarantee electric power yield. Compact DC switch-disconnectors complement these in both switchgear systems and alone in a housing with protection to IP65. We also ensure the required safety for the system and people with additional components. The DC fireman’s switch remotely disconnects the PV system for safer fire-fighting. DC string circuit-breakers with integrated short-circuit protection react quickly when needed and are immediately ready for use after a trip. DC overvoltage protection devices protect inverters from overvoltage damage and guarantee system profitability.

Safer fire-fighting in buildings with solar systems

Buildings with solar systems pose a problem for fire-fighting. The reason is that photovoltaic systems generate voltage up to 1,000 V per line which remains active even after disconnection of the building from the grid. This endangers the life of rescue workers entering the building. The SOL30-SAFETY fireman’s switch from Eaton offers the solution. It disconnects the PV lines from the solar modules to the inverter to remove the electrical hazard from fire-fighting. It is installed right next to the PV modules in the DC line between the panel and the inverter. The disconnection of the PV modules occurs automatically or manually on site.

Safe overvoltage protection for photovoltaic systems

Overvoltage protection modules developed specially for photovoltaic applications protect the entire PV system from transient overvoltage caused for example by indirect effects of lightning. Eaton offers models for both earthed and unearthed systems which utilize a spark gap to ensure galvanic separation. The SOLSP overvoltage protection is the safe, reliable choice for unearthed photovoltaic systems up to 1,000 VDC. The large variety of models also includes complete connecting units with protection to IP65.

Reliable protection and safety for systems and people

Lightning and overvoltage is not only dangerous for electrical systems but also for the operators. This is where Eaton comes in with an extensive range of overvoltage protection devices. In addition, attachable auxiliary switches make it possible to monitor the functionality of the devices. And when maintenance work needs to be done on the PV system or when leaves or snow must be removed from the modules the DC switch-disconnectors let the operator quickly and reliably disconnect the entire system from the voltage source so that working on the roof is safe.
Variable frequency drives and soft starters designed to save energy

To harness the full efficiency potential of a building it is essential to determine the energy-saving potential of each and every component. The new variable frequency drives and soft starters from Eaton meet all the requirements for sustainable starting and switching. Scaled to suit the application and designed to save energy, they play a key role in a Green Building although they might be overlooked at first sight.

Energy saver with a low-profile that works round the clock

Variable frequency drives convert the voltage and frequency of the mains supply to DC voltage. A three-phase supply is generated with a variable voltage and frequency for the three-phase motor. High-performance drives from Eaton control motor speeds with absolute precision according to the required loads. This discreet form of efficient energy utilization delivers energy savings from 10 to 70% depending on the application.

Innovative frequency inverters from Eaton for maximum efficiency

The demand for variable speed drives is increasing in many areas. Building energy efficiency measures are no exception. The new M-Max™ and H-Max™ variable frequency drives from Eaton are the ideal solution. They optimally adjust the desired speed to the drive requirements. They reliably ensure the required drive motor sequences and contribute to operational safety and cost-effectiveness.

A smooth start for motors, pumps and fans

Soft starters are the gentle alternative in many applications in building environments for smooth motor starts that are easy on the supply system. Their everyday operation helps cut costs because they prolong the life cycle of a motor by smoothing every start-up phase and increase the service life of the attached mechanical components.

Eaton Variable Frequency Drives – Sustainable benefits

- Precise control for motors and other loads
- Dramatic energy savings of up to 50% 
- Prevention of voltage peaks on start-up
- Reduction of excess capacities at peak periods
- Total remote control, integrated in various fieldbus standards

Eaton Soft Starters – Sustainable benefits

- Prolonged equipment life cycle
- Longer service intervals
- Lower operating costs
M-Max variable frequency drives – For all applications and sustainable energy savings

Just because a device offers a high level of functionality doesn’t mean it needs to be complicated to operate: Designed with the user in mind, quick to commission and equipped with extensive diagnostic capabilities, the new M-Max variable frequency drives are ideal for a wide range of applications from 0.25 kW to 18.5kW at 400V.

Their small and compact design enables space-saving installation. The series’ integrated radio frequency interference (RFI) filter for electromagnetic compatibility and flexible interface makes it perfect for nearly every application. With approvals according to global standards it can be used anywhere in the world.

H-Max variable frequency drives – The specialists for buildings

H-Max series is particularly suited for use in Heating, Ventilation, Air Conditioning (HVAC) applications. Important functions for building applications are integrated with BACNet and Modbus interfaces, RS485 and Ethernet, PID controllers, switching of non-regulated motors and a precisely definable behaviour in case of fire. Variable frequency drives are available in two different housing designs, IP21 and IP54, for motor output ratings from 1.1 to 160 kW. An integrated RFI filter and DC link reactor simplify EMC-compliant installation.

Soft starter DS7

Soft starters show their strengths wherever direct starting or star-delta starting is not the best solution. The new DS7 soft starter is ideal for applications with pumps and fans. It is a fully integrated module that not only replaces the mechanical protection but is also the first to bring soft starting to building automation. This intelligent technology lengthens service intervals and lowers operating costs for the controlled components of the building’s infrastructure.

The Eaton Energy Savings Estimator is a program that determines the motor data, the load profile and the operating hours with only a few inputs required. The tool shows the following savings options: Expected energy and CO2 saving (foot print) as well as the payback times when using alternative drive solutions. The program takes all important factors into account such as running time, output requirements, energy or investment costs. The energy savings report also offers several graphic representations that can be selected by the user. The program also creates additional charts that are made available by simply clicking the appropriate buttons.
Harnessing the sun’s energy for E-Mobility – right from the Green Building

Setting up a network of solar-supplied and/or supported charging stations is a key step to securing the supply of “fuel” for electric vehicles. Eaton has the solutions to intelligently and efficiently integrate the required infrastructure into the Green Building concept. Once energy produced from renewable sources is available for electric vehicles across the board the number of these types of cars and utility vehicles will continue to grow.

Tested and proven, supplied by Eaton: eco-friendly power for eco-friendly cars

There will be an emerging need for reliable EV charging solutions at most commercial buildings as the Electric Vehicle market continues to develop. If available, the power is supplied by renewable sources integrated into the building’s infrastructure, i.e. solar or wind power, but power can also be supplied via the public grid.

Eaton is also a leading provider of EV technologies. Vehicles with Eaton hybrid systems travelled over 160 million kilometres in a period of ten years. This translates into savings of around 15 million litres of fuel and 40,000 tonnes of CO₂.

Eaton Green Building also offers green power to vehicles

Whereas hybrid electric vehicles can only be charged using brake energy or the vehicle’s diesel engine, vehicles with a plug-in hybrid electric drive system also incorporate a charging system that enables the vehicle batteries to be charged any time at fast charging stations for electric vehicles.

Eaton offers the innovative products and solutions to build photovoltaic and wind turbine generator systems that supply renewable energy to buildings and also directly to EV charging stations using Eaton’s inverters, switchgear systems, power protection systems and feed technologies for bidirectional connection to the public power grid.

Eaton solutions for E-Mobility – Sustainable benefits

- Strategic concepts for truly Green Electric Vehicles
- Proven photovoltaic systems and wind power technologies for a network of Green Electric Service Stations
- World’s leader with a holistic approach – providing the electrical infrastructure and not just the hybrid drive systems for reliable operation across the board
Safe switching of DC voltage

DC applications like photovoltaic systems or accumulators require sophisticated switchgear systems. Eaton’s comprehensive product portfolio provides solutions in this area as well with compact switch-disconnectors, circuit-breakers, off-circuit switches and string circuit-breakers for every application up to 1,000 V and 1,500 A, with IP20 or IP65.

The SOL30-SAFETY fireman’s switch offers maximum safety by disconnecting the PV lines from the solar modules to the inverter to remove the electrical hazard from fire-fighting. It is installed next to the PV modules in the DC line between the panel and the inverter.

Dependable building energy metering with SmartGrid

The difference between today’s power grid and the Smart Grid of the future is the bidirectional current flow. Electricity will no longer be transported in one direction. Every consumer will be able to become a supplier. More and more electrical energy is being fed into the public power grid from renewable sources such as solar and wind power. Feed stations require intelligent, electronic metering technologies that register, document and control energy flows. Then energy can be supplied whenever it is cheap and metered accordingly for accurate billing while cars are being reloaded. Eaton is strategically active in the field of Smart Metering applications and works successfully with technology leaders.

Rapid charging with EV charging stations from Eaton

Eaton is a pioneer in the development of DC fast charging systems for electric vehicles and AC charging technologies. Our DC fast charging system reaches 80 % capacity in less than 30 minutes – yet another solution that increases the suitability of electric vehicles for day-to-day use.

A large-scale field test in California initiated by Mitsubishi Motors titled “Electrified Highway” proved our stations’ capability to reliably provide energy to Mitsubishi’s new i-MiEV. Efficient solutions for the implementation, monitoring and maintenance of charging stations and networks are no longer a long way off. These are now key components of Eaton’s product range.
Energy-saving solutions for a safe and reliable power supply in buildings

The availability of critical building automation components such as security systems, fire alarms and communication is indispensable, especially during power outages. Our innovative power quality solutions including customised services not only protect these building automation systems and IT facilities, they also make a valuable contribution to the reduction of energy consumption throughout the building. This is another way we help customers meet their energy saving and climate protection targets.

Power supply, distribution and management for IT

Demands for a safe and flexible power supply are rising in the area of building automation. Maximum reliability and continuous availability of server rooms and data centres with their computer, communication and data storage systems is indispensable. Eaton’s comprehensive portfolio offers innovative and highly efficient solutions for reliable protection, flexible distribution and transparent management of energy for a building’s IT systems. This also includes extensive service offerings to ensure maximum UPS performance and availability.

Reliable power supply for a building’s infrastructure

Indispensable systems that are critical to the security of a building must continue to be available during a power outage. Eaton’s rugged, energy-efficient UPS solutions do exactly this. Emergency lighting, security systems, fire alarms and building services management systems continue to work reliably even when there are major malfunctions in the main power supply. This protects all relevant building systems from power failures.

Reliability in all areas of building automation

Eaton labels its particularly energy efficient and low emission products with the Green Leaf certificate. These products exceed the very high international standards for climate protection and environmental compatibility. UPS solutions from Eaton are among the most efficient and energy saving on the market.

Eaton UPS solutions – Sustainable benefits

- Maximum reliability and uninterruptible uptime based on energy-efficient technologies
- Optimized Capex thanks to modular scalability
- Optimized Opex due to industry leading technology Energy Advantage Architecture (EAA)
- Significantly higher energy efficiency compared to traditional UPS systems for up to 50% less energy loss
- Increased energy efficiency and reduced operating expenses
Flexible single-phase UPS solutions

In today’s globalized world where workflows and applications are subject to modification, dynamic change is the driving force of many processes. It’s not surprising, therefore, that our customer’s expectations concerning a secure, reliable and highly flexible energy supply are rising.

Eaton has a broad range of single phase UPS components in stock. The Powerware product line and Pulsar series protect your IT systems and any building system both reliably and efficiently against disturbances in the main electrical power supplies.

Powerful three-phase UPS solutions for secure IT and building management infrastructure

The robust, tried and tested Powerware product family, used in a wide range of data centres and building automation environments, combines technical innovations, a wide range of functions and maximum efficiency. Their unprecedented level of power performance, reliability and energy savings make Eaton three-phase UPSs the best solution to protect your critical applications. Thanks to their revolutionary Energy Advantage Architecture (EAA), they are up to 99% efficient for significantly lower energy consumption. Investing in state-of-the-art, Green Leaf certified building safety already pays for itself within three to five years just with the savings in energy costs.

Flexible power distribution to the IT infrastructure (ePDUs)

The rack-based power distribution units of the ePDU series supply IT environments round the clock with power and ensure transparent power management. Their redundant design makes them extremely flexible. What’s more, they integrate smart tools for monitoring and optimizing power consumption right down to the rack level. This convenient overview helps IT managers make the right decisions at any time to further improve the energy efficiency of the IT system and reduce costs.

Software solutions for comprehensive power management

Administrators need to detect malfunctions in the power supply as early as possible. Building facilities managers want to be informed when the temperature in the data centre rises. Service technicians need to be notified directly as soon as a system fails. Eaton’s solution is to integrate networks, IT systems, facility management and building automation in an intelligent network.

Intelligent Power software from Eaton makes transparent monitoring, secure analysis and rapid response possible – even in virtualized environments. And when things get critical it supports controlled and protected shut down of the affected systems.
Power quality optimized for the respective application that is free of power and voltage fluctuations increases the service life of appliances and systems and noticeably reduces their energy consumption. Linear and nonlinear power factor correction with Power Factor technologies from Eaton is precisely for this kind of individual adjustment and optimization of power and voltages for all critical building services applications.

Linear and nonlinear correction for every application

Classic linear power factor correction is used to optimize reactive power consumption with the goal of achieving zero output voltage distortion. Eaton’s Power Factor modules have innovative output stages with power capacitors that feature intelligent controller-activated switching. These make sure the power factor stays as close to “Optimum 1” as possible. High power reserves ensure this in all operating conditions.

Nonlinear power factor correction enables the additional adjustment of reactive power consumption that can be subject to interference from nonlinear power output and voltage fluctuation. Special chokes minimize distortion to ensure optimum power quality in these fields of application.

Maximum power quality reduces consumption and wear

Power Factor systems from Eaton improve current quality, optimize the efficiency of transformers and improve voltage quality. This prevents power fluctuations and line losses, lowers energy costs and ensures that there are no failures.

The modular Power Factor series has a compact design and complies with all relevant IEC standards. It features self-healing components that dramatically increase the service life of the systems and it can be transparently integrated in power management systems.

Eaton Power Factor – Sustainable benefits

- Lower energy costs thanks to the supply of reactive power for appliances and systems with changing loads such as heating, air conditioning, motors and lifts
- Reduced power loss and power consumption and, consequently, prevention of greenhouse gas emissions
- Increased service life of electrical equipment thanks to optimized, consistent power quality
„Whether you believe in climate change or not – we can do better and take sustainability on the offensive. This is a huge opportunity to do the right thing.“

Sandy Cutler, Eaton CEO – April 7, 2008

One of Eaton’s strategic initiatives is the development and production of eco-friendly products. They should be environmentally sound in every respect, from the design and production to the operation and recycling of the product. Our goal is to not harm the environment in any of these stages and to reuse as many of the materials as possible for production at the end of their life cycle.
Eaton Corporation
Eaton is a leading power management company. Eaton operates worldwide with products, systems and services in the electrical, hydraulic, aerospace, truck and automotive sectors.

Eatons Electrical Sector
Eatons Electrical Sector is the worldwide leader in products, systems and services for energy distribution, safe electricity supply and automation in industrial, residential and purpose-built buildings, public facilities, energy providers, commerce and OEMs.

Eatons Electrical Sector includes the brands Cutler-Hammer®, Moeller®, Micro Innovation, Powerware®, Holec®, MEM® and Santak®.

www.eaton.com

E-Mail: info-bonn@eaton.com
Internet: www.eaton.com/moellerproducts

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