SOLUTIONS FOR ENERGY EFFICIENCY

RESIDENTIAL
COMMERCIAL
DATA CENTER

THE **GLOBAL SPECIALIST**
IN ELECTRICAL AND DIGITAL BUILDING INFRASTRUCTURES

legrand®

Energy efficiency solutions

End users, design offices, engineers, contracting companies and investors are requesting **solutions to reduce the carbon footprint and to increase the energy efficiency of their buildings.**

Legrand

offers a comprehensive range of solutions for residential, commercial and datacenters to achieve optimum performance and to generate energy savings.

SOLUTIONS FOR ENERGY EFFICIENCY IN BUILDING

GENERAL CONTENTS

LEGRAND
GROUP

Legrand and the sustainable development

The Legrand group has been committed for many years, with its customers and partners, to developing a continuous improvement process and guaranteeing the responsible and sustainable growth of its business.
For this reason, Legrand Group is contributing to the fight against climate change by reducing its own GHG emissions, and enabling its customers and their buildings to reduce their energy consumption, while supporting also its suppliers in reducing their carbon emissions.

A global approach for sustainable development

Legrand's approach to sustainable development is oriented towards three areas: responsibility the environment and governance. The Groups targets are to carbon neutrality throughout the group value chain by 2050 - to reduce by 50% its own carbon emissions by 2030 and by 15% the carbon emission of our value chain

For more information visit
www.legrand.com

Reduction of the environmental impact of the group sites

Since 1996 Legrand has integrated environmental protection and management in the operations by which it manages its industrial sites.

Control of the use of chemical substances

When producing products, Legrand systematically looks for technical solutions which can replace the usage of dangerous substances.

Ecological products

Legrand puts an eco-design approach into effect to limit the global impact which the products have on the environment during their life cycle.

COMPANY SOCIAL RESPONSIBILITY

Voluntary initiatives such as signing the Global Compact or respecting the rigid social and environmental criteria laid down by the FTSE4Good and DJSI Indices form part of a general policy aimed at transparency, to highlight Legrand's concrete commitment to the Company Social Responsibility framework

UN GLOBAL COMPACT
WE SUPPORT

A Certified Group

The Legrand Group has obtained in 2016 the ISO 50001 certification for the Energy Management System. This certification covers the Legrand head office, the 21 production sites and the logistic sites in Europe.

Management de l'énergie

The Legrand +

Legrand is the first French industrial group to obtain ISO 50001 multi-site certification on a large European perimeter.

PEP ecopassport®

An eco-responsible group

The Group brands offer PEP Ecopassport® (environment profiles and products conforming to ISO 14025) for most of their products.

1 INTRODUCTION AND QUALIFICATION OF LEGRAND GROUP

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INTRODUCTION AND QUALIFICATION OF **LEGRAND GROUP**

Legrand, a global player

Why trust Legrand?

Legrand is a global specialist in electrical and digital building infrastructures. We have built up a store of unique expertise in regional and national standards Legrand has developed solutions that provides a full experience to support end users, engineers, investors, consumers and facility managers reduce their operating costs, and have a positive impact on people, the planet and performance!

LEGRAND VALUES

WE SEIZE **THE FUTURE**

WE EMBRACE **INCLUSION**

WE MOVE **IN SYNC**

WE STRIVE FOR **SIMPLICITY**

WE ARE **DEPENDABLE**

IMPROVING LIVES BY TRANSFORMING SPACES, THE ESSENCE OF OUR PURPOSE

The Group's mission is to improve lives by transforming the spaces where people live, work and meet, with electrical and digital infrastructures and connected solutions that are simple, innovative and sustainable.

#LegrandImprovingLives

Transforming spaces where people live, from individual and collective housing to hotels and more.

Transforming spaces where people work, including data centers, offices and industrial sites.

Transforming spaces where people meet, from housing to shops, hospitals, schools, universities and more.

THE LEGRAND GROUP IN A NUTSHELL

SALES IN CLOSE TO **180** COUNTRIES

AN ACTIVE INTERNATIONAL PRESENCE ESTABLISHED IN OVER **90** COUNTRIES

5% OF TOTAL BUDGET USED IN R&D

€8,3 BILLIONS SALES IN 2022

OVER **38000** EMPLOYEES WORLDWIDE

Our business...

From control and connection interfaces to cable management, energy distribution and voice-data-image (VDI) distribution systems, Legrand provides a host of solutions designed to manage lighting, energy, networks and building access.

A PORTFOLIO OF FLAGSHIP BRANDS

Legrand • BTicino • Borri • Cablofil • C2G • Emos • Ensto • HDL • HPM • Ime • Indo Asian Switchgear • Inform • Middle Atlantic • Minkels • Neat • Netatmo • Numeric UPS • On-Q • Pass & Seymour • Raritan • Server Technology • Shidean • SMS • Starline • Watt Stopper • Wiremold • Zucchini and more

THE LEGRAND GROUP HAS MORE THAN **80** BRANDS

A WIDE CHOICE BY ANY MEASURE

OVER **300,000+** CATALOGUE ITEMS

AROUND **500** PRODUCT FAMILIES BRINGING ENERGY EFFICIENCY

3 KEY BUSINESS AREAS

RESIDENTIAL AND SMALL BUSINESS

COMMERCIAL

DATA CENTER

1

INTRODUCTION AND QUALIFICATION OF **LEGRAND GROUP**

Legrand Energy Efficiency Proposal

Buildings are significant contributors to greenhouse gas emissions worldwide.

Legrand offers electrical and digital solutions, the aim is to be simple and affordable. To avoid heavy maintenance costs, systems need to be open and uncomplicated from the selection to the instalation and use, being adaptable to the buildings needs in real time. It is Legrands aim to provide solutions that can be scalable over time and suitable to all building types, new or retrofit.

APPLICATIONS

- Indoor cooling
- Home Automation
- Renewable Energies
- Monitoring and Reporting
- Active Energy Management
- Digital Lighting Management
- Electrical Vehicle Charging Station
- Measurement and Supervision
- Efficient Energy Distribution
- Guest Room Management
- HVAC / Heating control
- Power Quality

VERTICALS

- Hotels
- Industry
- Education
- Warehouses
- Commercial Stores
- Data Centers
- Residential
- Hospitals
- Offices

CLIENTS

- Specifiers
- Contractors
- Panel Builders
- System integrators
- ESCO (Energy Service Company)
- CPO (Charge Point Operator)
- Professional distributors
- Facility Managers
- Investors
- End users

1

INTRODUCTION AND QUALIFICATION OF **LEGRAND GROUP**

Greener buildings, at all levels!

At Legrand, we create **ENERGY EFFICIENCY SOLUTIONS** accessible to everyone with simple, scalable, affordable and effective solutions adapted to all types of buildings for both new builds and renovations.

ALL TYPES OF BUILDINGS AND ALL BUDGETS

At Legrand, we firmly believe that energy efficiency must be neither complex nor aimless.

It must be a set of effective and efficient solutions improving lives and enhancing spaces where people live, work and meet. Which is what the Legrand energy efficient offer brings.

- COST-EFFECTIVE EXCELLENCE
- EFFICIENCY
- SCALABILITY OF OUR OFFERING
- EASY AND USER-FRIENDLY
- OPENNESS OF OUR SOLUTIONS
- ENHANCED INTEGRATION
- AUDIT SERVICES
- HISTORICAL EXPERTISE

The buildings and construction sectors combined are responsible for **30% of total global final energy consumption and 27% of total energy sector emissions.**

Source: IEA 2022

Did you know that:

- **CONTROLLING ENERGY CONSUMPTION** with precise measurement and implementation of decisive actions
- **ENSURING THE OPTIMIZATION**, through quality and performance of energy distribution is the foundation of a building profitability
- **LIGHTING ACCOUNTS FOR UP TO 20%** of a commercial building's electricity use

Several pain points still limit use of energy efficient solutions:	**Much can be achieved to tackle pain points with simple and effective solutions. Legrand offers solutions to overcome these difficulties thanks to:**
1. High costs Costly installations can discourage companies	**Cost effectiveness & scalability:** start with minimal investment
2. Lack of financing Hard to get project financed especially for SME	**Easy and User-friendly** and therefore suitable for most buildings to select profitable Legrand's solutions
3. Lack of awareness The benefits of energy efficiency are not always well understood or communicated	**Reliable documentation:** comprehensive information available
4. Resistance to change Changes in behavior difficult to accept	**Achieve energy efficiency** without compromising your business or comfort
5. Insufficient standards Standards to encourage acceptance of new technologies are not enough	**Quality, security, and expertise:** go beyond standards ensuring high-quality installations
6. Lack of coordination and Collaboration Projects involve many stakeholders and collaboration is needed	**Wide partner network:** international partners network available, not restricted to a single brand system

Offer overview by building type

INDEX RESIDENTIAL

PRESENTATION OFFER - RESIDENTIAL

INDEX COMMERCIAL

PRESENTATION OFFER - COMMERCIAL

INDEX
DATA CENTER

PRESENTATION DATACENTER WHITE ROOM / GREY ROOM

2 LEGISLATION AND STANDARDIZATION

2

LEGISLATION AND
STANDARDIZATION

Energy Efficiency: The view of COP 21

"The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius."

Therefore, the legislation in the main regional areas shall follow the target to reduce greenhouse gas emissions, in particular:

EU

-55% GREENHOUSE EMISSIONS per unit of GDP from 1990 level by 2030

By the year 2050 all buildings in EU should be Zero Emission Buildings.

CHINA

-65% GREENHOUSE EMISSIONS per unit of GDP from 2005 level by 2030

By the year 2060 all buildings in China should be Zero Emission Buildings.

US

-50-52% GREENHOUSE EMISSIONS per unit of GDP from 2005 level by 2030

By the year 2050 all buildings in the US should be Zero Emission Buildings.

Regulations for energy efficiency targets and GHG emissions targets are set by states and cities.

INDIA

-45% GREENHOUSE EMISSIONS per unit of GDP from 2005 level by 2030

By the year 2070 all buildings in India should be Zero Emission Buildings

For further details and other countries, consult the Climate action tracker webpage about energy strategy:

Home | Climate Action Tracker

2

LEGISLATION AND
STANDARDIZATION

Energy Efficiency: Legislation

Buildings play a fundamental role in reducing greenhouse gas emissions. For this reason, the international community is committed to take specific actions.

These actions translate into specific legislations.

EU

The basic implementing tools for the EU energy strategies are the Directives:

- **Energy Efficiency (EE) Directive:** EUR-Lex - 4372644 - EN - EUR-Lex (europa.eu)
- **Energy Performances of Building Directive (EPBD):** EUR-Lex - en0021 - EN - EUR-Lex (europa.eu)
- **EcoDesign Directive:** Ecodesign requirements in the EU - Your Europe (europa.eu)

All EU countries shall align their legislation to these three fundamental directives.
The EU directives are under constant revision process. See the latest at: http://ec.europa.eu/energy/en

Other examples of building legislations over the world are:

US

The basic implementing tools for the US energy strategies are the Directives:

MAIN CODES ON BUILDINGS ENERGY EFFICIENCY

US EPAct 1992 – Energy Policy Act, establishes policy for building efficiency and energy use

ASHRAE/IES 90.1 - model energy efficiency standard for commercial buildings

IECC (International Energy Conservation Code) - model energy efficiency code for commercial and residential buildings

ASHRAE Standard 100 - Energy Efficiency in Existing Buildings

VOLUNTARY PROGRAMS AND INITIATIVES

ENERGY STAR: Rates the energy efficiency of products including appliances, lighting, and building materials.

Better Buildings Initiative: Encourages buildings to operate more efficiently:
Better Buildings Initiative | U.S. Department of Energy

CHINA

The basic implementing tools for China energy strategies are the Directives:

- **Green Building Action Plan (GBAP):** China Promotes Green Buildings to Peak Construction Emission by 2030 - Seneca ESG
- By 2025 the total consumption of primary and secondary energy in building operations (tons of standard coal) shall be limited to 115 million tons of standard coal; while the energy efficiency of newly-built residential buildings in urban areas shall increase by 30%, and by 20% for newly-built public buildings.
- **Building Energy Efficiency Labeling Program (BEEL):** Effect of implementing building energy efficiency labeling in China A case study in Shanghai_final.pdf (ucl.ac.uk)
- National Emissions Trading Scheme (ETS): China's Emissions Trading Scheme – Analysis - IEA

INDIA

The basic implementing tools for India energy strategies are the Directives:

- **Energy Conservation Building Code (ECBC), adopted by 22 states in India:** Energy Conservation Act 2022
- **National Mission for Enhanced Energy Efficiency (NMEEE), the Indian national mission:** NMEEE | BUREAU OF ENERGY EFFICIENCY, Government of India, Ministry of Power (beeindia.gov.in)
- **Indo-Swiss Building Energy Efficiency Project (BEEP), a bilateral cooperation project:** BEEP – INDO-SWISS BUILDING ENERGY EFFICIENCY PROJECT (BEEP) (beepindia.org)

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LEGISLATION AND
STANDARDIZATION

Energy Efficiency: Standardization

Electrical installations and equipment standardization is a fundamental tool in order to comply the legislation:

EU

- **Electric installations:**
  - IEC 60364-8-1
  - IEC 60364-8-82
- **HBES/BACS**
  - ISO 52120-1
  - EN 50491-12-1
  - IEC 63402-1
- **Energy efficiency/ products**
  - IEC 62962 – LSE
  - IEC 62991 – SSE
  - IEC 63172 – EE electrical accessories
  - IEC TR 63196
  - IEC 60076-20 – transformers
- **Electric Vehicle**
  - IEC 61851 series – Electric vehicle conductive charging sytems
  - IEC 61980 series – Electic vehicle wireless power transfer
- **Ongoing activity:**
  - SDFI – Switching Device for Islanding
  - SRCSD – System Reference Conductor Switching Device
  - CEM -Custom Energy Manager

US

Nb: Some states like California, are creating their own efficiency standards.

- **Building Automation and Control Systems (BACS):**
  - ASHRAE Standard 135: BACnet® – A Data Communication Protocol for Building Automation and Control Networks
- **Energy Efficiency/Products:**
  - The US Code of Federal Regulations, Title 10 starting under parts 429, 430, 431: Energy Conservation Standards for appliances and equipment
- **Electric Vehicles:**
  - AE J1772: Recommended Practice for Electric Vehicle Conductive Charge Coupler
  - SAE J2954: Wireless Power Transfer for Light-Duty Plug-In/ Electric Vehicles and Alignment Methodology
- **Energy efficiency in data centers:**
  - ASHRAE 90.4 - energy efficiency standard for data centers
- **Ongoing Activities:**
  - Smart Grid Interoperability Panel (SGIP): SGIP is a public-private partnership that coordinates standards and practices for the smart grid in the United States.

CHINA

- **Electric installations:**
  - GB 50052: Code for Design of Electrical Installations in Low Voltage of Buildings
  - GB 50171: Code for Design of Electric Power Supply and Distribution Systems in Buildings
- **Building Automation and Control Systems (BACS):**
  - GB/T 20280: Building Automation and Control Systems - General Requirements and Test Methods
  - GB/T 20281: Building Automation and Control Systems - Communication and Interoperability
- **Energy Efficiency/Products:**
  - China Energy Label: A labeling program for energy efficiency
  - China Top Runner Program: A program that sets energy efficiency standards
  - China Green Building Evaluation Standard: A rating system that evaluates the environmental performance of buildings
  - SAMR Adds 3 Standards in the List of Standards for China Green Product Assessment in 2020:
    - GB/T 37866-2019 Green product assessment-Plastic products
    - GB/T 39020-2020 Green product assessment-Detergents
    - GB/T 39084-2020 Green product assessment-Packings for express service
  - Eco-Design of Express Packaging: Standard Proposal proposed by the China National Institute of Standardization (CNIS), was approved by ISO.
- **Electric Vehicles:**
  - GB/T 18487: Electric Vehicle Charging Infrastructure - General Requirements
  - GB/T 20234: Electric Vehicle Charging Interface - Technical Requirements and Test Methods
- **Ongoing Activities:**
  - National Smart Grid Demonstration Project: A project launched by the Chinese government.
  - Green Energy Certification Center (GECC): A certification program that verifies the energy efficiency and environmental performance of products and buildings.
  - China Energy Efficiency Financing Program: A government-supported program that provides financing and incentives for energy efficiency projects in buildings and industries.
- **Energy Efficiency for Data Center:**
  - By 2025, PUE (Power Usage Effectiveness) for data centers won't exceed 1.5, and even 1.3 for big data centers.

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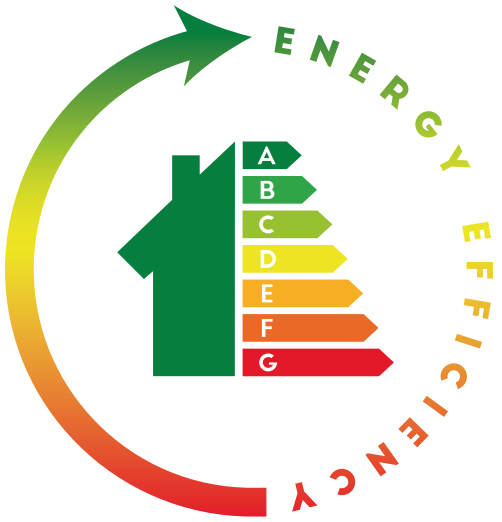
LEGISLATION AND STANDARDIZATION

Energy Efficiency: Standardization

INDIA

- **Electric Installations:**
  - IS 732: Code of Practice for Electrical Wiring Installations
  - IS 3632: Code of Practice for Maintenance of Electrical Switchgear
- **Building Automation and Control Systems (BACS):**
  - TIS 15679: Guidelines for the Automation of Buildings
  - IS 16444: Building Automation and Control Systems (BACS) – Vocabulary
- **Energy Efficiency/Products:**
  - Bureau of Energy Efficiency (BEE) Standards: The BEE promotes energy efficiency standards and labeling programs for appliances and equipment. Some examples include:
    - o Star Rating Program for Air Conditioners, Refrigerators, and other appliances
    - o Energy Conservation Building Code (ECBC) for commercial buildings
  - Indian Standards (IS): The IS develops and maintains standards for products.
- **Electric Vehicles:**
  - Bharat EV Charger AC-001: Standard for AC charging of electric vehicles in India
- **Ongoing Activities:**
  - National Smart Grid Mission (NSGM): The NSGM is a program launched by the Indian Ministry of Power to implement a smart grid in India.
  - UJALA (Unnat Jyoti by Affordable LEDs for All): UJALA is a government scheme that promotes energy-efficient LED lighting in India.
  - Perform, Achieve and Trade (PAT) Scheme: The PAT scheme is a market-based mechanism that encourages large energy-intensive industries to improve their energy efficiency and reduce their carbon footprint.



Energy performances Certifications

A number of energy performances classification schemes for buildings have been created. This approach allows to identify the environmental sustainability of the buildings.

Sustainability includes energy efficiency.

HERE ARE SOME POPULAR SCHEMES:

LEED
Leadership in Environmental and Energy Design
LEED rating system | U.S. Green Building Council (usgbc.org)

BREEAM
Building Research Establishment Environmental Assessment Method
www.breeam.com

France HQE
Haute Qualité Environmentale
La certification HQE (hqegbc.org)

Australia Green Star
Exploring Green Star | Green Building Council of Australia (gbca.org.au)

Africa Green Star
GBCSA

India GRIHA
Green Rating for Integrated Habitat Assessment
Home | Green Rating for Integrated Habitat Assesment (grihaindia.org)

China GBEL system
Green Building Evaluation Label (China Three Star): Green Building Information Gateway (gbig.org)

R2S
2S frame of reference - Smart Buildings Alliance

SRI
Smart readiness indicator (europa.eu)

The building classification schemes have a comprehensive approach to cover:

- Location and transportation
- Sustainable site
- Water efficiency
- Energy and Atmosphere
- Material choice
- Environmental Quality
- Innovation
- Regional priorities
- Wastes.

Energy is a fundamental part of the building classification scheme and it's highly affected by the installation design and the equipment choice.

3 ENERGY CHECK

3

ENERGY
CHECK AUDIT

Energy efficiency

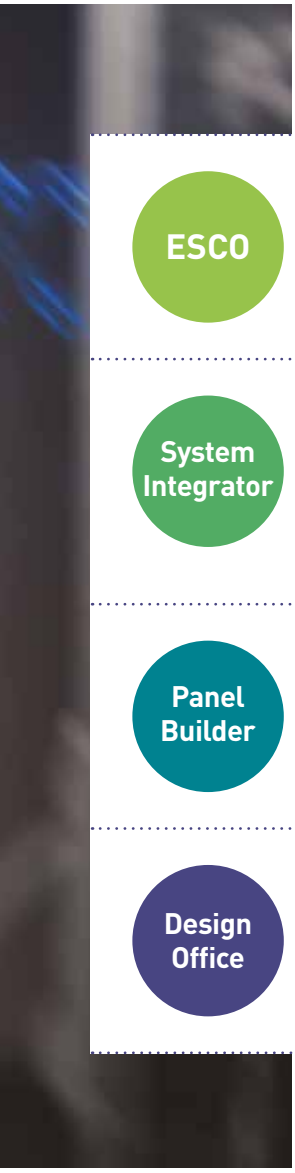
Whether you need advice or you are looking for solutions to optimize energy costs and make savings..

Our experts and partners can support you in your project.

At Legrand, we have a long history of helping professionals achieve greater energy efficiency with a performant ecosystem - a network of trained and expert partners that can be by your side every step of the way (installation, configuration, maintenance...),
in full compliance with regulations.

Here is a list of some of our partners and the range of their energy efficiency services.

For any additional information or specific contacts, please reach out your local representative.



ESCO

ESCO (Energy Service Company) implements energy-saving measures and provides financing options.

- Site survey and preliminary evaluation
- Identification of possible energy saving and efficiency improving actions
- Measurement and verifications of the savings results

System Integrator

System integrator specializes in combining and coordinating building automation systems (BAS) and controls to optimize building performance and reduce energy usage.

- HVAC system optimization
- BAS design and implementation
- Renewable energy integration
- Energy monitoring and reporting

Panel Builder

Panel builder provides safe and efficient power distribution for buildings.

- Installation of Energy efficiency components
- Smart Panel Upgrades
- Troubleshooting and Maintenance

Design Office

Design office helps improve energy efficiency and reduce environmental impacts during new building design and building renovation.

- Efficient building envelope design
- Renewable Energy Systems Design
- Building automation and controls design
- Energy modeling and simulation

4 OFFER OVERVIEW FOR AREAS

Energy efficiency solutions for residential applications

End users, design offices, engineers, contracting companies and investors are requesting solutions to reduce their carbon footprint and to increase the energy efficiency of their buildings.

Legrand offers a comprehensive range of solutions for residential facilities to achieve optimum performance and to generate energy savings.

ENERGY SUSTAINABILITY

By switching to e mobility, an average of **1 ton of Co²** is reduced per year with the solution of photovolaic plants and **vehicle charging stations.**

MEASUREMENT AND ENERGY MANAGEMENT

Ability to avoid until **11%** **of the houshold bill** related to devices and appliances left on standby account.

ENERGY QUALITY

Achieve up to **96%** efficiency with our **UPS single phase solutions**, leading to significant energy savings.

LIGHTING MANAGEMENT

Up to **40%** Energy Saving (according to EN 15193) per year with the following solutions: for example **automatic switches**, **time switches** and **automatic lighting control**. A wide range of switch sensors, comprising motion and lighting management sensors, designed to reduce the amount of time lighting is left on unnecessarily and reducing energy waste.

TEMPERATURE AND AIR QUALITY MANAGEMENT

Up to **15%** energy saving on **heating and cooling** by adjusting temperatures by 1 to 2°C, according to Ademe France, or by 7 to 10°F, according to the US Department of energy. By using the solutions of connected thermostats Smarther by Netatmo and NETATMO.

CONTROL AND COMMAND

Automatically lower your blinds at the **hottest time** of the day to reduce heat and improve efficiency of your air conditioning system. Manage skylights to optimise energy consumption and take advantage of air flow.

Context & issues

HOUSEHOLDS WORLDWIDE ACCOUNTS FOR 27% OF THE TOTAL ELECTRICITY FINAL CONSUMPTION*

ENERGY IS A MAJOR FIELD OF EXPENSES

According to a study by the International Energy Agency (IEA), the share of energy expenses of a household's total consumption ranges:

- Between 3% to 10% in developed countries
- Between 10% to 25% in developing countries.

However, these figures can vary significantly from household to household depending on energy consumption, geographic location, and type of housing.

OBSTACLES TO ENERGY EFFICIENCY

By implementing appropriate solutions and adopting energy-efficient practices, residents can significantly:

- reduce their energy consumption,
- lower their carbon footprints,
- contribute to a greener future.

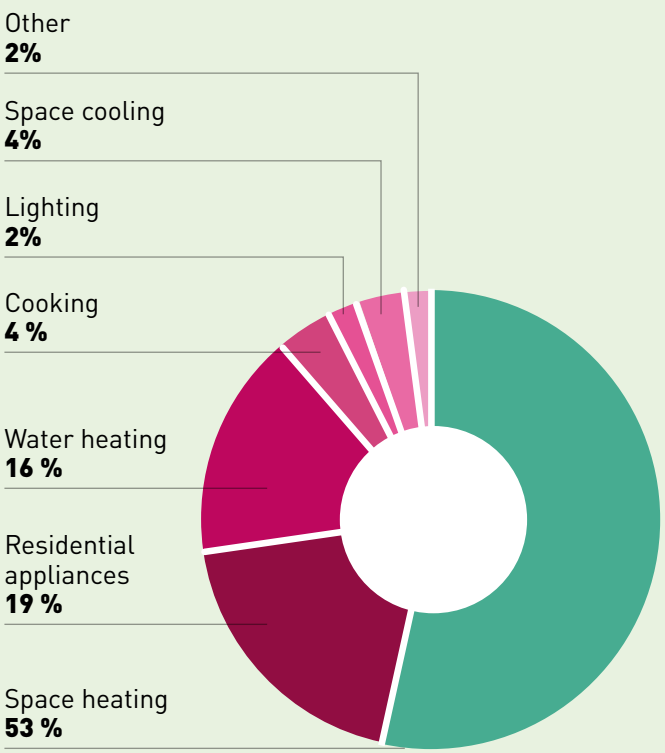
However, there are several obstacles that can hinder the implementation.
Investing in energy efficient solution requires:

- changing our habits and behaviour concerning our way of living
- upgrading or retrofitting a house or flat to improve energy efficiency
- often involves significant initial investment

At Legrand we provide user-friendly products and systems that make it easier for homeowners to adopt energy-efficient practices.

*source: International Energy Agency (IEA) publication titled "Key World Energy Statistics 2021"

DISTRIBUTION OF ENERGY CONSUMED BY A HOUSEHOLD



Scalable solutions for residential applications

Legrand offers different and scalable solutions able to satisfy several needs.

From the stand alone up to integrated systems we can provide components, devices and systems that guarantees energy efficiency that comply with the technical and economic aspects from more simple electrical plants up to more complete systems.

STAND ALONE SOLUTIONS

MODULAR SOLUTIONS
(latching relays, contactors, time switches...)

LIGHTING CONTROL
(wiring devices)

UPS
(single phase)

GREEN'UP ACCESS
(Mode 1 & 2)

GREEN'UP ONE
(Mode 3)

GREEN'UP PREMIUM
(Mode 3)

COMPLETE SYSTEM

Automatic Switches

WHAT IS THE CONCEPT OF AUTOMATIC SWITCH?

You no longer need to worry about the lights you forgot to turn off.

The automatic switch turns the light on and off automatically depending on the movement and the luminosity. No more wasted energy due to forgotten lights. You can easily install it in an exsisting electrical outlet.

CUSTOMER BENEFITS

- **Detects movement** within a 170-degree radius and at a distance of 8 meters
- **4 levels of sensitivity** adjustment
- **Compatible** with all lamps on the market
- Suitable for renovations and new buildings
- Possible **manual override**

Up to **40%** Energy Saving (according to EN 15193)

Annual reduction in the emission of **62Kg CO_2**

Environmental advantages

- Low power consumption in idle mode
- Lighting turns off automatically if no presence is detected
- Regulate the intensity of the light to adapt it to the different needs of the consumers
- Suitable for LED bulbs

Programmable Shading/Shutters

SIMPLY PROGRAM

Don't worry about roller shutters, now that they are programmable!

During winter, take full advantage of the free heating from the sun by opening your shutters during the daytime and closing them when the night falls.
The programmable shading/ shutter switch offers the possibility to plan at what time your shutters or blinds close or open.

CUSTOMER BENEFITS

- **Schedule roller shutters** open and close to a chosen time
- Possible **manual override**
- **Accuracy** is +/- 1 second/day
- **Easy** to use

Environmental advantages

- During winter, use the sun's natural and free energy to avoid over-consumption of lighting and heating
- During summer, close shutters during daytime limit the window temperature
- Automatically close shutters at night to keep the heat inside

Wiring Devices with Netatmo

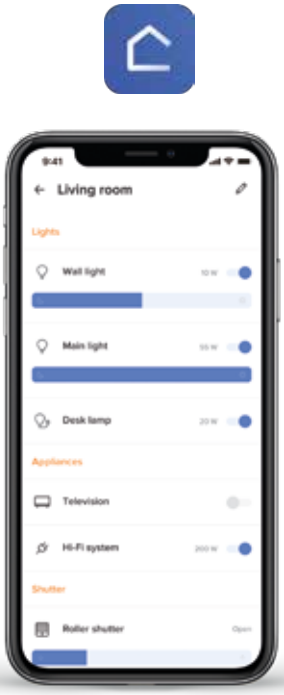
WIRING DEVICES WITH NETATMO

Connect your lights, shutters and electrical appliances thanks to Wiring Devices with Netatmo and manage your energy.

Make immediate benefits with home/away scene button turning off all unnecessary appliances. Using Home + Control App, create schedules, smart automations and smart notifications to create a real efficient Smart Home.

CUSTOMER BENEFITS

- **Easy to install and upgrade**, suitable for renovations and new builds
- **Visualize and understand** global energy consumption in KWh (and local currency) but also of a single product and compare it
- **Scheduling system** according to users' needs (planning the use of a product at off-peak hours to consume as little as possible...)



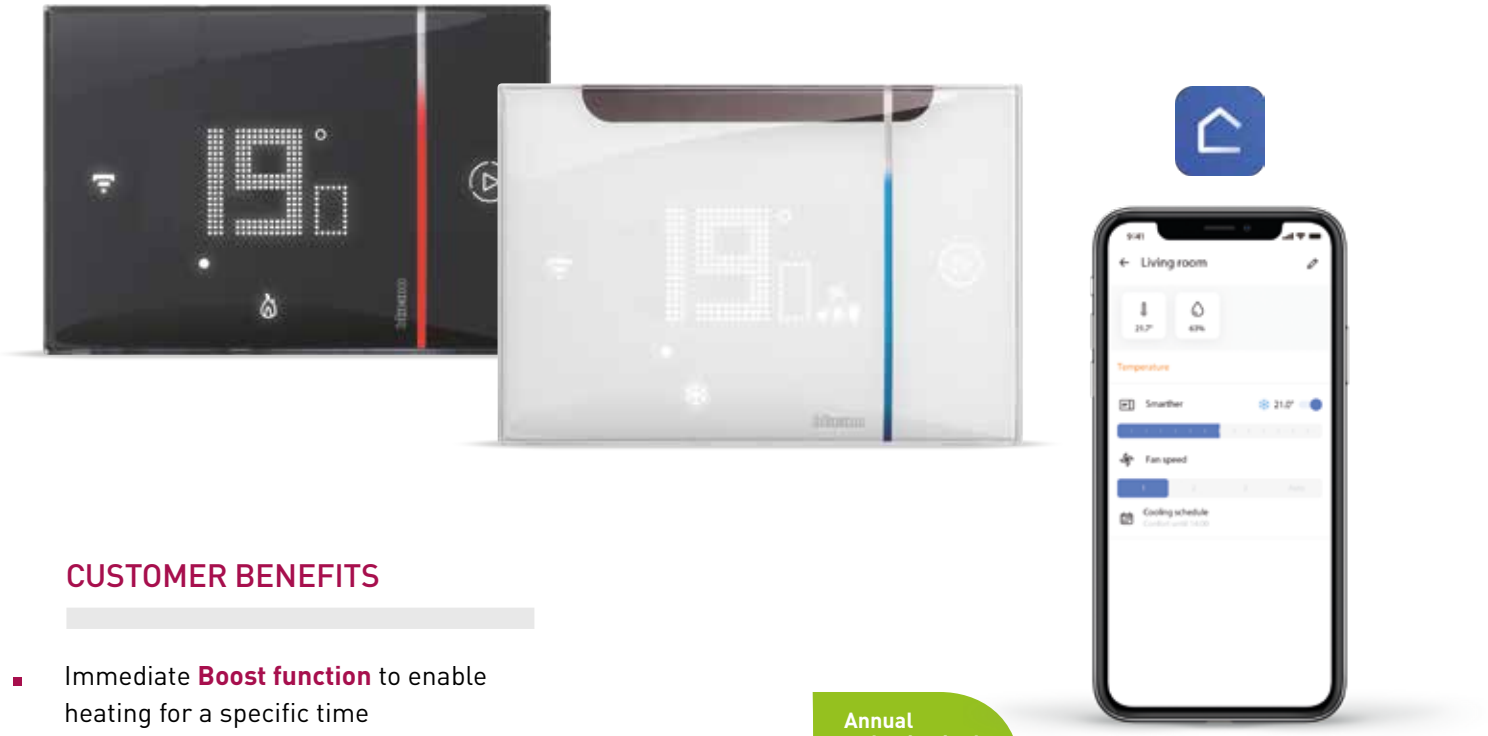
Environmental advantages

- Better energy consumption understanding (being aware of the home's energy usage)
- Smart management of energy requirements (scheduling, timing ....)
- Home load management (consume the energy at more opportune times)

Smarther & Smarther AC with Netatmo

A SMART THERMOSTAT to save energy in your home, that monitors, controls, and optimizes the temperature of your home.

Thanks to the Auto Adapt function, it allows Intelligent temperature management of your house. Using Home + Control App which is compatible with the voice assistance, you can manage your boiler and your radiators thanks to independant thermostatic valves. Minimal and refined design, in which the thickness and the glass effect finish make it versatile and suitable for any style of home.



CUSTOMER BENEFITS

- Immediate **Boost function** to enable heating for a specific time
- **Saves on heating** by programming customers needs
- Thermostat **independently adjusts** to automatic programming
- **Auto-Adapt** system that considers the weather conditions and thermal characteristics of the home to ensure the necessary temperature
- **Geolocation** that allows to cut the heating when you are away
- **Fan speed control**
- **Measured humidity** level

Up to 15% Energy Saving

Annual reduction in the emission of 561Kg CO_2

Environmental advantages

- Heating or cooling exactly when and where it is needed, avoiding waste and making maximum use of the sun's natural supply
- Improved energy classification of buildings through more accurate and controlled heating
- Make energy savings without sacrificing your comfort

Netatmo Smart Modulating & Smart Thermostat

With the SMART THERMOSTAT save energy without decreasing your comfort.

Thanks to the auto adapt function, it allows intelligent temperature management of your home. using home + Control app which is compatible with the voice assistance, you can manage your boiler and your radiators thanks to independant thermostatic valves.

CUSTOMER BENEFITS

- **Remote control** and possible **manual override**
- Wireless installation (perfect for renovation)
- **Auto Adapt** system that considers the weather conditions and insulation of your home and keep your home at the perfect temperature
- **Monitor consumption** in real time with a data history and a personalized Energy Savings Report every month
- **Auto-Care** feature alerts if a problem arises
- Domestic hot water supply regulation

Up to **15%** Energy Saving

Annual reduction in the emission of **561Kg CO_2**

Environmental advantages

- Heating exactly when and where it is needed, avoiding waste and making maximum use of the sun's natural supply
- Improved energy classification of buildings through more accurate and controlled heating
- Make energy savings without sacrificing your comfort
- More accurate and stable temperature

Netatmo Smart Radiator Valves

RADIATOR VALVES

It is possible to intelligently control the temperature room by room of your house, simply with an application.

The additional smart radiator valves adapts the temperature in each room of your house. Using Home + Control App which is compatible with the voice assistance, you can manage the temperature of your house room by room. The smart radiator valve completes your thermostat by precisely controlling your heating.

CUSTOMER BENEFITS

- **Adaptable** on many radiator
- **Remote control** and **possible manual override**
- **Scheduling system** according to users' needs
- **Two heating modes** (Comfort and Eco)

Environmental advantages

- Set the right temperature room by room and only heat when it's needed
- Open window detection that automatically turns off radiators to avoid energy waste

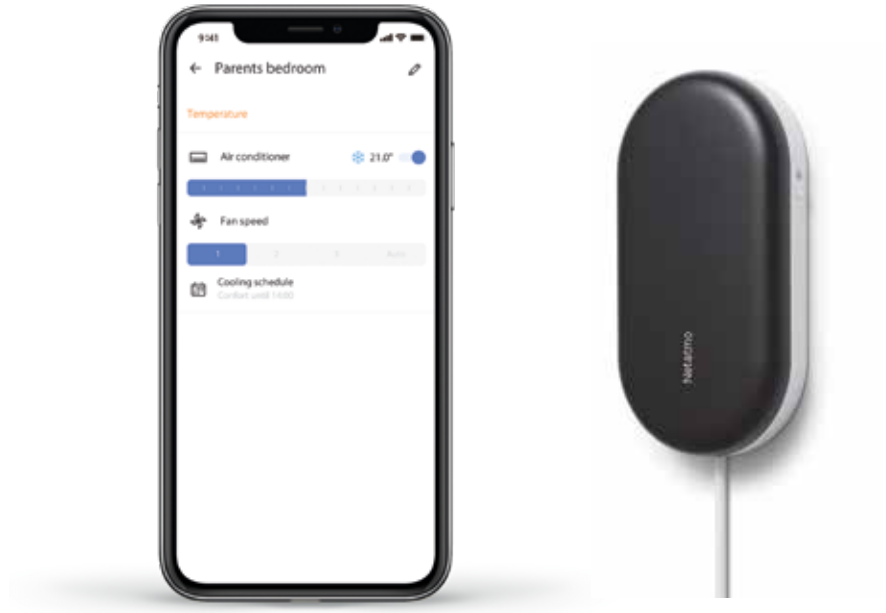
Netatmo smart AC Controller

WHAT IS THE CONCEPT OF AC CONTROLLER

An AC Controller to save energy in your home.

Using Home + Control App and compatible with the voice assistance, you can manage the air conditioning, the fan and even the dehumidifier.

Thanks to the Auto-Adapt function you can manage intelligently the temperature of your home. Connect it close to your air conditioner, then choose the ideal location: wall-mounted or on a piece of furniture.



CUSTOMER BENEFITS

- **Scheduling system** according to users' needs (planning the use of a product at off-peak hours to consume as little as possible...)
- Immediate **Boost function** to activate the cooling for a specific time
- Thermostat adjustment independent of automatic programming
- **Auto-Adapt** system that considers the weather conditions and the thermal characteristics of the housing to guarantee the necessary temperature
- **Fan speed control**
- **Measured humidity** level

Environmental advantages

- Cooling exactly when and where it is needed, avoiding waste and making maximum use of the natural supply
- Improvement of the energy classification of buildings thanks to a more precise and controlled temperature

MyHome
Active Energy Management

MyHome SYSTEM

No more power outages with the MyHome charge management control system.

Compatible with the Home + Control App, MyHome manages the maximum power used by measuring the actual consumption and automatically disconnecting the least important appliances according to your personal needs in case of overload.

Environmental advantages

- Display of the instantaneous and cumulative energy consumption over a declinable period that allows to measure the consumption of the controlled load
- In case of overconsumption, MyHome automatically disconnects some products according to the priorities defined, which allows avoiding waste

CUSTOMER BENEFITS

- **Define** consumption **priorities**
- **Remote control** and possible **manual override**
- **Scheduling system** according to users' needs (planning the use of a product at off-peak hours to consume as little as possible...)
- **Scenario** creating (home/away scene button turning off all unnecessary consumption.)
- Perfect for **new building**

MyHome Thermostat

MyHome SYSTEM

MyHome allows you to control, manage and optimize by a thermostat the temperature of your house, room by room.

Compatible with the Home + Control App, MyHome divides the housing or building into zones to manage the temperature (heating and cooling) according to needs and solar irradiation. Is the system "Zone temperature-control".

Environmental advantages

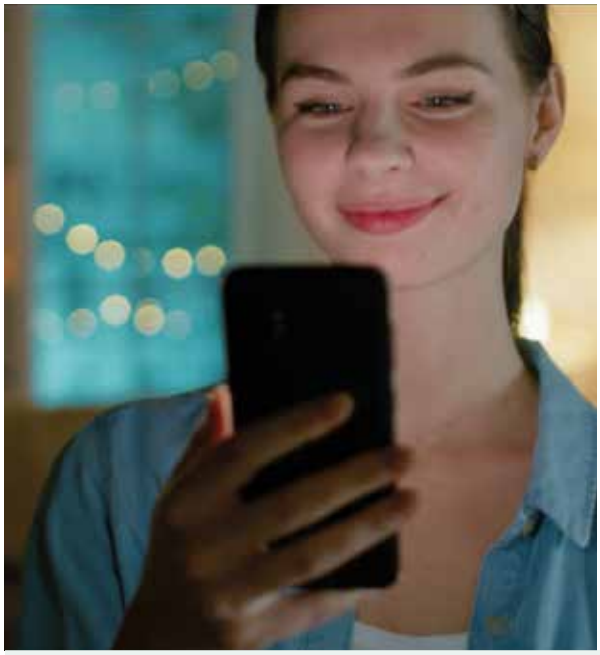
- Heating and cooling exactly when and where it is needed avoiding waste
- More accurate and controlled heating
- Make energy savings without sacrificing your comfort

CUSTOMER BENEFITS

- **Remote control** and **possible manual** override
- **Saves on heating** as per customer's needs
- **Scheduling system** according to users' needs (planning the use of a product at off-peak hours to consume as little as possible...)
- **Scenario** creation

Smart electrical panel offer with Netatmo

CONNECTED ELECTRICAL MODULES FOR ELECTRICAL PANEL BOARDS



Lower your energy bill and your impact on the environment by taking full control of your home: **from lights to power-hungry appliances, while maintaining your comfort and well-being at home.**

This solution is composed of a range of modules to be installed directly into any electrical panelboards, at the heart of your homes power infrastructure.

It can fit all your needs by proposing many functionalities, such as the measurement of your consumption and remote-controlling of loads, including the most energy consuming ones, for example your water heater or your electric vehicle charging station.

The solution is complementary to Legrands' Smart Switches and Power Outlets, providing users with a complete Smart Home offer.

Power-hungry loads
remote control of your electrical vehicle recharging station

Intelligent loads
management and balancing of energy consumption

Maximum consumption control and **energy waste reduction**

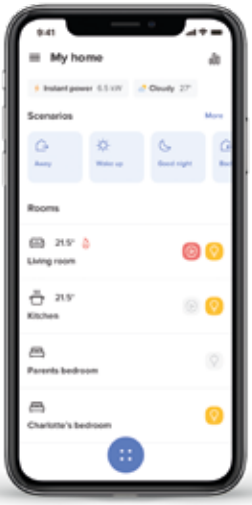
4.1

OFFER OVERVIEW
FOR **AREAS**

RESIDENTIAL

Smart electrical panel offer with Netatmo

Environmental advantages



- Become aware of your consumption thanks to clear historical data, live updates and energy report tips it becomes possible to reduce your consumption by 10%.
- Consume energy at a more opportune time. Thanks to H+C scheduling becomes easy and can save you another 10%. These savings can be increased when scheduled on a power hungry appliance.
- Manage your loads by playing on the running time of appliances can make a real difference: automatic management actions such as the load shedding, to proactively prevent electrical outages at home due to overloads. Just by playing automatically with the operating time of appliances it is possible to avoid consumption peaks and saves energy too.

CUSTOMER BENEFITS

Energy consumption

A complete and accurate view of consumption in real time and historical data (daily, weekly, monthly and yearly) with the possibility of receiving smart notifications in case of over or under-consumption

Remote control

Benefit from advanced energy management features that will help users to save energy by precisely monitoring their consumption and automatically take relevant actions via real time or scheduled ON/OFF, load shedding, or automations)

Smart management

Personalized analyses with enegy reports via dedicated topics cards (energy bills summary, top 3 power-hungry appliances ...)

Home + Control

APP USAGE

What if you had a single App to manage your energy consumption simply?

Home + Control is an App available on smartphones - tablets (iOS & Android). It offers the possibility to remotely control lights, shutters, heating, cooling, and ventilation. Thanks to its functional dashboard, it allows you to visualize and optimize the energy consumption, simply.

CUSTOMER BENEFITS

- **Remote control** of all connected devices
- **Visualize and understand** global energy consumption in KWh (and local currency) but also of a single product
- **Scheduling system** according to users' needs (planning the use of each product at off-peak hours to consume as little as possible...)
- Customize **notifications** for users (alert for lights on, power outage...)
- **Compare consumption** between days, weeks, months and even annually to adapt it

Environmental advantages

- Set the right temperature room by room and only heat when it's needed...
- Adjustment of the shutters in keep warm or cool, let in the natural light...
- Turn off unnecessary lights, reduce dimming level...
- Turn off all appliances on standby, schedule the power on at the right time...

Single-phase UPS for residential applications

The UPS for (digital) homes are the perfect solution to ensure a safe and high quality energy supply to modem, router, Smart TV, home entertainment systems.

These UPS are line-interactive technology that guarantee total and reliable protection for all Small-Office and Home-Office applications. They are supplied with electronic voltage regulator and telephone protection. Automatic start-up. When there is no main supply or it is of poor quality, the UPS continues working using a battery and switches off if the network breaking time exceeds the back-up time.

Keor SP
from 600 VA to 2 kVA

Keor SPE Tower
from 0,75 to 3 kVA

Keor Multiplug
from 600 to 800 VA

CUSTOMER BENEFITS

- The single-phase UPS range is comprehensive and complete, with solutions that meet the demands of different application sectors, from domestic to tertiary
- Range available from **25 W up to 3 kVA**
- **Line interactive** technology
- Easy to install and configure
- Excellent high quality/price ratio
- Equipped with LED indicators for monitoring of the UPS status
- Plug&Play

Environmental advantages

- **High efficiency**
  The innovative design and high quality of the components enable our UPS to achieve up to **96%** efficiency, leading to significant energy savings.
- **Energy stability**
  The integrated AVR will guarantee a stable energy supply for your IT equipment to get the best performance from it.

For more details and information. see the website: **ups.legrand.com**

Kit Green'Up Access

THE SIMPLEST HOME CHARGING SOLUTION

With the **Green'Up Access socket**, Legrand makes it easy for you to charge vehicles at home.

Inexpensive, simple to install and safe, they can also be used for all conventional purpose. They are with a mode 3 charging station.

Manage your Green'up socket through Home+Control by installing a conected dry contact.

18 to 60% CO_2 saving

IP 55 | IK 08

MODE 1
MODE 2

GREEN'UP ACCESS SOCKET

IP 55 - IK 08 - 3,7 kWh- 230 V
Compliant with the standard IEC 60884-1

30 MA

Rccb 16 A - curve C - Detects faults with AC and DC components (type F).

SUSPENSION BRACKET

Bracket with cable support

SINGLE-PHASE (16 A) – 3,7 kW

Kit Green'Up Access
Reinforced domestic socket

DETECTION SYSTEM PATENTED

The electric vehicle recognizes the secure Green'Up Access infrastructure and selects the maximum power that can be supplied via the socket, thus reducing recharging times (1)

POLYCARBONATE SOCKET, DESIGNED FOR ELECTRIC VEHICLES, BUT SUITABLE FOR ANY APPLICATION

Compliant with the standard IEC 60884-1

MAXIMUM SECURITY

Surface treatment of metal contacts, to improve electrical conductivity

FROM 8 TO 16 A FOR SAFE CHARGING (1)

for all electric vehicles with a cable for MODE 1 or 2, regardless of amount of power required by the vehicle

(1) For vehicles equipped with cable with Green'Up plug

OFFER OVERVIEW
FOR **AREAS**

Green'Up One charging stations (AC)

FOR INDIVIDUAL HOME, INSIDE OR OUTSIDE

The Green'up One charging station is an elegant and durable charging unit with a fixed charging cable, used for charging vehicles in mode 3.

With its native Bluetooth connection it can be used to control charging locally via the CHARGER CONTROL App.

18 to 60% CO_2 saving

IP 54

IK 10

MODE 3

App
CHARGER
CONTROL

Download on App Store

GET IT ON Google Play

PLUG SUPPORT
When not in use, plug can rest in the middle of the indicator ring.

FOR ANY ELECTRIC VEHICLE MODEL
Supplied with 5 m length cable and T2S Plug for **MODE 3** charging.

LED INDICATOR RING
For the status of the charge (green/blue/red/yellow).

SINGLE-PHASE POWER: 3.7/7.4 kW

THREE-PHASE POWER: 22 kW

Local charging management (via Bluetooth) with Smartphone and **Charger Control App.**

Green'Up charging station

GREEN'UP PREMIUM
PLASTIC CHARGING STATIONS (AC)

SOLUTION WHICH ALLOWS CHARGING TO BE CONTROLLED LOCALLY OR REMOTELY

The Green'Up Premium charging station is used for charging vehicles in mode 2 and mode 3. With its Bluetooth connection it can be used to control charging locally via the EV CHARGE light application. When connected to the IP or Wi-Fi network with the communication kit (optional), it allows remote control from a smartphone, tablet computer or PC.

Note: Green'up Premium plastic charging station are also usable in commercial applications.

18 to 60% CO_2 saving

IP 44

IK 08

MODE 1 AND 2

MODE 3 COMMUNICATING

DELAYED START: 3, 6 OR 9 HOURS

Option of delaying start by 3, 6 or 9 hours. For charging during the cheap rate period.

TYPE 2

VOLT-FREE CONTACT INPUT

For external control of the charging station (time switch, contactor, connected dry contact, etc).

FOR ANY MODEL OF ELECTRIC VEHICLE

Shuttered T2S EV Plug socket for **MODE 3** charging.

Green'up Access heavy-duty socket for charging in **MODE 2** and for all applications.

SINGLE-PHASE POWER: 3,7 kW / 4,6 kW / 7,4 kW

THREE-PHASE POWER: 22 kW

Local or remote charging management:

- **locally** (via Bluetooth) with Smartphone and EV CHARGE app connected to the Internet;
- **remotely** (via IP / Wi-fi Web page) with smartphone or personal computer (requires accessory communication kit 0 590 56).

Solutions for solar panel connection

The Legrand solutions for photovoltaic applications represent an answer to the connection and protection needs, from system start up to its connection to the low-voltage mains, always guaranteeing the maximum level of protection.

Environmental advantages

- Saving energy, using renewable energies and avoiding waste are key to safeguarding the planet.
  Legrands answer, in this context, is in full harmony with the enviroment.

CUSTOMER BENEFITS

- Designed to guarantee a simple and quick connection and start up, the proposal is complementary and perfectly integrated in traditional installations.
- String box solutions READY TO USE

Eco Wallbox

Save energy where you least expect it.

Eco Wallbox is a drywall back box. It is designed to be airtight thanks to the flexible and enveloping entries for corrugated conduits. Moreover, it particularly improves the energy performance of your building by eliminating the air flows generated by the electrical infrastructures.

Environmental advantages

- Eliminates uncontrolled air infiltrations and by doing so saves on energy bills.

CUSTOMER BENEFITS

- Improve **occupants' comfort** and the **internal air quality**
- **Optimum savings** by combining blanking plates
- **Enhanced airtightness** thanks to flexible entries wide enough for spiral conduits
- Wide flange, retractable gripping clamps

Our specialist brands

COVERING ALL YOUR IT INFRASTRUCTURE, CABLE MANAGEMENT, AND CRITICAL POWER NEEDS!

With award-winning solutions from strong data center players, you benefit from optimal uptime of mission-critical operations.

Our team of local specialists design and build innovative solutions, including enclosures, cooling, power, structured cabling, and access management, to meet your unique requirements.

legrand®
Complete global solutions for digital and electrical infrastructure.

bticino
Global solutions for wiring device, protection and control of electrical plant

Netatmo
Solutions for smart home and home automation

EMOS
A Czech leader in electrical installation components

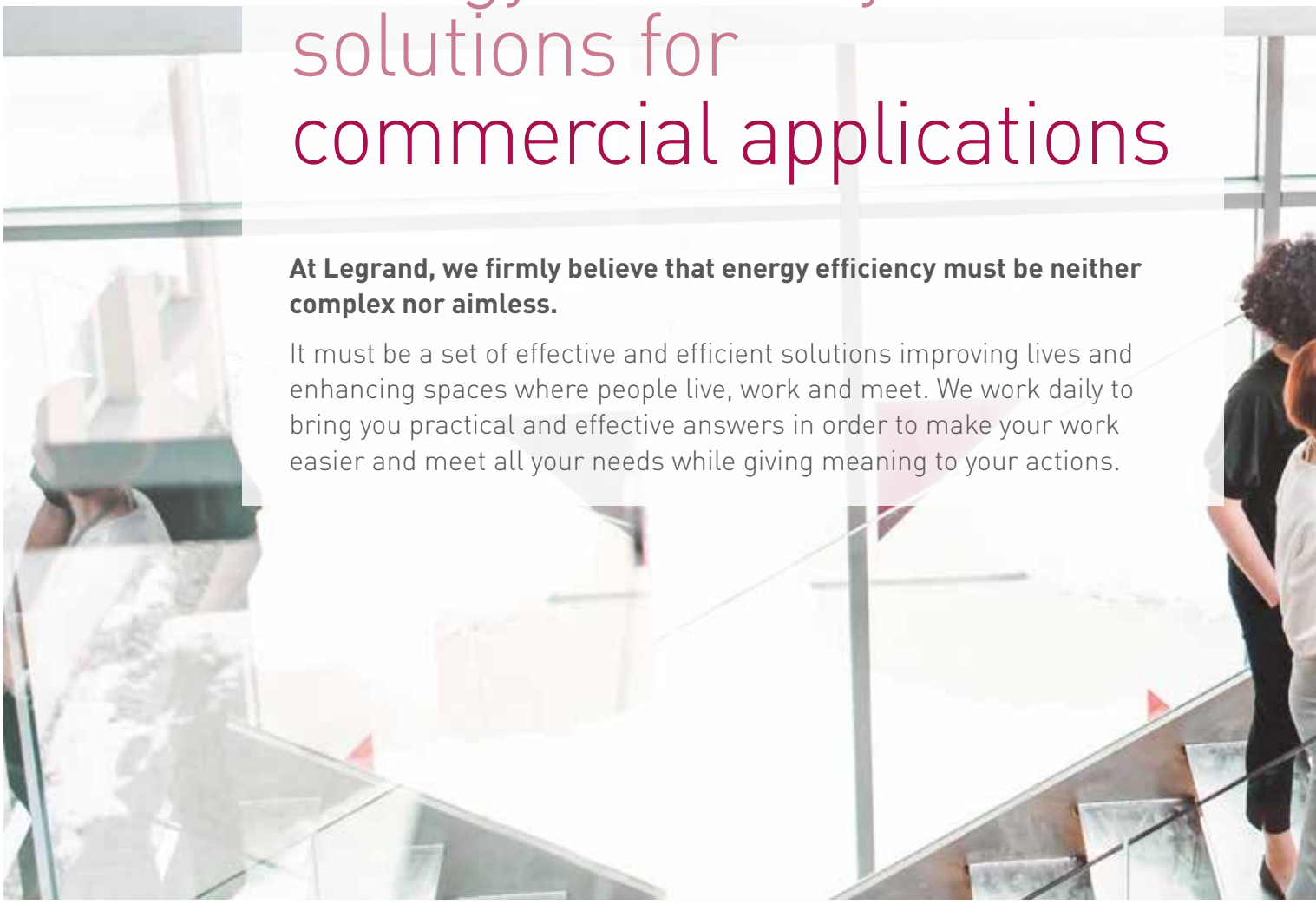
CLAMPER
Brasilian leader in low voltage surge protection for photovoltaic

VANTAGE
Luxury solutions for smart automation in residential plants

Pass & Seymour
Innovation in countless commercial, residential and industrial electrical wiring installations.

HDL
Differentiated and innovative solutions in interphony and electric locks

Energy efficiency solutions for commercial applications



At Legrand, we firmly believe that energy efficiency must be neither complex nor aimless.

It must be a set of effective and efficient solutions improving lives and enhancing spaces where people live, work and meet. We work daily to bring you practical and effective answers in order to make your work easier and meet all your needs while giving meaning to your actions.

MEASURING MANAGEMENT

~15% average saving per year. Savings brought by measuring plan following EN 12765. The offer includes multifunction meters, energy static meters and electronic circuit breakers with integrated measuring functions

ENERGY SUSTAINABILITY

The diffusion of electrical vehicles reduce up to **1 ton of CO^2** per year. To satisfy the modern needs we can offer several solutions of charging stations for electrical vehicles with power from 3.7 up to 180kW (AC or DC)

ENERGY EFFICIENCY

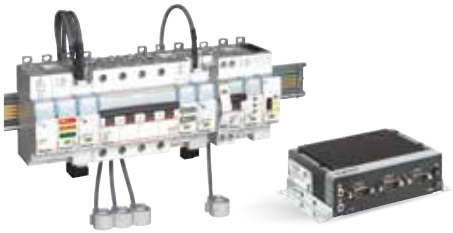
Up to **10%** energy savings can be realized thanks to GREENT.HE transformers, energy efficient for low power losses in accordance to European and International standards and Zucchini busbars with performing connection system.

ENERGY QUALITY

Up to **3 points efficiency** above highest efficiency rate (compared with European Code of Conduct Elite requirements). In addition we offer power factor correction systems able to increase power availability to realize more efficient plants.

LIGHTING MANAGEMENT

With lighting accounting for up to **20%** of a commercial building's electricity use" by "Up to **40%** energy saved per year with Legrand Lighting Management solutions.



ENERGY MANAGEMENT

Savings brought by measuring plan following EN 17265 bring in average **15%** savings, to which can be added non structural actions allowing from **7** to **15%** additional savings (depending on reference, above or below 150 kWh/m²).
Source IFPEB (Cube 2020 study).

Context & issues

COMMERCIAL BUILDINGS ACCOUNTS FOR AROUND 21% OF GLOBAL ELECTRICITY FINAL CONSUMPTION*.

ENERGY-INTENSIVE BUILDINGS

Commercial buildings contribute significantly to global energy consumption and greenhouse gas emissions.

These buildings serve as the basis for economic activities, and their energy requirements can be significant due to factors such as lighting, heating, ventilation and air conditioning (HVAC) systems. However, commercial buildings often exhibit inefficiencies in energy use, leading to increased costs and carbon footprint.

ENERGY EFFICIENCY IN SMALL MEDIUM BUILDINGS

Among all the commercial buildings, small and medium ones are the majority. Ample energy efficiency optimization opportunities exist there, and when added together, the potential for energy savings becomes quite substantial.

For example, by floor space

- in the United States, buildings with a size of less than 5,000 square feet represent nearly half of all commercial buildings**
- in France, buildings below 5,000 square meters occupy approximately 80% of the overall commercial building sector***

*International Energy Agency (IEA) publication titled "Key World Energy Statistics 2021"
** U.S. Energy Information Administration, 2018 Commercial Buildings Energy Consumption Survey
*** Statista, 2022 Commercial real estate in France

Legrand's response

Given the fragmented nature of the commercial buildings, especially small medium sector , meeting the energy efficiency challenges is no easy task.

At Legrand, we create, simple, **open and affordable energy efficient solutions** adaptable to all buildings, new builds or renovations.

Scalable solutions for commercial applications

MARKET

SMALL COMMERCIAL BUILDINGS

Restaurants, retail stores, pharmacies, General practitioner officies, doctor's office...

STAND ALONE SOLUTIONS

MOTION SENSORS (IR)

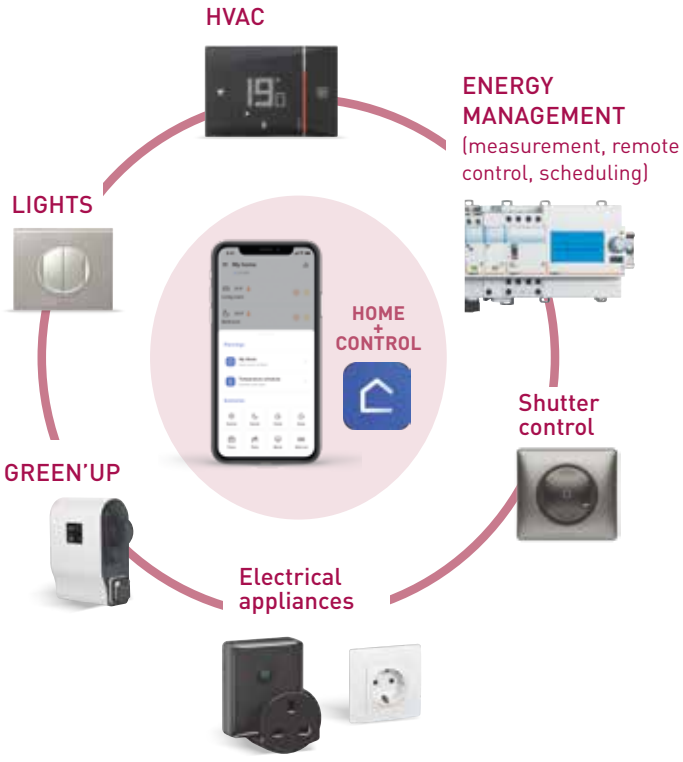
UPS single phase

MODULAR LATCHING RELAYS

MODULAR CONTACTORS

GREEN'UP ONE Mode 3

COMPLETE SYSTEM



or lighting management modules
& energy management solutions

At Legrand, we create, simple, **open and affordable energy efficient solutions** adapted to all buildings, new builds or renovations.

SUPERMARKET

MEDIUM COMMERCIAL BUILDINGS

School, supermarket, office, hospital...

STAND ALONE SOLUTIONS

PRESENCE SENSORS (IR + MICROWAVE)

UPSs 3-phase conventional

MODULAR LATCHING RELAYS

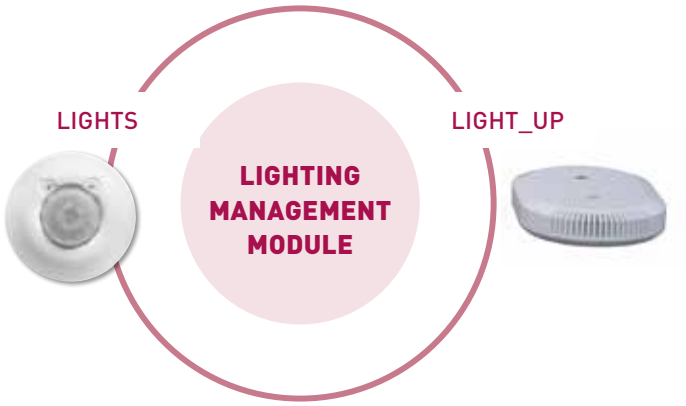
MODULAR CONTACTORS

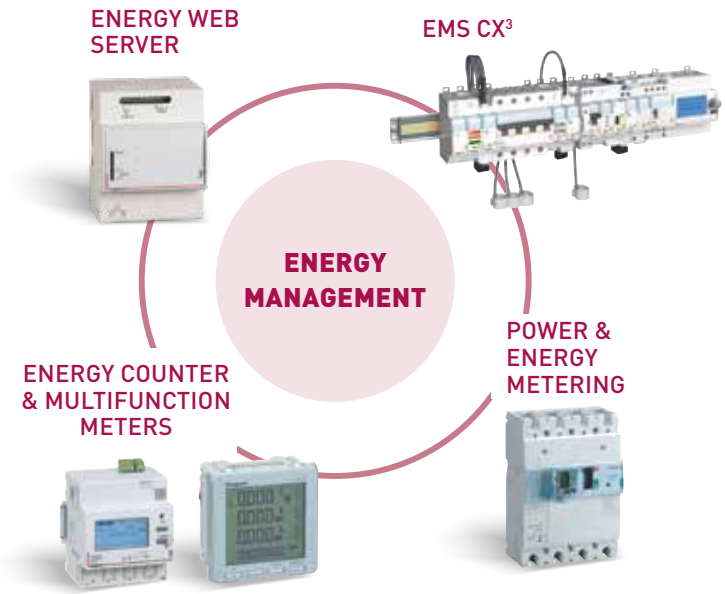
TRANSFORMERS

BUSBARS

GREEN'UP PREMIUM & ECOTAP Mode 3

SET OF PRODUCTS





Scalable solutions for commercial applications

LARGE COMMERCIAL BUILDINGS

University, hypermarket, office, airport, hospital...

STAND ALONE SOLUTIONS

PRESENCE SENSORS (IR + MICROWAVE)

UPSs 3-phase conventional

UPSs 3-phase

ENERGY COUNTER & MULTIFUNCTION METERS

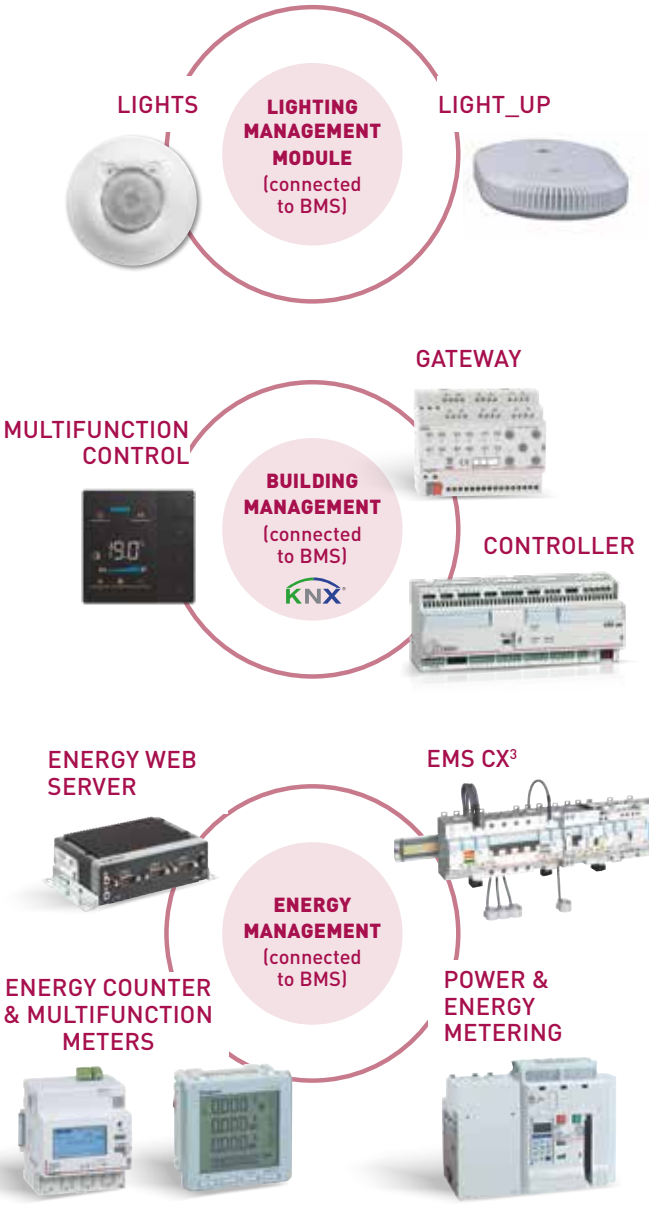
TRANSFORMERS

BUSBARS

GREEN'UP

ECOTAP DUO Mode 3

OPEN SOLUTIONS

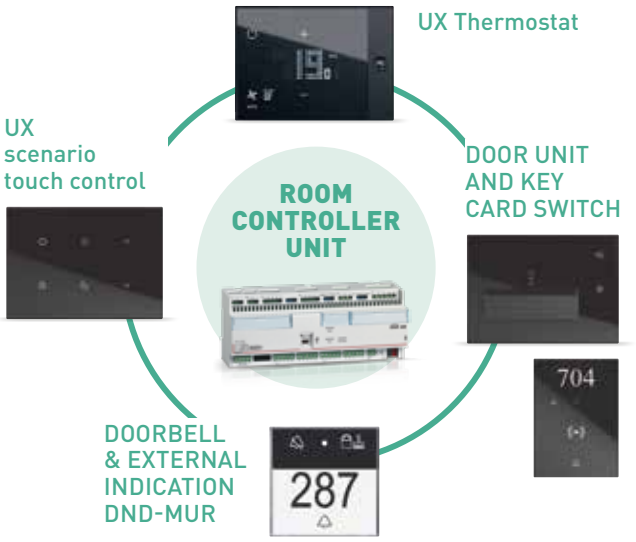


At Legrand, we create, simple, **open and affordable energy efficient solutions** adapted to all buildings, new builds or renovations.

HOTELS

From the smallest to the largest

ROOM LEVEL



BUILDING LEVEL

BEYOND BUILDING

GREEN'UP & ECOTAP Mode 3

ECOTAP DUO Mode 3

UPSs 3-phase modular

TRANSFORMERS

CIRCUIT BREAKER

Circuit breaker with integrated measurement

DPX³ AND DMX³ CIRCUIT BREAKERS (RESPECTIVELY MCCBS AND ACBS), NATIVE EMC COMPATIBLE, are ideal to protect and control the supply end of low voltage installations. Until today, Legrand range of DMX³ ACBs was divided into three different frames: up to 2500A, up to 4000A and up to 6300A.

With the integration of innovative functions such as energy measurement and the communication function for supervision system, it is possible to measure the most important parameters automatically, without making any modification to your system.

The main measurements are:

- Currents, voltages, powers
- Active and reactive energy
- Total harmonic distortion (THD)
- Power factor
- Frequencies

Energy Saving 15%

Environmental advantages

- **Integrated measurement** to monitor power consumption and plan energy efficiency reactions
- **Optimization** of the material use
- **~15% average saving per year.**
  Savings brought by measuring plan following EN 12765.

CUSTOMER BENEFITS

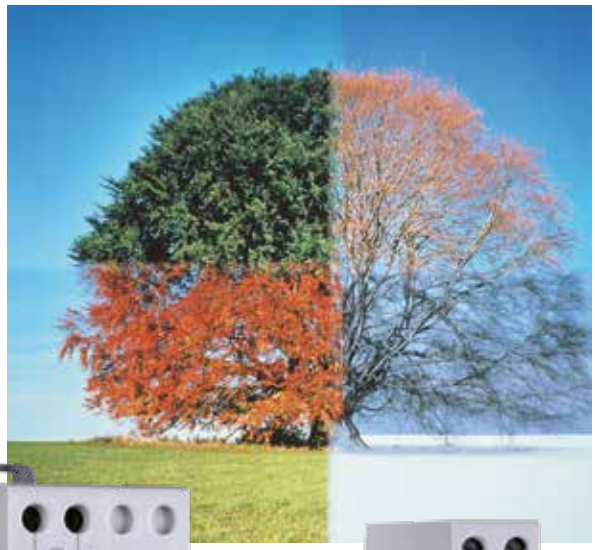
- **Integrated** in Legrand communication and supervision system
- Several **available frames** to optimize panel design
- **Integrated measure** of key parameters
- **Performances** covering all market needs

Time switches

TIME SWITCHES ELECTRICAL MODULES

Control "hard-to-reach" an isolated appliances with simple and recurring programming possibility.

Easily Schedule your loads (motors, pump ....) to run at the most convenient time.



Environmental advantages

- Scheduling: save energy by progamming the running time of your appliance at a more opportune time

CUSTOMER BENEFITS

- **EASILY PROGRAM THE RUNNING TIME OF AN APPLIANCE**
  On a daily or weekly basis, remote control some oads to ensure that they work only when necessary.
- **DIFFERENT VERSIONS TO SUIT ALL SITUATIONS AND NEEDS**
  Manual, digital and digital displayless with Bluetooth configuration.
- **IDEAL FOR HARD-TO-REACH APPLIANCES**
  When Wifi connection is poor or impossible, use the use of these standalone systems is recommended.

Measure and energy management

The Legrand **MEASUREMENT** and **SUPERVISION** system has been developed with the aim to manage energy consumptions inside the building, guaranteeing reliability and continuity of service, to maximize energy efficiency.

The offer of measuring devices puts Legrand at the cutting edge.

The Energy and Multifunction meters are able to measure electrical parameters and provide the measurement of currents, voltages, active, reactive and apparent power, internal temperature and power factor.

15% energy saving

CUSTOMER BENEFITS

The different types of measuring instruments are characterized by:

- **Simplicity of use** completely modernized from an aesthetic point of view (LCD displays, din rail and/or panel 96x96 mm mountings)
- **Maximum precision** and performance in measuring electrical parameters
- **High reliability** compliance with CEI 61557-12 e CEI 62053 -22/23
- **Innovation state-of-heart performance** and new functions; plug-in modules on multifunction meters is to add new functions such as communication outputs, analogue outputs, alarms and memory.
- **Improve the installation** of an energy monitoring system in existing building thanks to retrofit kits

Environmental advantages

- knowing your consumption is the first step toward to energy efficiency.
- Combination of the main products which allow you to obtain energy efficiency.

IME the specialist of the measure

IME is a company specialized in display and measurement instruments, among the largest European companies of the sector.

Just a few of the products available in the catalogue are shown below.
These are the main products which allow you to **obtain energy efficiency.**

RETROFIT KIT

A solution which allows installation of an **energy monitoring system** on existing systems easier.

NEMO 96 HDLE

Flush mounting, 96x96mm - expandable with **plug-in modules**

NEMO 96 HD+

Connected on LV/MV networks by means of CT and VT flush mounting 96x96mm

PLUG-IN MODULES

The purpose of the plug-in modules is to add **new functions** to the Nemo 96 HD/HD+/HDLe models such as communication outputs, analogue outputs, alarms and memory.

For more details or technical information. see the website: **imeitaly.com**

EMS CX³

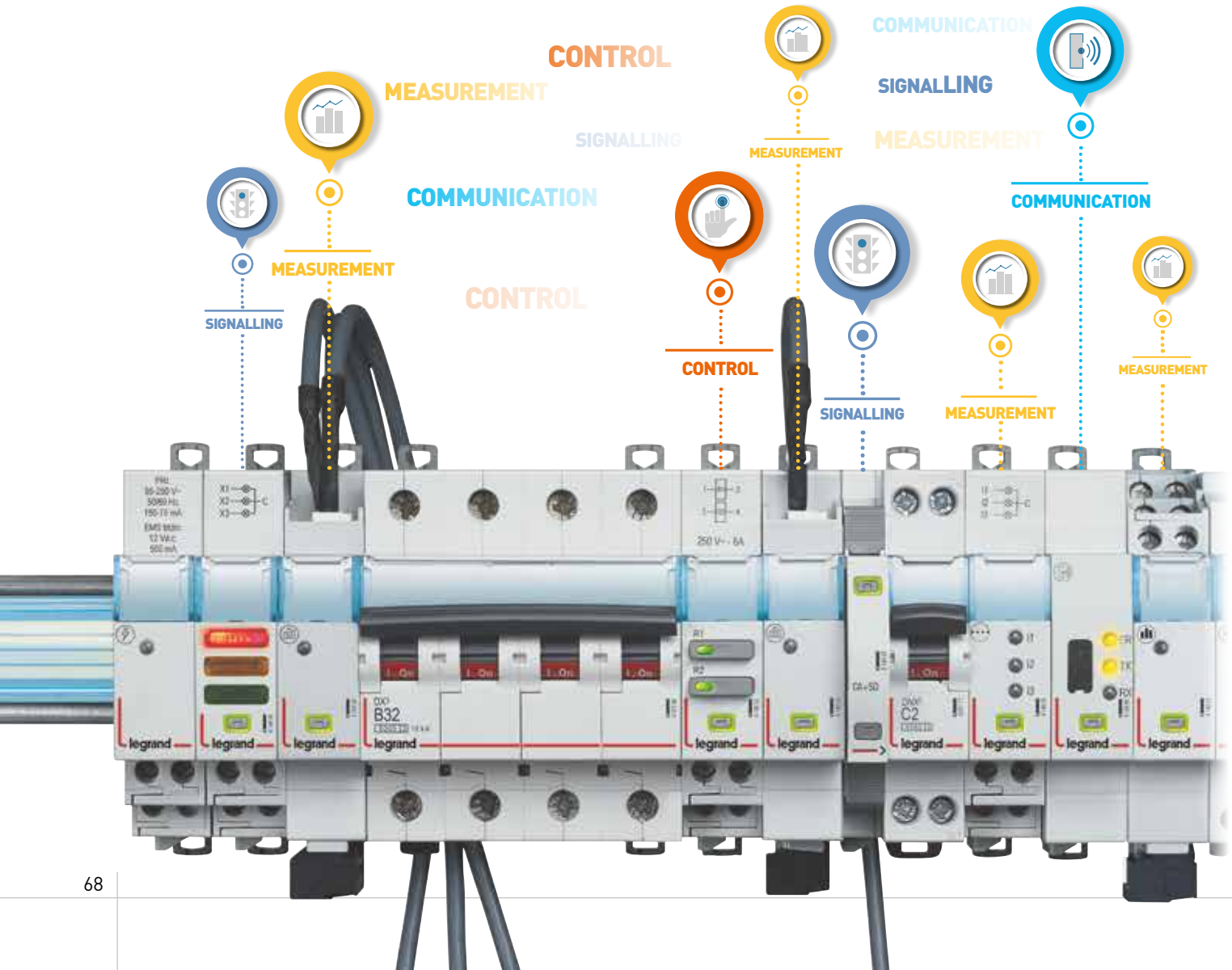
A modular and adaptative system for measure, status and control

USER USAGE

EMS CX³ is composed of various discreet modules for measurement (any kind of Energy and all electrical characteristics of the installation), but also for status & remote control of power devices in board or any kind of equipment.

The extrem modularity allows to meet precisely various requests for any kind of configuartions, in a minimum of space

For visualization and usage, you will be able to choose between a rail mounted screen module, or Legrand software embedded in the Energy Webserver, and also a third-part application using directly modbus data or datas managed an energy webserver.



Environmental advantages

- Control the different consumption lines by easily multiplying the measurement points
- A space-saving solution with low environmental impact

CUSTOMER BENEFITS

- **Wide range of functions in a small** footprint, easy to upgrade
- Energy metering and measurement of electrical characteristics up to 6300 A, with opening flexible toroids from 250 A
- **Configuration** can be carried out without a computer (mechanic wheel and/or local screen mini configurator) or with a computer using a specific **free commissioning tool.**
- **All the modules and components are easily connected to each other** thanks to the specific bus easy to implement using a "bus rail" or dedicated communication cables.
- Specially adapted to meet the European standard **EN 17267 "Energy measurement and monitoring plan"**
- Combined with the Energy Webserver, the whole system forms an **energy management system**, with all the screens adapted to the various functions

Energy Webserver

Interface for data management & Dashboards embedded

USER USAGE

Energy Webserver is a "computer" that is a 2 in 1 product

- Read and save all data coming from any Modbus devices
- Embeds software (webpages) that uses the data to display various dashboards (graphs and tables), as well as visualizing the status of the equipement, including some that can be controlled remotely.

The "datalogger" functions allows to configure alarms with thresholds to inform you remotely by sending an email.

By being integrated into the building's IP network, it can be accessed from any computer, terminal (tablet or smartphone) connected to the same local network.

The heart of the global Energy management system is that it is connected to the energy meter.

CUSTOMER BENEFITS

- A physical device that allows to **easily implement a software**
- **3 versions** depending of the number of devices to manage: 10,32 and 255 Modbus addresses
- **Most of the group's Modbus devices are pre-installed** (Meter, Multi-functions, EMS CX3, pulse meter, electronic Circuit breakers, ...), making connection and configuration very easy
- It could be used as a **gateway** in being connected to a local BMS or advanced Energy management software, but also to any distant server (Cloud platform or distant server without Intranet) thanks to the "connector" function
- **Simple and clear dashboards** to visualize energy consumption and status of the various electrical boards or equipment

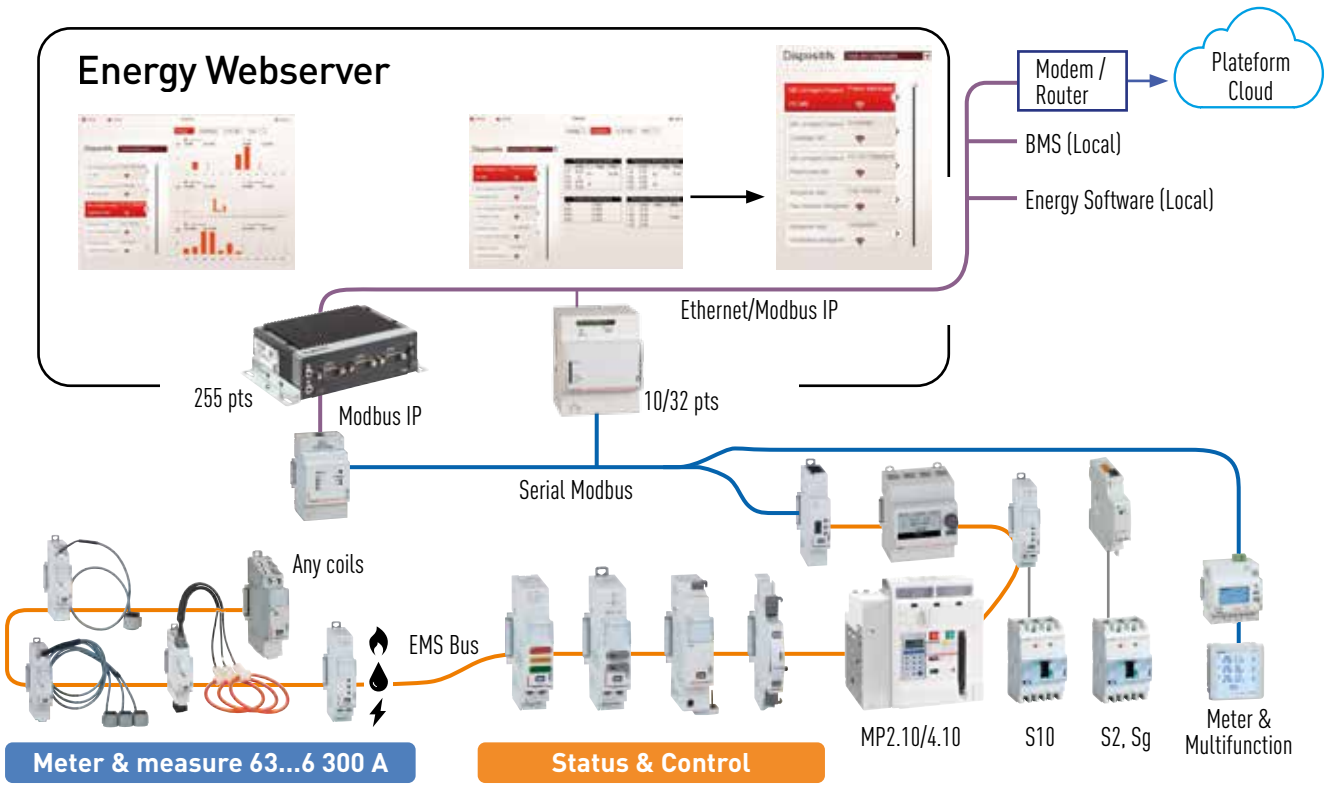
Environmental advantages

- A simple, powerful and easy-to-install solution for controlling consumption

Software

Interfaces

Devices



UPS Uninterruptible Power Supply for commercial applications

The wide diffusion of UPS systems generally stems from an increasing dependence on electricity and the need to protect a range of equipment, data and processes that are crucial to companies.

Power electronics is focused on the design and development of static UPS with increasing performance, which provides adequate energy saving along with lower environmental impact. Thanks to the use of the latest technologies, the new concept UPS boast high efficiency and an intelligent battery charging system that extends its useful life. In addition to significantly reducing UPS consumptions and operating costs, these features contribute to reducing the environmental impact of battery disposal.The UPS offer includes single-phase and three-phase solutions (conventional and modular technology) up to 21 MVA.

PEP ecoPASSPORT

Product Environmental Profile
Green Transformers High Efficiency

Environmental advantages

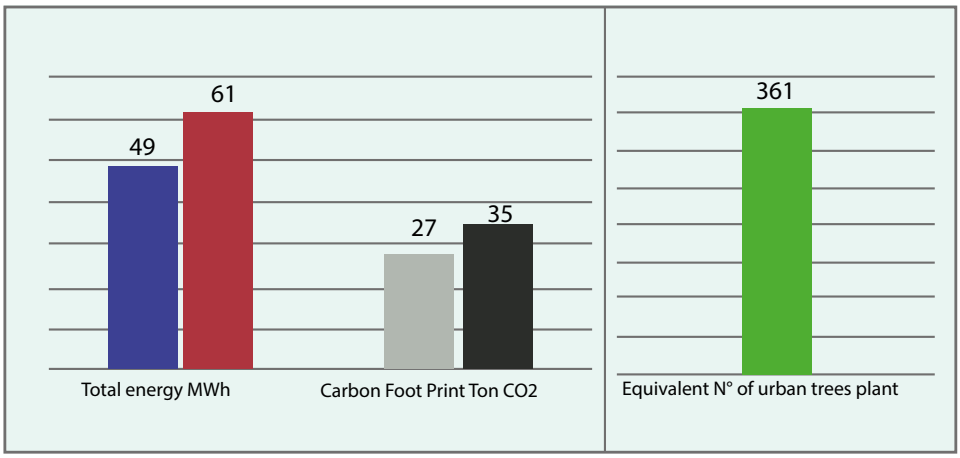
- **ECO compatibility:** The reduction of the energy consumptions and operating costs of the modern UPS, contributes to reduce the environmental impact of battery disposal.
- **Reduction of CO^2 emission**

  The development of increasingly efficient UPS allows high and incremental performance with minimum energy dissipation; with regarding CO^2 emissions.

CUSTOMER BENEFITS

- **Average Efficiency:** up to **96.5%** for modular version and **97.2%** for conventionals
- **Certified Efficiency:** Legrand modular UPS guarantee exceptionally high efficiency values, up to **3%** higher than the European Code of Conduct Elite
- **Power factor 1:** Legrands conventional UPS units have the latest generation micro processors for accurate and constant control of all measurements, and a power factor correction (PFC) circuit.
- **Enhanced Efficiency:** thanks to the use of the latest technologies, the new concept UPS possesses high efficiency and an intelligent battery charging system that extends its useful life.

UPS 100kW 96% efficiency vs 95% efficiency difference in 1 year
Energy savings 13 MWh; 7 Ton of CO^2 not emitted



Three-phase


Trimod HE


Trimod MCS


Keor MOD


UPSaver

Modular

UPSaver


Keor Compact


Keor T Evo


Keor HP


Keor HPE


Keor XPE

Conventional

Green Cast resin transformers with low losses

The **LEGRAND GREEN T.HE** (for European countries) and **GREEN T** (for the rest of the world) transformers are very high-quality products with PEP (Product Environmental Profile) certification. Both transformers have excellent performance and reduce energy loss, in full compliance with regulation 548/2014 and subsequent updates (EU regulation 2019/1783), thanks to the completely new magnetic core with newly developed and high performance materials.

CUSTOMER BENEFITS

- **Compliance** with strict EU regulations on efficiency standards
- **Compact range** to enable installation even in narrow rooms
- **Certified product** for severe environmental conditions (up to E4)
- **Fire resistant** (class F1)
- **Proved reliability** (<5 pC partial discharges)

Environmental advantages

- **Reduces power loss,** increases energy efficiency
- **Reduction** of CO2 emissions
- Use of **high-performance** materials lead to weight reduction and global lower use of materials and
- **Dry technology** removes the need of polluting substances required by oil transformers

Note: Cast resin trasformers are also used in the grey room in Data Center solutions

Product Environmental Profile
Green Transformers High Efficiency

- Average reduction losses
- CO^2 saved 450 (Tons/year)
- More than 30.000 equivalent of trees planted

Average load factor considered 30% for continuous use.

CLASSIFICATION

The classification of a cast resin transformer depends on the value of the no-load loss (P0), as well as the load loss (Pk). More precisely, P0 losses are independent from the loads and remain constant for the whole time the transformer is connected to the electrical grid. On the other hand, Pk losses only occur when the transformer is feeding a load and they are proportional to the square of the current.

Full EU regulation compliance. -15% losses for other countries.

Once the transformer has ended its service life, all of the materials can be easily recycled or disposed of, as indicated in the PEP (Product Environmental Profile) document. This document describes the environmental impact of a product during its entire life cycle (from extraction of the needed raw materials to product disposal).

Zucchini
Green Busbar

The **BUSBAR** is the most modern solution for distributing medium-large power, supplying light fittings in warehouses, fairs and any space where speed of assembly offers tangible benefits. The busbar is also frequently used to supply the backbones (horizontal and vertical) of service-sector buildings complying with installation times and offering a final solution with many technical advantages.

The ZUCCHINI Busbars, available in 3 distinct amperage ranges:

- **Low Power** Busbars from 25A to 63A
- **Medium Power** Busbars from 63A to 1000A
- **High Power** Busbars from 630A to 6300A

Note: Zucchini busbars can be installed in several applications, depending to the power and also for the energy distribution in Data Center solutions.

CUSTOMER BENEFITS

The main benefits using the bus bar are:

- **Reduction** of installation time
- **Simplicity** with design cost reduction
- **Reduction** in maintenance costs
- **Flexibility** and reduction in reconfiguration costs
- **Fire resistance**
- **Compactness** and more useful space for the building.
- Possible **reduction** for conductor costs
- **Reduction** in installation and support costs
- **Reduction** of operating costs and decrease energy loss
- **Lower electromagnetic** emissions with suppression of shielding solutions

Environmental advantages

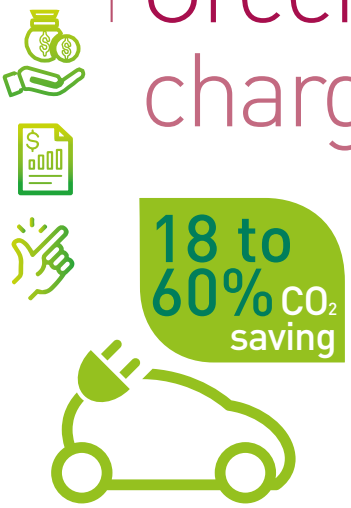
The measurement of the environmental impact is a deterministic process that takes into consideration the entire life cycle of a product.

- About **-10% loss, CO_2 generated,** environmental impact (example: 1 km XCP-HP 2000A copper charged at 30% for 30% of its life, after 20 years it will have contributed to generating 835 T CO_2 equivalent. An equivalent cable distribution generates about 100 T CO_2 equivalent more).
- A busbar requires **fewer materials (-19%)** for its construction and installation than an equivalent solution for cables (comparison with the same voltage drop)
- All materials can be **easily recycled** or disposed of, as indicated in the **PEP (Product Environmental Profile)** document. **Eco Passport PEP** evaluate the environmental impact taking in account 11 parameters during the entire life of the product

PEP ecoPASSPORT®

Product Environmental Profile
Green Transformers High Efficiency

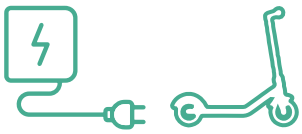
Green'Up charging station



The **GREEN'UP** charging stations allow plug-in electric and hybrid vehicles equipped with single-phase or three-phase alternating current (AC) battery chargers – MODE 2 / MODE 3

– To safley and simply recharge.

MODE 1

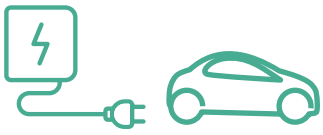


Typical for e-Bikes, kick scooters and electric scooters. Connection of the EV vehicle to normal 230 Vac sockets up to 8A/10A max.

MODE 2

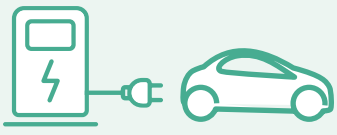
It requires the presence of a protection device generally integrated in the cable supplied with the vehicle. Connection of the EV vehicle to 230Vac domestic sockets up to 8A/10A A max or reinforced sockets like Green'up Access up to 16 A max.

MODE 3



It requires the presence of a protection device integrated in the charging station. Connecting the EV vehicle to the network with dedicated sockets – up to 22 kW (32 A). Communication between station and vehicle via PWM (Pulse Width Modulation) protocol.

MODE 4



It provides a connection with the EV vehicle via specific connectors, a fixed cable and digital communication with the vehicle itself. Battery charger inside the station – up to 500 A / 1000 V. Standard type connectors: CCS (European standard) and CHAdeMO (Japanese standard).

ATTENTION: MODE 4 NOT SUPPORTED BY GREEN'UP PREMIUM SOCKET

18 to 60% CO_2 saving

GREEN'UP PREMIUM
PLASTIC CHARGING STATIONS (AC)

A SOLUTION WHICH ALLOWS CHARGING TO BE CONTROLLED LOCALLY OR REMOTELY

The Green'Up Premium charging station is used for charging vehicles in MODE 2 and MODE 3. With its Bluetooth connection it can be used to control charging locally via the EV CHARGE light application. When connected to the IP or Wi-Fi network with the communication kit (optional), it allows remote control from a smartphone, tablet computer or PC.

SINGLE-PHASE POWER: 3,7 kW / 4,6 kW / 7,4 kW

THREE-PHASE POWER: 22 kW

Local or remote charging management:

- **locally** (via Bluetooth) with Smartphone and EV CHARGE app connected to the Internet;
- **remotely** (via IP / Wi-fi Web page) with smartphone or personal computer (requires accessory communication kit 0 590 56).

Note (*) System preparation and devices required for connected system (Smart)

OFFER OVERVIEW
FOR **AREAS**

Green'Up charging station

18 to 60% CO_2 saving

GREEN'UP PREMIUM
METALLIC CHARGING STATIONS (AC)

FOR OUTDOOR OR UNCOVERED RECHARGE

- Charging of 2 EV vehicles simultaneously at the maximum power
- Wall installation (with accessories)

IP 55 | IK 10 | MODE 1 AND 2 | MODE 3 COMMUNICATING

INTEGRATED RFID BADGE READER

Allows you to unlock the terminal to count the energy consumption

SECURE ACCESS

Lock/unlock the station via the EV CHARGE application.

GREEN'UP ACCESS SOCKET

Reinforced socket to charge in **MODE 2** up to 16A.

Socket with IPXXD protection and equipped with safety shutter for charging in **MODE 3**.

TYPE 2

SINGLE-PHASE POWER:
3,7 kW / 4,6 kW / 7,4 kW / 22 kW

THREE-PHASE POWER:
11 kW / 15 kW / 18 kW / 22 kW

Local or remote charging management:

- **locally** (via Bluetooth) with Smartphone and EV CHARGE app connected to the Internet;
- **remotely** (via IP / Wi-fi Web page) with smartphone or personal computer (requires accessory communication kit 0 590 56).

Ecotap charging station

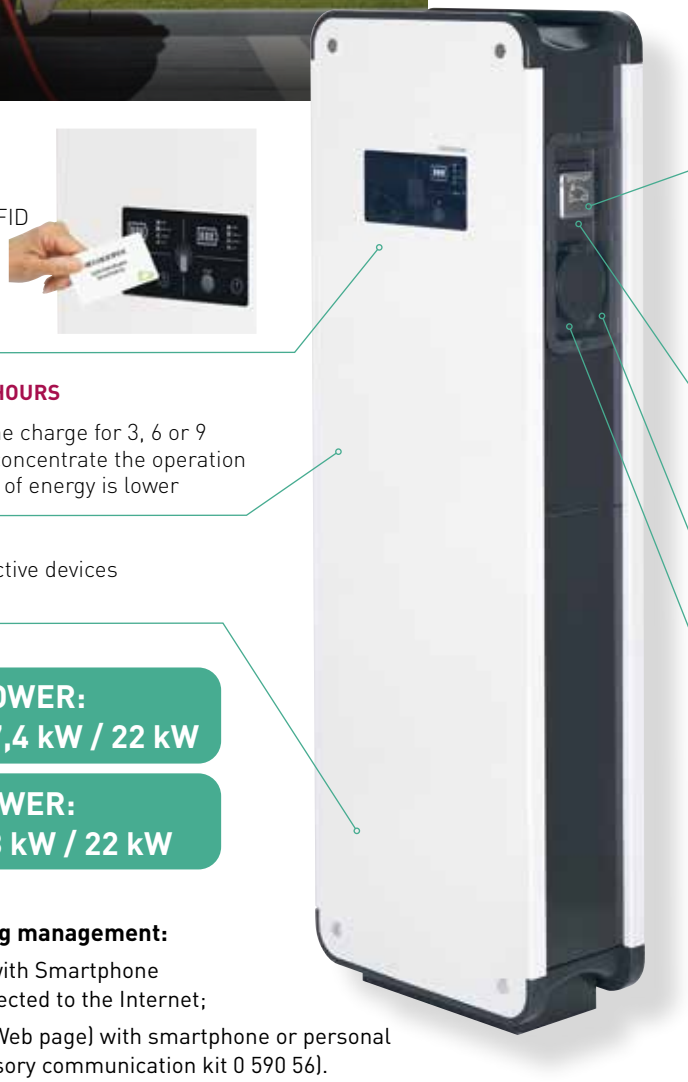
18 to 60% CO_2 saving

GREEN'UP PREMIUM METALLIC CHARGING STATIONS (AC)

FOR OUTDOOR OR UNCOVERED RECHARGE

- Charging of 2 EV vehicles simultaneously at the maximum power
- Floor installation (with accessories)

IP 55 | IK 10 | MODE 1 AND 2 | MODE 3 COMMUNICATING



Identification system for RFID badge reader incorporated in the terminal. Allows the activation of the sockets (optional).

DELAYED START 3, 6 OR 9 HOURS

Possibility of postponing the charge for 3, 6 or 9 hours, so as to be able to concentrate the operation in the hours when the cost of energy is lower

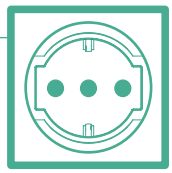
Free space to install protective devices in the pedestal.

SINGLE-PHASE POWER:
3,7 kW / 4,6 kW / 7,4 kW / 22 kW

THREE-PHASE POWER:
11 kW / 15 kW / 18 kW / 22 kW

Local or remote charging management:

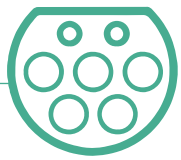
- **locally** (via Bluetooth) with Smartphone and EV CHARGE app connected to the Internet;
- **remotely** (via IP / Wi-fi Web page) with smartphone or personal computer (requires accessory communication kit 0 590 56).



GREEN'UP ACCESS SOCKET

Reinforced socket to charge in **MODE 2** up to 16A.

TYPE 2



Socket with IPXXD protection and equipped with safety shutter for charging in **MODE 3**.

Ecotap (AC & DC) charging stations

18 to 60% CO_2 saving

FOR OUTDOOR OR UNCOVERED RECHARGE

- Charging solutions for applications in the tertiary sector (hospitality, trade, municipality), service companies (Mobility Service Providers, utilities) and prestigious residential
- Reduction of CO^2 emissions and reduced impact for the enviroment

IP 54 | IK 10 | MODE 3 AND 4 | MODE 3 and 4 COMMUNICATING

THE ECOTAP RANGE INCLUDES:

- Alternating current (AC) charging stations **MODE 3** – up to 22 kW
- Direct current (DC) charging stations Fast charging - **MODE 4** - with powers from 30 to 180 kW.

ALL ECOTAP PRODUCTS ARE CONNECTED AND COMPATIBLE WITH ALL MSPs **(Mobility Service Providers).**

This offers the possibility to sell the service of recharge through **MSP to manage the payment** with the end user. These require internet connection via a **GSM network (SIM card)** or via LAN cable.

Remote communication / connection allows for Its constant and timely updating Firmware / new car management and resolution of the problems / malfunctions without intervention of the technician on site.

Guest Room Management System

GRM SYSTEM

Optimize energy costs while simplifying the lives of your employees and guests with a room management system that revolutionizes the hospitality industry.

The GRMS (Guest Room Management System) is the hotel room automation system. It manages the information sent by the commands, allowing to activate many functions such as the management of the light, the heating, the roller shutters...

Legrand has therefore built a complete solution capable of managing services, increasing guest comfort and providing real added value for all.

Environmental advantages

- Heating and cooling exactly when and where it is needed avoiding waste
- Make energy savings without sacrificing comfort
- Automatic switch-off of electrical equipment when the customer is not present

CUSTOMER BENEFITS

- **Connected interface** Hotel Room Controller centralizes all the commands and allows a simple management of each room
- **Check out** at the reception desk if the guest's safe is empty during the Check OUT
- **Remote modification** of the room temperature
- **Maintenance staff badges** can be set to launch a dedicated scene to facilitate their work
- **Customization of the scenario** according to different customers
- **Customizable design** according to the products

Lighting control

Several solution are available for lighting control for energy saving.

With these solutions is possible to reduce lighting consumption but respecting the wellbeing and safety of people living in the spaces.

occupancy detection permit to reduce lighting consumption but also HVAC

BASIC	CP ELECTRONICS	LIGHT_UP	KNX
Short rage for budget project	Specialist wide range for any space and project	Solution for smart workspace	Standard for home and building automation

Basic motion sensor - stand alone

Basic motion sensors are a short range of stand alone sensor for budget projects.

Reduces energy waste in unoccupied spaces switching the light on and off based on the presence.

They are particularly useful passage area such as toilets, corridors, car park, porches and storage room.

CUSTOMER BENEFITS

- Passive infrared sensor (PIR)
- Automatic ON-OFF
- Easy lux and time setting with trimmers
- 8 meters of area detection
- Different installation options

40% Energy Saving (according to EN 15193)

Annual reduction in the emission of 249Kg CO_2

Environmental advantages

- Avoid energy waste in unoccupied spaces
- Avoid energy waste if there's enough natural light at the detection

CP Electronics specialist - stand alone sensor

CP Electronics is a UK company specialised in lighting control and part of the Legrand Group since 2016.

The presence stand alone detectors are a wide range for any space and projects, counting on many different form factors, technologies and full configuration of parameters.

As long as a presence is detected the sensor switch only if the lux level is below the target. Presence and lux level are constantly monitored to switch off the light depending on the delay set.

Can be used in all application such as residential and hotel common area, offices, commercial spaces, educational, hospitals, warehouses, airports.

CUSTOMER BENEFITS

- Passive infrared sensor (PIR) and microwaves
- Automatic ON-OFF and manual override
- Dimming 1-10V and DALI
- Daylight harvesting
- Complete settings parameter with handset

40% Energy Saving (according to EN 15193)

Annual reduction in the emission of 249Kg CO_2

Environmental advantages

- Avoid energy waste in unoccupied spaces, not only of lighting but also of HVAC
- Avoid energy waste if there's enough natural light
- Dim maximum at 85% to save energy and expand drivers life
- Use manual ON instead of Auto ON permit to get additional savings
- Adjusting and differentiating the sensitivity with lights ON or OFF permit to avoid false detection

CP Electronics specialist - stand alone sensor

CEILING

False ceiling

EBDSPIR
PIR sensors, compact, recessed ceiling mount

Surface

EBDSM
PIR sensors, compact, surface mount a ceiling

Medium range

EBDMR
PIR sensors, compact, recessed ceiling mount with medium range

Corridors

EBDRC
PIR sensors, mounting from long-range ceiling recessed for corridors with adjustable head

Mini (small size)

EBMHS
PIR sensors, miniature, flush mount a ceiling

Installation in channels

EBMPIR-MB
PIR sensors, miniature, for mounting on light fixtures

CEILING AND WALL MICROWAVE

Corridors

MWS3A
MW sensors, flush mounting long range ceiling lights for corridors with adjustable head

Mini (small size)

MWS5
MW sensors, compact, flush mount/ceiling surface

False ceiling

MWS6
MW sensors, compact low profile, recessed ceiling mount

Semi protruding mounting (for high ceilings) IP40

MWS1A
MW sensors, square, long radius, semi assembly protruding from the wall

Surface mount (for high ceilings) IP66

MWS1A-IP
MW sensors, square, long beam, surface mount wall mounted, IP66

Semi assembly protruding IP40

MWS1A-C
MW sensors, square, semi protruding mounting ceilings (ceiling light version)

Surface mount ceiling IP66

MWS1A-C-IP
MW sensors, compact, ceiling surface mount (ceiling light version), IP66

CEILINGS OR SPANS HIGH (HIGHBAY)

Flush mounting

EBDHS
PIR sensors, mounting from recessed for very high environments (high bay)

Low working temperatures

EBDHS-LT30
MW sensors, compact, flush mount/ceiling surface

Installation in channels

EBDHS-MB
PIR sensors, mounting on light fixtures for very high environments (high bay)

Light_Up

IoT solution for smart workplaces to avoid energy waste in unoccupied spaces and leverage natural light contribution in occupied ones, share people counting and environmental data with BMS to reduce HVAC consumption and optimize spaces.

Lighting management

Brightness + movement | Brightness + movement | Sound + IAQ + Temperature + brightness + movement + humidity | Sound + IAQ + Temperature + brightness + movement + humidity + count

CUSTOMER BENEFITS

- Passive infrared sensor (PIR) and people counting
- Automatic ON-OFF and manual override
- Dimming 1-10V and DALI
- Daylight harvesting
- Multisensor with occupancy, temperature, humidity, air quality and noise
- Complete settings parameter with Smartphone app

40% Energy Saving (according to EN 15193)

Annual reduction in the emission of 249Kg CO_2

Environmental advantages

- Avoid energy waste in unoccupied spaces, not only of lighting but also of HVAC
- Avoid energy waste if there's enough natural light
- Dim maximum at 85% to save energy and expand drivers life
- Use manual ON instead of Auto ON permit to get additional savings
- Adjusting and differentiating the sensitivity with lights ON or OFF permit to avoid false detection

KNX standard for building automation

Control on unique standard the most energy impacting functions as HVAC, lighting control and blinds, automating the building behavior through scheduling and scenes.

MALLIA SENSES

CÉLIANE

MOSAIC

CUSTOMER BENEFITS

- Legrand wiring devices on the KNX standard for home & building automation
- Multi application controllers for lighting, shutter and HVAC
- All dimming technologies (DALI, 1-10V, phase dimming)
- Passive infrared sensor (PIR) or microwaves
- Daylight harvesting
- All setting with KNX standard ETS soware

AXOLUTE

LIVING NOW

Note: KNX standard solutions are available also for residential applications

40% Energy Saving (according to EN 15193)

Annual reduction in the emission of 249Kg CO_2

Environmental advantages

- Use occupancy information coming from presence sensor to manage no only lights but also to reduce HVAC set point and other loads
- Create a schedule based how the building is used
- Monitor building through supervision software that reacts to anomalies

Our specialist brands

SEVERAL BRANDS AND OFFERS TO SATISFY ALL NEED FOR TERTIARY, COMMERCIAL AND INDUSTRIAL APPLICATIONS

Legrand group is able to warranty a wide range of solutions, thanks to specialist brands that offer products for measure, supervision and energy efficiency.

Devices and systems to improve energy efficiency and benefits for all stakeholders are available to meet the specific needs.

legrand
Complete global solutions for digital and electrical infrastructure.

bticino
Global solutions for wiring device, protection and control of electrical plant

BORRI
Specialist in UPS for industrial applications and datacenters.

CABLOFIL
Using its global strength and market leading position, Cablofil has developed a complete range of cable management solutions.

IME
Specialist for measurement and supervision

WIREMOLD
Trust the industry's largest provider of end-to-end wire and cable management solutions for indoor and outdoor applications

ecotap
Specialist for vehicle charging station in AC and DC

WattStopper
Solution for lighting control

TCL
Chinese firm specializing in modular and high-current circuitbreakers for residential, commercial.

Estap
Major player in the Turkish electronics enclosures industry

ELECTRAK
Powertrack systems, floor boxes, grommets, desk modules and lighting control ranges

ZUCCHINI
Zucchini has become a leading brand of cast resin transformers, offering one of the most comprehensive ranges on the market.

inform
Your Solution Partner in Power Electronics and Uninterruptible Pure Energy

ENSTO
Ensto Building Systems
Ensto Building Systems designs, manufactures and sells high quality electrification products and solutions in the Nordics and the selected product segments globally.

4.3

OFFER OVERVIEW
FOR **AREAS**

DATA CENTER

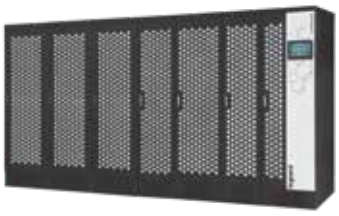
Energy efficiency solutions for Data center applications

Controlling energy consumption is the first step towards energy efficiency, which cannot be reached without precise measurement and the implementation of decisive actions.

Ensuring the optimization, of Datacenter cooling and of server consumption allows to work on more than **85%** of datacenter overall energy consumption.

ENERGY EFFICIENCY

Up to **10%** energy savings can be realized thanks to **GREENT.HE transformers,** energy efficient for low power losses in accordance to European and International standards and Zucchini busbars. Metering solutions (energy meters, multifunction meters) are also essential solutions installed both at Grey Room level and at White Room level.



ENERGY QUALITY

Legrand UPS, which have always featured high performance, but low power consumption (high energy efficiency) represent an excellent investment. Our three-phase ranges guarantee maximum real power. The solution offered for Data Center applications is UPSAVER.

COOLING EFFICIENCY

Choosing the right **cooling solution for data center environment** can improve efficiency and performance, dramatically impacting cost savings and Power Usage Effectiveness (PUE). The challenge data center managers face is how to select the right solution for their specific cooling requirements.

SMARTSENSORS

SmartSensors are a valuable tool to accurately report critical environmental conditions affecting IT equipment. Available models monitor temperature, humidity, airflow, differential air pressure, water/leaks, dust/particles, contact closures, proximity detection, vibration, and more.

INTELLIGENT PDU

PX Series PDUs are equipped with bi-state latching relays, making outlet switching safer while consuming **70%** less energy than conventional alternatives.

LIGHTING MANAGEMENT

Lighting controls should be easy to select, install, monitor, and use today — and to expand effortlessly in the future. We don't just make life better and brighter for tenants and occupants

4.3

OFFER OVERVIEW
FOR **AREAS**

DATA CENTER

Context & issues

DATA CENTERS CONSUME A GREAT DEAL OF ENERGY:

220-320 TWh in the EU in 2021, **i.e. 0.9-1.3% of world energy consumption*.**

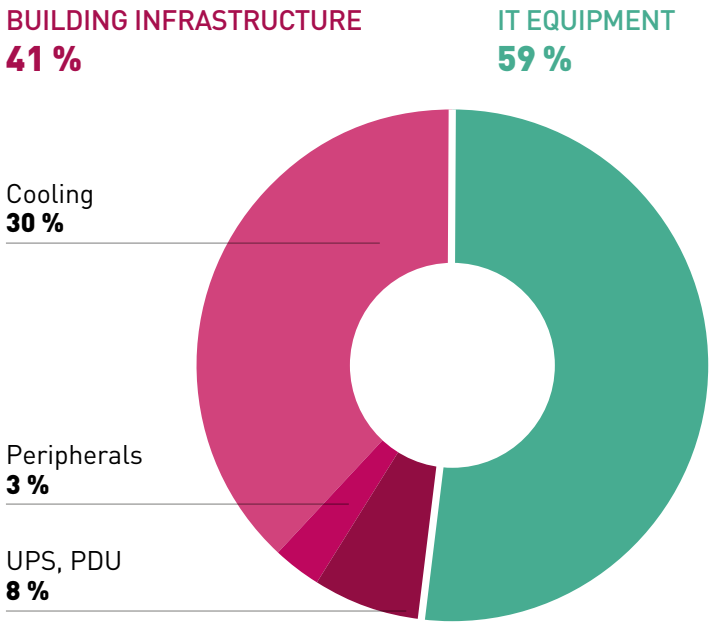
ENERGY-INTENSIVE BUILDINGS

For example:

- a typical data center consumes 10 to 100 times more energy per m² than a standard office building
- the consumption of a 10,000 m² data center can be the same as that of a town with 50,000 inhabitants
- over 10 years, the operating cost of a data center can be the same as its installation cost
- the electricity bill represent in most cases 70% of operating costs

The building infrastructure currently represents close to half of the total energy consumption.

DISTRIBUTION OF ENERGY CONSUMED BY A DATA CENTER



* Source: European Commission

AN INCREASINGLY LARGE ECOLOGICAL FOOTPRINT

The environmental footprint of data centers continues to increase: over the 10 coming years, it is estimated that there will be 30 times more data (including 90% unstructured data) and 1000 times more servers.
At this pace, energy needs could double within five years. It is therefore essential to reduce the carbon footprint of data centers and improve their energy efficiency, in order to reduce consumption and costs.

For more information consult:
https://www.iea.org/reports/data-centres-and-data-transmission-networks

Legrand Group's response

OBJECTIVE: REDUCE THE PUE

The PUE (Power Usage Effectiveness) is an indicator for measuring the energy efficiency of a data center by working out the ratio of the total consumption of the data center to that of the computer and telecoms (IT) equipment. The ISO/IEC 30134-2:2016 "Information technology -- Data centres -- Key performance indicators -- Part 2: Power usage effectiveness (PUE)" standard defines several PUE categories:

Basic PUE (Category 1)

This measurement stipulates the conversion of all measurements into kilowatt-hour (kWh). It is a precise method including energy sources other than mains electricity. PUE1 is calculated over a 12-month period.

Intermediate PUE (Category 2)

This measurement includes the category 1 requirements. However the IT consumption is measured at the PDUs (Power Distribution Units). A clear distinction is therefore made between the infrastructure and the IT equipment and it is easier to measure a pPUE (partial PUE).

Advanced PUE (Category 3)

This measurement includes the category 2 requirements. It refines them by requiring the IT consumption to be measured at device level. A data center with optimum efficiency will be PUE 1, whereas the average global PUE of a data center is between 1.55 and 2.55 (source: Global Data Center Survey 2022). Reducing this is therefore a priority in order to ensure that the infrastructure provides ever-higher performance.

THREE POSSIBLE ACTIONS TO REDUCE THE PUE :

- OPTIMIZING THE COOLING SOLUTIONS
- REDUCING POWER LOSSES
- MAKE USE OF PERFORMANCE INDICATORS

AVERAGE PUE 2022 : 1.55

Note

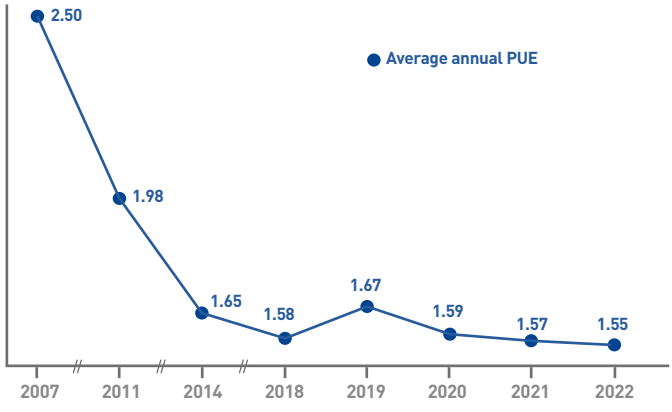
ISO/IEC standardised additional indicators to refine the assessment of the ecological footprint of a data center:

- The Renewable Energy Factor was standardised as the ISO/IEC 30134-3:2016 Information technology -- Data centres -- Key performance indicators -- Part 3: Renewable energy factor (REF)
- The Energy Reuse Factor (ERF): this measure of the amount of energy reused outside the data center is in the process of being standardised
- The Carbon Usage Effectiveness (CUE): this extrapolates a greenhouse gas emission volume based on the electricity consumption of the data center
- The Water Usage Effectiveness (WUE): it measures the amount of water used in the data center.

These last two KPI's are on the list for future standardization.

PUE progress has stalled

What is the average annual PUE for your largest data center? (n=669)



UPTIME INSTITUTE GLOBAL SURVEY OF IT AND DATA CENTER MANAGERS 2007-2022

Scalable solutions for Data center applications

AT RACK LEVEL

Smart PDUs

Smart sensor

Airflow management

Rear Door Coolers

Legrand offers different and scalable solutions able to satisfy several needs.

From the stand alone up to integrated systems we can provide components, devices and system that guarantee energy efficiency complying to technical and economic aspects.

AT POD LEVEL

Busbars

Containment & airflow racks

In Row Cooling

COMPLETE DATA CENTER SYSTEM

Busbars

UPS

Transformers

Metering with Intelligent PDU

PX4 RACK PDUS

The power of forward thinking

Raritan
A brand of legrand

Trusted by the world's largest data center operators, Raritan intelligent PDUs benefit from 30+ years of battle-tested engineering and have been perfected by our Data Center experts to ensure uptime and availability.

The new PX4 builds on the Xerus™ Technology Platform by adding industry-proven outlet technology and a set of groundbreaking intelligence features. This combination delivers unsurpassed outlet and power density, flexibility, reliability, security, and accurate data collection.

Discover how the innovations in the PX4 intelligent PDU can help you to Outpace, Outthink, and Outperform.

Benefits

- Real-time visibility, reporting, and alerting of power metrics and event
- Best-in-class flexibility to meet and anticipate future requirements
- Engineered for mission-critical uptime
- Unsurpassed outlet and power density
- Easy data collection and export to manage energy utilization
- Secure encrypted communication, by default, for all PDU data

OUTPACE

- High Density Outlet Technology
- C13 and C19 all-in-one outlets
- Alternating branch power distribution
- Outlet and cable locking
- 45-degree angled infeed

OUTTHINK

- Power quality monitoring
- ±0.5% metering accuracy
- Circuit Breaker Trip Forensics with Waveform Capture
- Fully hot-swappable onboard iX™ Controller

OUTPERFORM

- Xerus Technology Platform
- Unsurpassed security suite
- Redfish® RESTful API
- Hundreds of cataloged and customization options

Measure to see → See to understand → Understand to act...

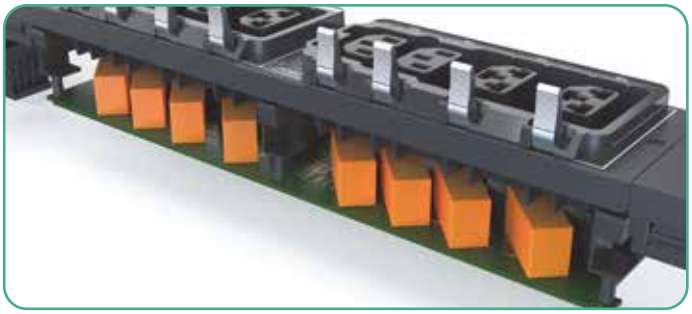
DATA COLLECTION & OPTIMIZATION

- Real-time visibility, reporting and alerting of power metrics and events, at the cabinet
- Easy data collection and export to examine energy utilization
- Granular data output at the PDU's inlet, outlet, and rack-level for accurate power capacity planning
- Enhanced Metering Features

±0.5% Outlet & Inlet Metering Accuracy
±1.0% Circuit Breaker Metering Accuracy
Features Meet IEC Metering Standards

BI-STABLE LATCHING RELAYS IN !

- Biggest value = less energy and less heat
- Makes outlet switching safer while consuming less energy than conventional alternatives



Metering with Intelligent PDU

POWER QUALITY MEASUREMENTS

The **PX4'S** rack-based power quality measurements allow you to proactively troubleshoot sources of power issues like power leaks, distortions, or variations before they become more significant problems.

The PX4 measures the following types of power quality measurements at the PDU's inlet and/or outlet:

Power Quality Metric	Measurement	Inlet Measurement	Outlet Measurement
Voltage, RMS	V_{RMS}	Y	Y
Voltage, Neutral	V_N	Y	N
Voltage, Harmonic Distortion	V_{THD}	Y	Y
Voltage, Dip & Swell	V_{DIP} V_{SWL}	Y	N
Current, RMS	A_{RMS}	Y	Y
Current, Neutral	A_N	Y	N
Current, Inrush	A_{INRUSH}	N	Y
Current, Harmonic Distortion	A_{THD}	Y	Y
Crest Factor	CF	Y	Y
Watts	W	Y	Y
Volt-Amps-Apparent Power	VA	Y	Y
Volt-Amps-Reactive Power	VAR	Y	Y
Power Factor, True	PF_{true}	Y	Y
Power Factor, Displacement	PF_{disp}	Y	Y
Power Factor, Distortion	PF_{dist}	Y	Y
Energy	kWh, kVA	Y	Y

*Metrics with Y (yes) in the Outlet Measurement column are only available on units equipped with outlet level monitoring.

PX SERIES

Raritan PDUs are available with various key features and intelligence levels.

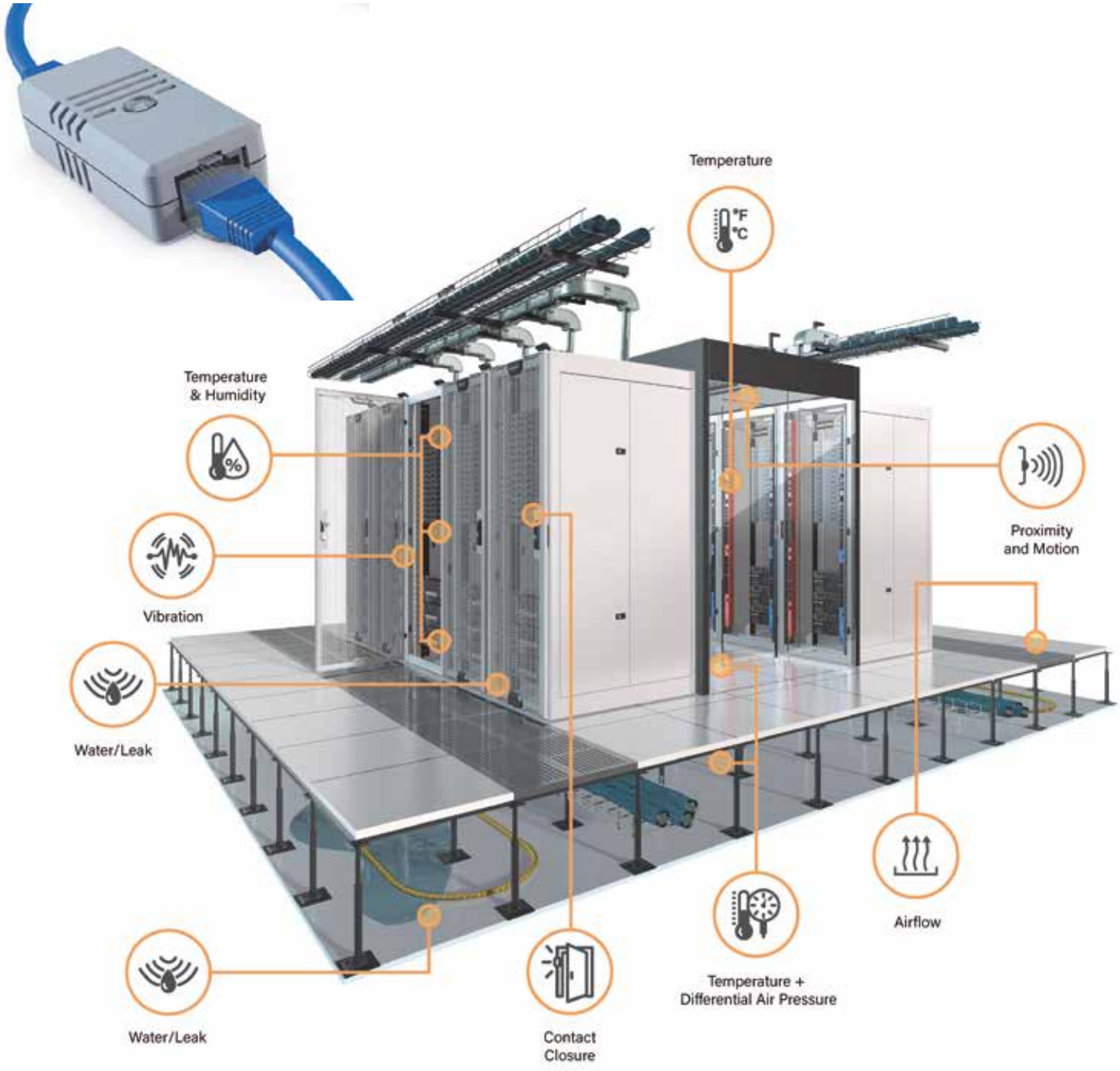
	Inlet Power Monitoring	Branch Circuit Monitoring	Circuit Breaker Trip Alarming	Outlet Level Monitoring	Outlet Level Switching
PX 1000 Series	●	●	●		
PX 2000 Series	●	●	●		●
PX 4000 Series	●	●	●	●	
PX 5000 Series	●	●	●	●	●

PX4 PDUS ARE SUPPORTING RARITAN SMARTSENSORS™

Gather & Monitor Environmental Information, especially to optimize cooling.

SmartSensors accurately report critical environmental conditions affecting IT equipment and helps you follow ASHRAE guidelines.

- Obtain the right insight to drive strategic decisions
- Increase response time to remediate critical risks
- Ease commissioning with its plug-and-playconnection to the Rack PDU's Sensor port.



4.3

OFFER OVERVIEW
FOR **AREAS**

DATA CENTER

Cooling
Which option should you choose?

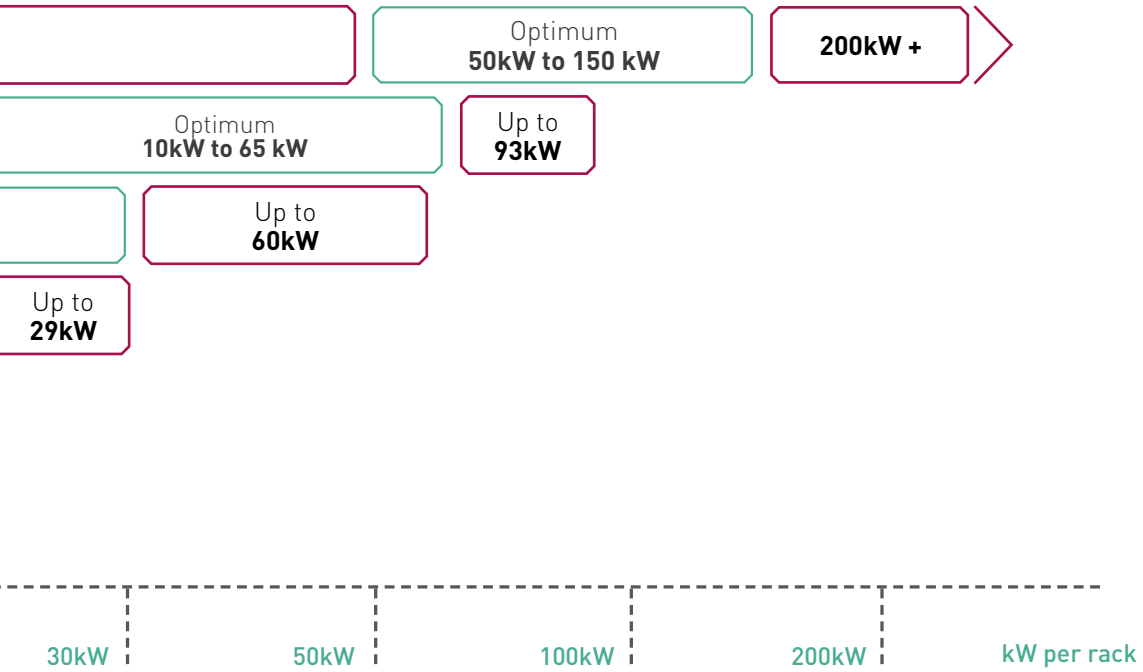
CL23 Rear Door Cooler	Deployments from **0.1kW**		
CL20 Rear Door Cooler	Deployments from **0.1kW**		
Aisle containment + Row-based Chilled Water Coolers	Deployments from **0.1kW**	Optimum **5kW to 30 kW**	
CL21 Rear Door Cooler	Optimum **0.1 kW to 20 kW**		
Aisle containment + Row-based Direct Expansion Coolers	Deployments from **0.1kW**	Optimum **5kW to 10 kW**	Up to **20kW**
Aisle containment + CRAC/H	Optimum **0.1kW to 5 kW**	Up to **10kW**	

0kW 10kW 15kW 20kW

Row-based Chilled Water Coolers

Row-based Direct Expansion Coolers (DX)

Nexpand aisle containment with row-based coolers



■ CL21 Rear Door Cooler

■ CL20 and CL23 Rear Door Coolers

The overlap between CL21 rear door coolers and aisle containment + row-based coolers is solved depending on the specifics of the customer's deployment. Generally, in terms of CAPEX the Row-based is the preferred choice, whereas Rear Door Cooling will improve efficiency and scalability.

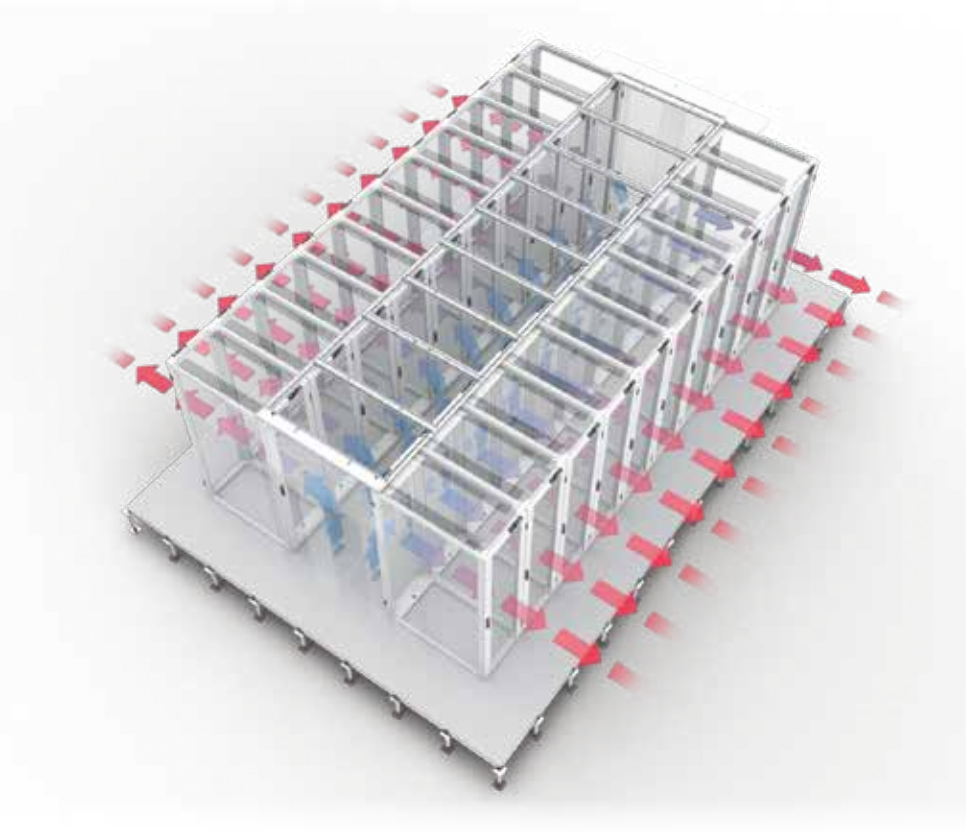
Optimize the cooling solutions

The cooling systems are the main item of consumption in a Data Center.

To reduce the energy consumption the server cooling system must above all reduce its energy usage.

This involves:

- an optimized design of the white room (IT room, the heart of the Data Center)
- selecting the right cooling solutions.



Data centers are increasingly using energy efficient cooling techniques such as free cooling.

We offer a variety of active cooling products both DX and H2O:

- **Separation of hot and cold airflows**

By separating hot and cold air using aisle containment solutions, this step leads to an optimum reduction of air leakage and increases the energy efficiency.

- **Optimization of the cold air circuit**

Though the airflow optimization in the rack is often not fully or effectively implemented, it is the next step in energy-efficient data centers. Objective: minimize the air leakage. Airflow optimization is also important for the proper functioning of the server, network and storage equipment, for temperature stability and for the general reliability of a data center.

The Legrand advantage

Thanks to its worldwide network of partners, Legrand supports you during the decisive stages of your project:

- selection of the right solutions when defining the white room's design
- sizing of the cooling solution in relation to the power of the servers

Passive Cooling

MINKELS
modulan

- Aisle containment

- Free-standing containment

- Vertical Exhaust Duct

4.3

OFFER OVERVIEW
FOR **AREAS**

DATA CENTER

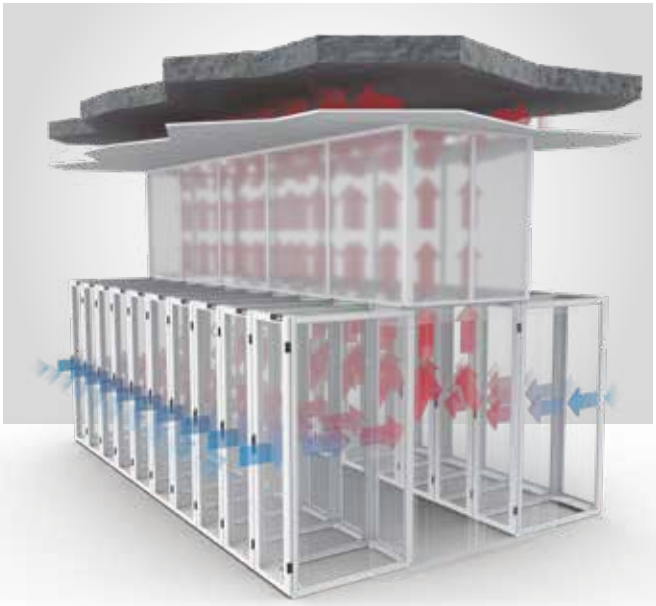
Passive Cooling

Aisle containment

FOR MORE DETAILED INFORMATION
DOWNLOAD THE BROCHURE

Cold Aisle Containment

- Refrigeration provided by CRAC (Computer Room Air Conditioning) unit to the aisle;
- Servers expel hot air into the room;
- Room-dependent solution. Raised floor needed;
- Legrand's premium high-transparency roof or drop-away panels available for roof system;
- Swing doors or mechanical and electrical sliding doors are available;
- Roof & doors stand on cabinets.



Red header > Vertical Exhaust Duct

- No need to invest in raised floors
- Optimal accessibility to cabling and power infrastructure
- Room at comfortable server inlet temperature

AISLE CONTAINMENT

Aisle containment provides a solution to data centers' cooling challenges:

the optimisation of cooling and energy efficiency through separating hot and cold airflows.

Hot Aisle Containment

- Refrigeration provided by CRAC unit to the room;
- IT Equipment expel hot air to the aisle;
- Room-dependent solution. False ceiling needed;
- Legrand's transparent or translucent structures are available for vertical structures;
- Swing doors or mechanical and electrical sliding doors are available;
- Roof & doors stand on cabinets.

Active Cooling

MINKELS

USystems
A brand of legrand

Row-based Cooling

Rear Door Cooling

Active Cooling

USystems
A brand of legrand

NEXPAND

CHILLED WATER | ROW-BASED COOLING

Features and benefits

HOT SWAPPABLE FANS

- The coolers are equipped with hot-swappable fans. To minimize possible downtime due to fan failure, this feature enables swift and safe replacement of the fans. The unit does not need to be turned off to replace the fan(s), so the issue of a faulty fan can be resolved in a matter of minutes.

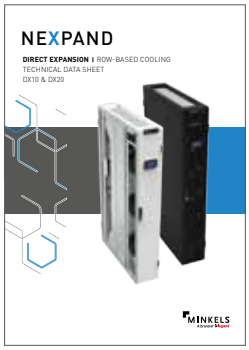
EC FAN TECHNOLOGY

- The fans are all equipped with EC fan technology. The benefits are an extended lifetime and a significant increase in the energy efficiency of the unit. Also, the fans are equipped with emergency speed functions. This means that even with controller downtime the fans are still running.

ADVANCED MONITORING

When monitoring through other communications protocols is a need, we can support this by upgrading with the pCOWeb card.
It features communication with SNMPv2c, BACNET, Modbus over TCP/IP and it is equipped with an integrated webserver.

Row-based cooling



FOR MORE DETAILED INFORMATION
DOWNLOAD THE BROCHURE

REAR DOOR COOLING

Rear door cooling is the preferred technology for the most demanding applications with high heat densities, recommended for High Performance Computing (HPC) solutions.

But rear door cooling is not only appealing because of its capacity to deal with very elevated heat densities; there are many other reasons why rear door cooling is increasing its presence in the market.

- Maximises free cooling thanks to high operating water temperatures;
- No refrigerant or costly dielectric solutions are used;
- There is no need for supplementary CRAC units;
- No aisle containment is necessary;
- Over 48% more footprint is available when compared to traditional aisle containment deployments;
- Achievable PUE of 1.03 where rear door coolers are used exclusively as the cooling technology;
- The hot water leaving the cabinet can be reused for other purposes in the facility such as heating;
- Our rear door coolers can be top and bottom fed as standard.

CL20 ProActive

Capacity	Up to 93kW
Available for	42/47/52 U 600/800W

CL21 Smart Passive

Capacity	Up to 29kW
Available for	42U, 47U, 52U 600w, 750w, 800w

- **Passive solution in our Rear Door Cooling portfolio.**

CL23 HPC ProActive

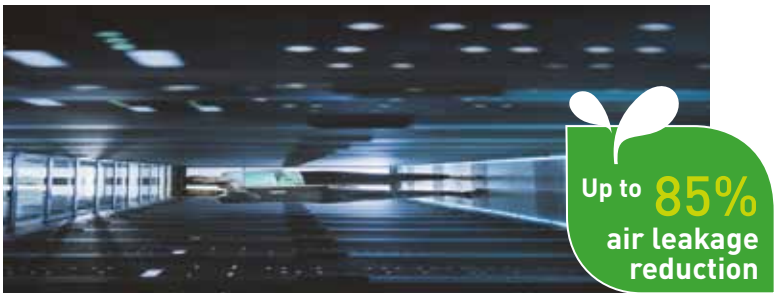
Capacity	Up to 200kW
Available for	47/52U 800W

Airflow management

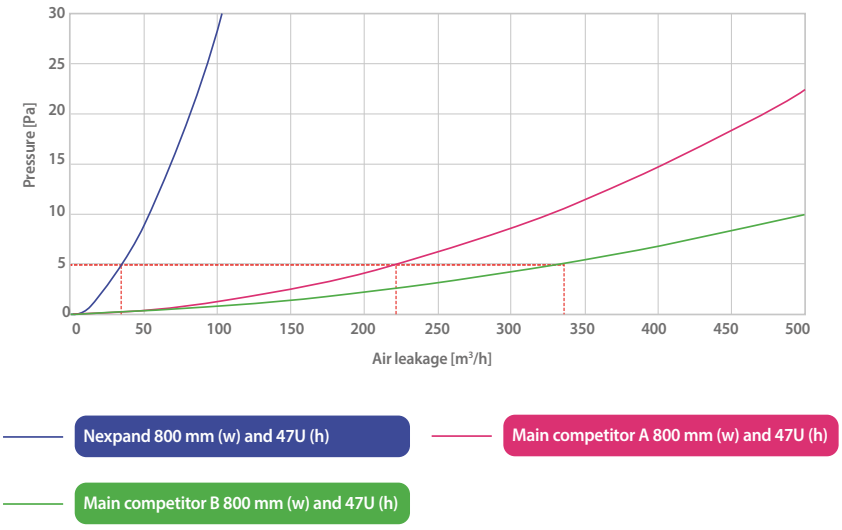
WHAT IF YOU CAN GUIDE YOUR COLD AIR WHERE IT IS REALLY NECESSARY, MINIMIZING YOUR ENERGY LOSS?

Data centre energy efficiency is coming under ever increasing scrutiny, with various local, regional and international standards and regulations (both existing and arriving) requiring data centre owners and operators to demonstrate best practice when it comes to the environmental credentials of their facilities.

Add in the industry's drive towards Net Zero targets and the recent, substantial increases in global energy costs, and there's never been a better time to focus on the importance of well-designed and maintained data centre infrastructure. Airflow management and optimisation is a key aspect of any such data centre energy efficiency improvement project.



Nexpand is a best in class solution: the airflow chart below represents the air lost within a cabinet with its best airflow management solution at different pressure conditions.



CUSTOMER BENEFITS

- Increase reliability, preventing hot spots
- Reduce cost, optimizing the energy consumption. Airflow pack has a ROI < 2 years* while a cabinet life time average is 20 years
- Use the energy efficiently giving the possibility to extend the DC for customers who are reaching their limits.

Environmental advantage

- Increase the sustainability of the DC, reducing the energy consumption.
- Avoid energy losses
- Increase the efficiency of the cooling system

AIRFLOW MANAGEMENT ACCESSORIES

Airflow management package

The airflow management package is a premium solution to enhance the performance of the IT equipment as it prevents the mixing of hot and cold airflows. It can incorporate different accessories to allow cable entry while controlling airflows.

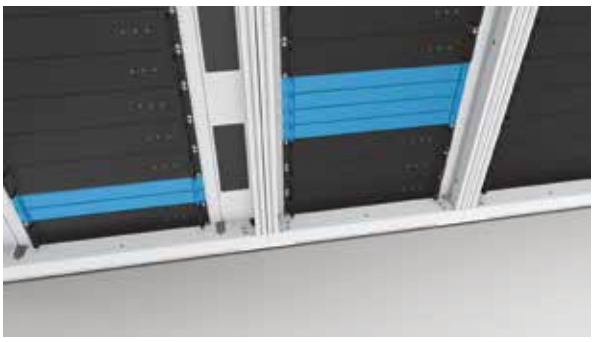
Bottom plinths

Our cabinets have been designed to be able to stand on the bottom frame directly, but when using the leveling feet is necessary the bottom plinths ensure a perfect air seal across the entire bottom part of the containment.

Front panels

1U plastic panels that prevent the mixing of airflows where the customer has no servers installed.

Metal sheet options options of different sizes are also available.



Sealing solution

Airflow management is where we excel, which is why even the smallest gaps are taken care of.

Our airflow seals have been specifically developed to prevent air leakages between cabinets, achieving a 100% sealed solution across the entire containment.

Starline Monitored Busway

A REVENUE-GRADE METERING PRODUCT FOR DATA CENTER OPERATORS TO MANAGE POWER CONSUMPTION.

Because of the growing need for energy efficiency, energy monitoring systems are more important than ever.

Starline Critical Power Monitor (CPM) provides actionable data for data center operators, delivering the necessary information to make purposeful decisions.

Starline CPM may be used as part of the Starline Track Busway system, for both end feed and plug-in unit applications, or as a standalone solution. The products support a variety of communications options for seamless integration with BMS and DCIM packages.

CUSTOMER BENEFITS

- Revenue grade metering functionality
- Set alarm conditions for power usage thresholds
- Monitors multi-circuit configurations for more efficient installation
- Seamless integration for both end feed and branch circuit (plug-in units) models
- SNMP, Modbus TCP/IP, BACnet TCP/IP, HTTP(S), Telnet, and SSH are all standard protocols for ease of securing data
- Optional temperature, humidity, and other sensor functionality

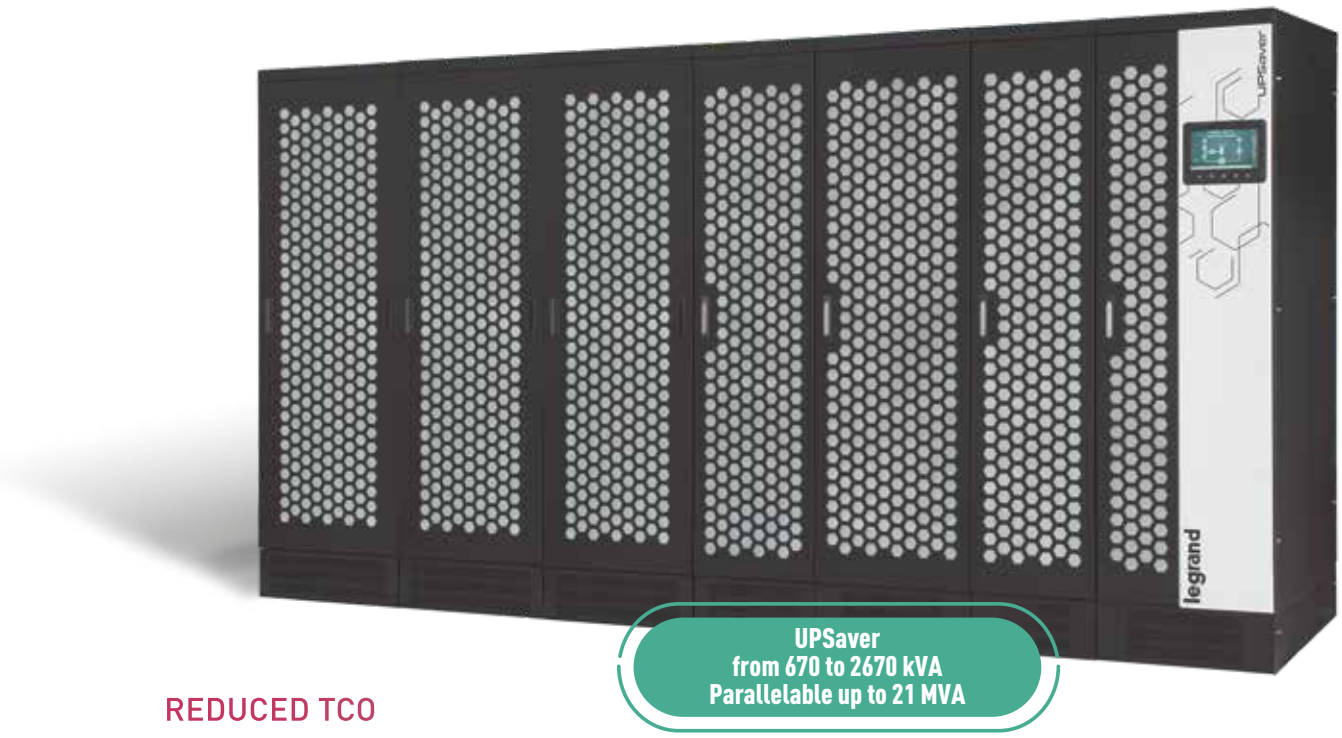
Environmental advantage

- Benchmarking current operational levels and trending for the facility
- Identify performance improvement projects and technologies
- Analysis of metered data to improve planning for future facilities
- Setting and managing future performance goals

UPSAVER Conventional solutions fot Data Center applications

UPSaver is a high power UPS based on hot scalable 333 kVA modules. It can reach up to 2.67 MVA in a single unit. The single units can be paralleled up 21 MVA.

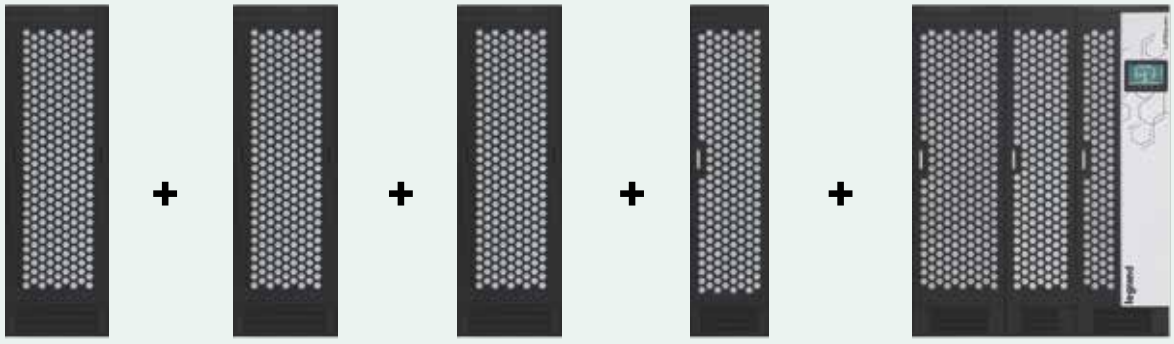
UPSaver is the ideal solution for data center and IT business critical applications, providing the highest reliability and availability. The flexibility of the system is designed to adapt itself to the critical and changing data center demands. With state-of-the-art components, UPSaver is one of the most compact, efficient and fully adaptable power protection system.



UPSaver
from 670 to 2670 kVA
Parallelable up to 21 MVA

REDUCED TCO

- Pay as you grow through hot scalability.
- Tailored to the room layout with total flexibility in design and installation.
- Quick upgrade and maintenance thanks to hot scalability, serviceability and minimal spare parts.
- Enhanced efficiency thanks to automatic output power control.
- Always delivering maximum performance with high efficiency operating modes.
- Less consumption to reduce carbon footprint.



TCO: Total cost of ownership

Up to 8 Power Units of 333 kVA = 2.6 MVA

UPSaver modular design allows easy system resizing by addition of power units.

Maintenance operations can be done without powering down the system and without switching to bypass line.

98.5 % AVERAGE EFFICIENCY

VFI High Efficiency: all the on-line double conversion protection (VFI-Voltage frequency independent mode), at **97.2%**

Enhanced Efficiency Mode: Load matched power provision to extend service life to enhance performance

ECO mode: suitable for stable mains, in VFD (Voltage Frequency Dependent) mode of operation achieving **98.5%** efficiency

Ultra High Efficiency (UHE): innovative technology for data center with **99%** efficiency and minimum total cost of ownership

Our specialist brands

COVERING ALL YOUR IT INFRASTRUCTURE, CABLE MANAGEMENT, AND CRITICAL POWER NEEDS!

With award-winning solutions from strong data center players, you benefit from optimal uptime of mission-critical operations.

Our team of local specialists design and build innovative solutions, including enclosures, cooling, power, structured cabling, and access management, to meet your unique requirements.

legrand

Complete global solutions for digital and electrical infrastructure.

BORRI

Specialist in UPS for industrial applications and datacenters.

CABLOFIL

Using its global strength and market leading position, Cablofil has developed a complete range of cable management solutions.

GEIGER

Data center fiber optic infrastructures, data center design and DCIM (monitoring & management) service and implementation.

MINKELS

Turn-key hot/cold aisle containment and enclosures for data center infrastructures.

modulan

Provider of fully customizable containment solutions. Maximum flexibility to cover customer needs.

PowerControl

A leading provider of uninterruptible power supply (UPS) solutions, trusted by businesses worldwide to protect their critical power loads and avoid unplanned business downtime.

Raritan

Proven leader of intelligent PDUs, transfer switches, environmental sensors, serial consoles and KVM-over-IP Remote Access switches.

Server Technology

Leading specialist in customer-driven power, access and control solutions for monitoring and managing critical IT assets.

Starline

Starline has grown to become a global leader in busbar power distribution equipment

USystems

A brand of legrand

USystems provide cooling products that enhance data center cooling, providing these to global businesses, making their data centers more environmentally friendly.

VOLTADIS

Voltadis offers support in electrical power supply systems for data centers' grey rooms including design, commissioning, equipment supply, and installation.

ZUCCHINI

Zucchini has become a leading brand of cast resin transformers, offering one of the most comprehensive ranges on the market.

5 REFERENCE PROJECTS

5

REFERENCE
PROJECTS

ECO Plaza (Lima - Perù)

The Eco Plaza commercial center offer 3 floors with more than 300 stores from 6,5m² up to 25m² with an investment of more than USD 25M, was looking for an energy monitoring system to be able to charge electricity invoice proportional to the consumption that each store will consume with a centralized system.

The system should collect a historical data in order to review and evaluate the consumption behavior of the shopping center to propose improvements to save energy.

Our proposal with 1 Module din rail EMS CX³ solution provides reduction of 30% of the investment when compared with traditional one and will also help Eco Plaza to achieve LEED Certification coming soon.

PRODUCT INSTALLATION

- EMDX³ + EMS CX³
- Energy Web Server (255 meters)
- Cooper Busbar
- XL³ Panel Boards

Hangzhou Westlake University (China)

Founded in 2018, Covering an area of 11.5 acres with a total construction space of 106.000 m², the university DC needs to update their installations by improving energy efficiency, reduce electricity costs and simplify previous AC cabling for a easier maintenance and found on Legrand´s PowerFlex Busbar solution the features that fits exactly with the customer´s needs.

A project where 1.5 M USD was invested on Clever powerflex busbars, brings higher efficiency in distributing power to the rack compared to RPP + cable, it also simplifies the AC cabling route and create a clear channel for cooling air, besides it is much more flexible when it comes to rack power capacity adjustment.

Yungu Campus | Westlake University

PRODUCT INSTALLATION

- Clever POWERFlex Busbar

5

REFERENCE
PROJECTS

CAN Provance (São Paulo - Brazil)

With approximately 1.500 m² of construction the ACN Provence house is already born unique; it was designed to receive environmental certifications (ACQUA-HQE, PROCEL) from the most credible institutions.

The excellence of the project goes further than what the eye can see, everything was designed to generate a more efficient and conscious use from the natural resources. Legrand is present in this emblematic project, guaranteeing the continuity of electric energy through its power distribution XL³, the connectivity of the entire system providing structured cabling for data, voice and image LCS³, in addition to measurement of electricity/water/gas provided by the My Home solution, integrating finishes with the refinement and sophistication of the ARTEOR line.

ACN | Construtora e Incorporadora (acnconstrutora.com.br)

PRODUCT INSTALLATION

- LCS
- ARTEOR
- XL³ Panel Boards
- MyHome
- Cable Tray

Banco Safra (São Paulo - Brazil)

The building opened initially in 1988 with 24 floors and 125 parking spaces, and the investor needed an upgrade with new technologies installing a lighting management system integrating with the existent BMS responsible for centralized air conditioning.

With the new LM solution implemented, Banco Safra can now see which lights are "ON" and propose improvements for different configurations for each floor reducing the waste avoiding illumination without use like it was before. Through the monitoring of electrical consumption, it was possible to verify that our solution resulted in a saving of 28.3% in relation to an environment without automation.

The vehicle charger installation project will be the next stage of the project.

PRODUCT INSTALLATION

- Lighting Management
- MyHOME

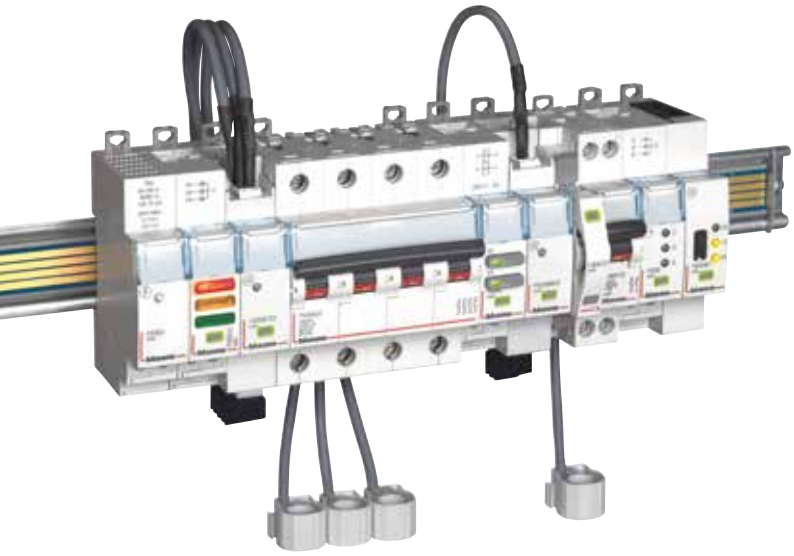
5

REFERENCE
PROJECTS

City of Limay (Limay - France)

As a Smart City initiative and as part of a 10 years energy performance contract managed by the CRAM company (Facility Manager), the city of Limay chose to deploy the Energy Management Software NEMO Green by LEGRAND ENERGIES SOLUTIONS and LEGRAND's electrical measurement solutions.

Issues: to control energy consumption in order to reduce bills and carbon footprint, while responding to the new energy regulations (tertiary decree).



PRODUCT INSTALLATION

- NEMO Green cloud platform:
  - 70 buildings managed
  - 400 data points monitored (electricity, gas, temperature,...)
    - Global reporting
    - Energy Management (Analysis, alerts, action plan)
    - Comfort management
- EMS CX³:
  - 200 electrical circuits

Sodes (France)

Specializing in the development of city center commercial buildings, **SODES Group got its entire property portfolio managed by the NEMO Green energy performance platform of Legrand Energies Solutions.**

Project carried out with the assistance of the consulting firm Leyton, expert in financial optimisation.

Issues: Enhance the green value of its assets and meet with its lessee the regulatory energy requirements (tertiary decree).

PRODUCT INSTALLATION

- NEMO Green cloud platform:
  - More than 50 buildings managed and 600 (shops, banks, pharmacies,...)
  - 600 data points monitored:
    - Global reporting
    - Energy Management (Analysis, alerts, action plan)
    - Tertiary Decree reporting

5

REFERENCE
PROJECTS

Daily Express Building (Manchester, UK)

The restoration of the Grade II* listed facility has resulted in the building now offering 77.500 m^2 of contemporary workspace.

The lighting control solution considered energy savings by utilising daylight harvesting.

PRODUCT INSTALLATION

- CP Electronics RAPID fully addressable lighting control system with daylight compensation
- CP Electronics BVITM6 lighting control marshalling boxes
- CP Electronics EBR-MINPIR-DALI Mini DALI PIRs
- CP Electronics standalone 230 V presence detectors

DataBank's ATL1 facility, Georgia Institute of Technology (Atlanta USA)

ATL1 is a high-performance computing data centre, one of the most advanced data centers in the country.

Supporting data-driven research in astrophysics, computational biology, health sciences, computational chemistry, materials and manufacturing, and even research into energy efficiency and performance of HPC systems themselves.

PRODUCT INSTALLATION

- USystem's ColdLogik rear door coolers, are cooling 50 kW per enclosure, per rack, using 73-degree warm water.

Tuscany Cloud System (Florence - Regione Toscana)

The Tuscany Cloud is a regional data center designed to provide advanced digital infrastructure and cloud services to benefit both the Tuscan Public Administration, as well as the region's businesses and citizens.
Legrand has supplied key data center infrastructure for the project.

PRODUCT INSTALLATION

- GreenTHE with external box
- Power Center
- UPS Keor Mode
- Cabinet and cold corridor Minkels
- PdU Raritan
- Sensor Raritan
- Baseway Starline
- DCIM

Pristina Mall (Kosovo)

Legrand powered-up the largest shopping Mall in the Southern-East Europe, Pristina Mall KOS providing complete installation of transformers, busbars and MV/ LV switchgears for the total power of 18 MVA

PRODUCT INSTALLATION

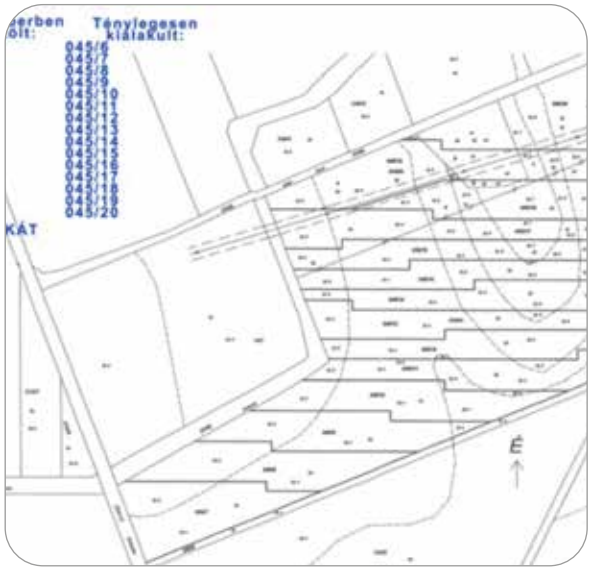
- Total installed power: 18 MVA/ 12 transformers
- Total length of XCP busbars: 7 km
- Total No. of panels: 20 LV switchgears, 261 power panels
- IME metering
- All the breakers and metering on Modbus and supervised by BMS

5

REFERENCE
PROJECTS

PV project (Hungary)

Legrand powered-up photovoltaic park in Hungary with total power of 65MWp.



PRODUCT INSTALLATION

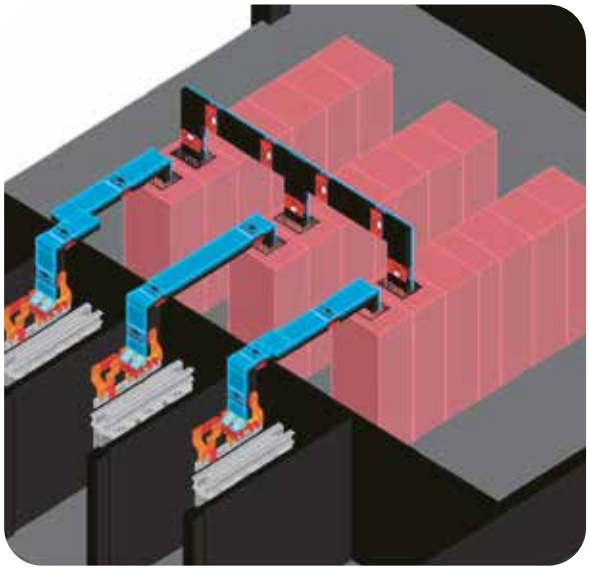
- SCOPE: 130 substations at 5 locations
- 65MWp of installed power
- 130 pieces of resin transformers 630kVA
- 130 x DMX³ 1600

Volkswagen (Bratislava, Slovakia)

Volkswagen LOZ III: new Production Centre H3 of VW plant Bratislava

Area: 120.000 m²

Installed power: 6 MVA



PRODUCT INSTALLATION

- Transformers: 4 x 1600kVA 22/0,4 kV: Zucchini: SCP2500A
- 22 distribution cabinets all over the plant
- Main panels, 100kA, 13 meters long, in line with IEC 61439-2:
- XL³ 4000 equipped with "C" Al bars and connection kits
- EMDX³

5

REFERENCE
PROJECTS

Viva Mare Beach Hotel (Sozopol, Bulgaria)

Viva Mare Beach hotel, designed to become the first smart, modern and technological hotel in Bulgaria.

Convenience, comfort, security, easy access, and full automation were the key elements in the choice of the solutions to be implemented.

PRODUCT INSTALLATION

GRMS includes:

- Virtual keycard function
- Welcome/Goodbye guest scenario
- Lighting and curtain guest scenarios
- Lighting and curtain staff scenarios
- Integration through BACnet with access control third party system
- Preparing for integration with PMS

RED 2022: Electric Terminals for Public Transportation (Santiago, Chile)

Copec Voltex , is responsible for the design, engineering, construction, maintenance, charging management software, and the supply of 100% renewable energy.

PRODUCT INSTALLATION

- **178** Electric buses
- **196** Fast Cherger
- **120** XL^3 - 4000 columns

RED 2022: Electric Terminals for Public Transportation (Santiago, Chile)

Copec Voltex requires installing all the necessary infrastructure for electromobility and was looking for a partner committed to energy efficiency that provides quality solutions and fast service.

As a supplier, Legrand has advised Copec Voltex on compliance with electrical regulations and designed standardized electrical panels for use in the project. Additionally, Legrand performs rigorous quality control on each of the panels and has material available to respond to emergencies.

These factors have led Copec Voltex to choose Legrand as its strategic partner for projects related to electromobility and renewable energy.

The total investment amount for this project is USD$30 million.

Legrand has provided Power & Meetering solutions, including XL³-4000 electrical panels, ACB, MCCB electrical protections, and EMS.

PRODUCT INSTALLATION

- USD$ 740.000,00
- XL³ - 4000
- ABC
- MCCB
- EMS

COPEC VOLTEX
ELECTROMOVILIDAD DONDE NECESITES

Client

legrand®

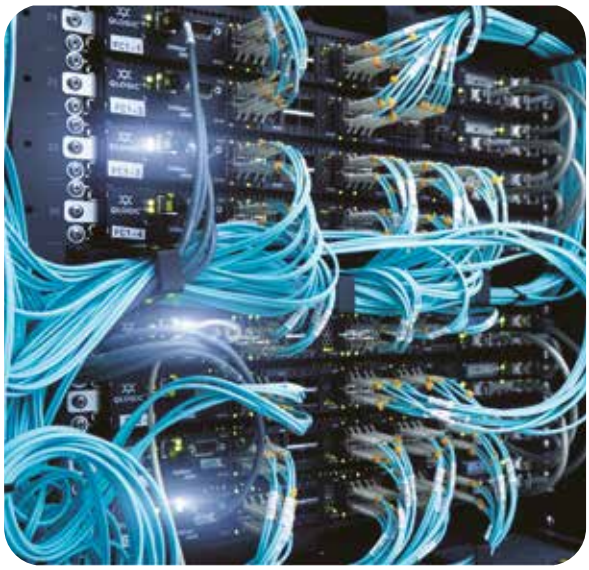
Design, material, quality control

EECOL ELECTRIC

Panel builder

Move-IT Technology (Germany)

Legrand partnered with Move-IT Technology to deliver an energy-efficient, state-of-the-art data center relocation for a client, providing all essential components from brands like Raritan, Minkels, and Server Technology. The new infrastructure not only met immediate requirements but also anticipated future expansion, with energy-efficient solutions.



PRODUCT INSTALLATION

- KeorMod
- Raritan intelligent PDUs

NOTE

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