EFFECTIVE AND SUSTAINABLE

INTELLIGENTLY CONTROL ENERGY FLOW

LOAD MANAGEMENT

Reduce power peaks, increase energy efficiency,
optimize photovoltaics and e-mobility
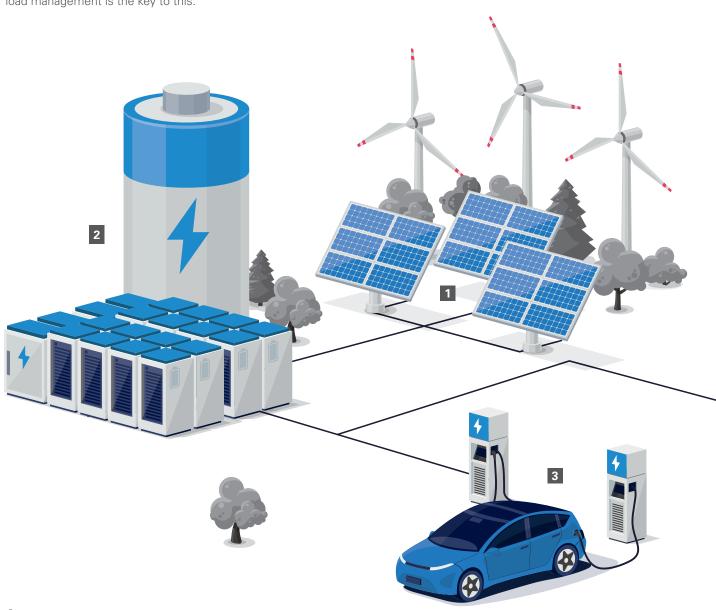
Janitza®

OPPORTUNITIES AND CHALLENGES

Your company in the energy transition
The energy transition is in full swing. The 26 million electric vehicles that will be on U.S. roads by 2030 aren't the only factor. The rate of renewable energy consumption is also anticipated to increase rapidly.

In industry and commerce, the focus is on making business operations sustainable and optimizing consumption through smart energy strategies. Modern and intelligent load management is the key to this.

Save costs with intelligent load management
Today, load management is a central component of modern energy management. It's not just about avoiding production downtimes: by networking machines in the industrial environment, load peaks can be detected in good time. They can be controlled to save energy and avoid additional costs. In addition, the use of self-generated energy can be flexibly arranged by means of an intelligent load management system.

LOAD MANAGEMENT ENGINEERING

In order to implement sustainable energy strategies, flexible and automatable control options are needed in addition to intelligent monitoring of consumers. Intelligent load management is capable of networking charging stations, PV systems, battery storage units, commercial kitchens, and heating and air conditioning systems, amongst other things, and controlling them both efficiently and in a cost-optimized manner.

Janitza electronics supports you with comprehensive load management engineering – from a needs analysis with an extensive consulting and evaluation process, to the planning of the networking and control, to the installation of a complete load management system tailored to your needs.

Our controllers support you in measuring, monitoring, and controlling your consumers in terms of a cost-optimized and sustainable energy strategy. Whether you need conventional peak load management or want to integrate the charging infrastructure for your company cars into your existing energy management system: with our comprehensive Janitza load management engineering and Procont® product series, you can meet a wide range of load and energy management requirements

- Integrating renewable energies
- Planning and implementing electromobility
- Incorporating the existing production environment
- Enabling cross-manufacturer networking
- Detecting and reducing load peaks
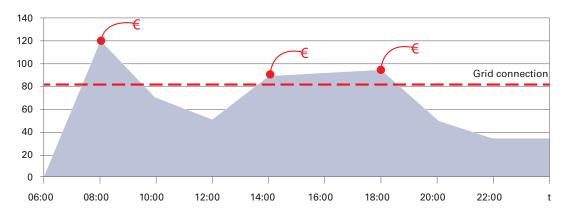- Ensuring transparency in your energy management

1. **PV system control & own consumption optimization**
2. **Battery storage usage optimization**
3. **E-mobility charging point load management**
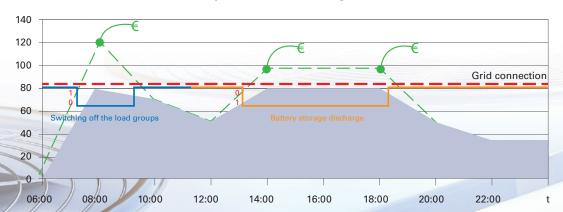4. **Comprehensive equipment peak load management**

COMPREHENSIVE PEAK LOAD MANAGEMENT

The goal of modern peak load management is to avoid high power peaks through targeted consumer control. Dynamic load shifting can be used to achieve this goal. Physical properties, such as thermal inertia in production processes, are used for this purpose. For example, freezers, air-conditioners, or ovens in a commercial kitchen can be shut down for a short time without affecting the process. We support you in detecting such time tolerances in processes and workflows and in optimally exploiting them with the right technology.

Load peaks <u>without</u> load management

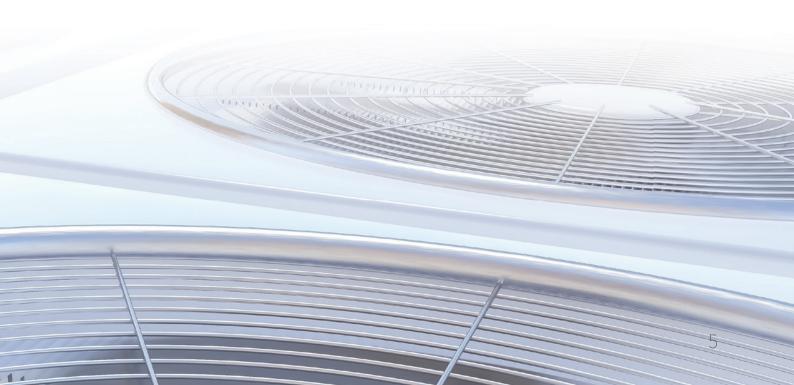**Load peaks <u>with</u> load management**

YOUR BENEFITS

- Reduction of power peaks
- Lower grid connection power required
- Higher security of supply
- Reduction of current energy costs
- Compliance with atypical network use
- Consistent transparency of energy data
- Detailed energy evaluation of the grid connection
- Alarms when limit values are exceeded

Procont® SYSTEM ADVANTAGES

- Regular system updates
- Link more controller modules for optimization of one's own PV consumption, use flexible electricity prices, and enable grid-serving functionalities
- Future-proof and modularly scalable solutions
- Operation in master-slave mode with substations for large objects
- Convenient and secure remote maintenance option

OUR LOAD MANAGEMENT SOLUTION

- Forward-looking peak load optimization based on trend calculations
- Targeted, demand-oriented consumer control through various parameters: prioritization, minimum and maximum on/off times, timers, holiday calendar, and dynamic load distribution

- Integrated instantaneous power monitoring
- Different setpoints and tariffs adjustable
- Detailed load and savings analyses
- Intelligent self-optimization function for the load setpoint (progressive maximum)

E-MOBILITY CHARGING POINT LOAD MANAGEMENT

E-mobility has now reached the masses. More and more electric vehicles can be found on the roads and the expansion of charging infrastructure is progressing. Companies, for example, wanting to provide their parking lot with their own charging stations must ask themselves the question: Is the power of the existing grid connection sufficient or does it reach its limits?

A comprehensive load management system with peak shaving function ensures the reliability of the charging stations and helps to keep an eye on and optimize costs.

The e-mobility charging point load management continuously monitors the connected load. If a limit value is threatened to be exceeded, the controller autonomously and dynamically downregulates the charging stations. In doing so, you define the strategy: time-controlled, prioritized, or electricity price-oriented, and thus cost-optimized.

From the analysis of the charging infrastructure to the set-up and integration of an intelligent charging point load management system to support in service and optimization issues – Janitza electronics supports the entire process.

UP TO	TOTAL	UP TO
50 %	**3**	**32**
REDUCTION OF CHARGING COSTS FOR ELECTRIC CARS	CHARGING SCENARIOS: TIMED-CONTROLLED, PRIORITIZED, AND PRICE-ORIENTED	CHARGING POINTS PER CONTROLLER

YOUR BENEFITS

- Realization of multi-site charging parks
- Consistent transparency of energy data through detailed energy evaluation of the grid connection and the individual charging and supply points
- Alarms when limit values are exceeded
- Avoidance of high network and connection costs
- Lower charging costs through use of self-generated energy and reduction of purchased power

Procont® SYSTEM ADVANTAGES

- Regular system updates
- Continuous integration of new charging station manufacturers
- Link with other controller modules to optimize PV self-consumption, take advantage of flexible electricity prices, use a 15-minute trend calculation, and enable grid-serving functionality
- Future-proof and modularly scalable solution
- Master-slave operation with substations for large objects
- Convenient and secure remote maintenance option

OUR SOLUTION FOR MODERN CHARGING POINT LOAD MANAGEMENT

- Optimized charging in compliance with grid specifications
- Predictive peak load optimization of the grid connection
- Comprehensive energy monitoring and energy data collection of the entire charging infrastructure
- Different charging scenarios: Time-controlled, prioritized, or electricity price-oriented
- Dynamic load management of up to 32 charging points per controller with extensions possible via modular substation controllers

PV SYSTEM CONTROL AND OWN CONSUMPTION OPTIMIZATION

The topic of solar power remains relevant, but the investment costs for photovoltaic systems are still high. Therefore, it is important to use the systems efficiently and to optimize one's own consumption of self-generated solar power.

Surplus energy must be stored and then accessed when the energy supplier's electricity costs are high or energy-intensive consumers, such as air-conditioning devices, are operated.

UP TO	E.G.	UP TO
100 %	**15 min.**	**8 times**
INCREASE OF THE EFFICIENCY DEGREE OF THE PV SYSTEM	**LOAD CONTROL FROM REACTIVE POWER**	**MODULARLY EXPANDABLE SOLUTION FOR PV SYSTEMS**

YOUR BENEFITS

- Reduction of ongoing energy costs through one's own consumption of PV electricity
- Coupling high solar gain with the cooling capacity of air-conditioning devices
- Production of hot water with heating element or via heat pump
- Reactive current functions, such as a 15-minute load control of reactive power or a voltage-managed reactive power control $Q = f(U)$

Procont® SYSTEM ADVANTAGES

- Constant integration of new inverter manufacturers
- Linking with other controller modules for the optimization of one's own PV consumption, for example, by combining the e-mobility charging infrastructure with a battery storage system for peak load coverage
- Future-proof and modularly scalable solution
- Convenient and secure remote maintenance option

OUR SOLUTION FOR THE CONTROL OF YOUR PV SYSTEM

- Integration of inverters into the energy control system
- Optimization of the share of one's own consumption
- Targeted and economical use of surplus energy
- Fully automatic function and efficiency monitoring

BATTERY STORAGE USAGE OPTIMIZATION

Storage solutions are on the rise and help relieve the strain on the grids. By integrating an electric storage system, your own consumption of PV systems can be increased, power peaks can be intercepted, and the strain on the grid connection point can be relieved.

The controllers help to control and plan the use of your battery storage system. They optimize consumption and the charging or discharging process, thus extending the life of your battery storage system.

UP TO	UP TO	UP TO
50 %	**128**	**15** %
INCREASE IN BATTERY STORAGE EFFICIENCY LEVEL	**FREELY DEFINABLE CONTROLS**	**FEWER EMISSIONS AND ENERGY CONSUMPTION**

Battery storage

YOUR BENEFITS

- Yields from the PV system that cannot be used directly can be loaded into the storage system to cover peak loads or night-time demand
- Relieving the strain on the grid connection point by covering the load peaks using stored electricity
- Higher yield of the PV system through targeted private consumption and surplus storage

Procont® SYSTEM ADVANTAGES

- Continuous integration of new electric storage unit manufacturers
- Linking with other controller modules for optimization of your own PV consumption, for example, through combination with e-mobility charging infrastructure and a PV system for peak load coverage
- Future-proof and modularly scalable solution
- Convenient and secure remote maintenance option

OUR SOLUTION FOR OPTIMIZING THE USE OF YOUR BATTERY STORAGE SYSTEM

- Integration of battery storage systems into the energy control system
- Targeted and economic use through storage of surplus energy from the PV system and peak load coverage for large consumers

- Predictive grid charging of the storage unit
- Fully automatic function and efficiency monitoring

CONSULTING, PLANNING, AND PROJECT DEVELOPMENT

Would you like to plan your load management in advance or equip an already existing production plant with a modern load management system? Are you planning to acquire a sustainable electric vehicle fleet and need help setting up efficient charging infrastructure? No two projects are the same. This makes it all the more important to have an ad-

visor who can provide you with comprehensive answers during all phases of the project. Janitza electronics supports you from the requirements analysis and the selection of suitable products to the installation and ongoing support of the load management system.

Load management engineering

In the planning phase, we work with you to develop the technical concept and jointly draw up specifications. We define together which technical components you need in addition to the load and energy management controllers. We then deliver all the equipment on schedule at the agreed start of the project.

We do not simply abandon you after the assembly of the individual devices. We commission the overall function of the installed load management system for you and provide training for your employees as required. If you have questions during operation, our technical hotline offers professional support. In addition, your personal Janitza project manager will be happy to assist you at any stage of the project.

360-DEGREE SERVICE – WE ARE THERE FOR YOU

1

REQUIREMENTS ANALYSIS AND PLANNING

- Development of the technical concept
- Creation of a specification sheet
- Definition of the interfaces
- Elaboration of a network plan
- Creation or adaptation of the hardware plans (EPLAN)
- Planning of the reporting system and configuration of the visualization interface

2

PRODUCTION AND DELIVERY

- Supply of the required products (energy meters, current transformers, controllers, etc.)
- If required, construction and supply of switchgear, sub-distribution boards, etc.
- Supply of the necessary cable and installation material

3

ASSEMBLY AND INSTALLATION

- Installation of switchgear and sub-distribution boards
- Extension and conversion of existing switchgear and sub-distribution boards
- Extension, construction, and installation of cable routes
- Cable routing and cable connection

4

SETUP AND COMMISSIONING

- Programming of the controllers and parameterization of the measuring devices
- Coordination with the manufacturers of the connected devices (inverters, battery storage units, charging stations, etc.) and parameterization, if necessary
- If necessary, adaptations to existing PLC controllers (selected manufacturers)
- Commissioning of the overall function, including training courses

5

SERVICE AND SUPPORT

- Helpful and professional technology hotline
- Technical contact for the entire service area
- Detailed project documentation
- Automatic e-mail dispatch in case of controller alarms
- Fast and uncomplicated help via remote maintenance

3in1

- Energy Management (ISO 50001)
- Power Quality (EN 50160)
- Residual Current Monitoring (RCM)

Procont®-LMC

For complex applications

The load management controller Procont®-LMC is the all-rounder in the field of load management control. It can be fully integrated and can be expanded to manage and control up to 128 load groups. This makes it the ideal device for optimizing peak loads, sustainably increasing energy efficiency, and improving the security of supply for companies, buildings, and plants. Used correctly, it helps optimize energy and consumption costs and reduce emissions. It can also record a wide variety of data; for example, environmental and sensor data, such as temperature and fill level, as well as operating hours.

Outputs
Load groups

Inputs
Utility pulses, synchronous, sub-meter

Display
4-line, background-illumination

Mains supply
230 V AC, 50 Hz

Analog inputs
Measurement, sensor, and environmental data

Serial interfaces
RS232 & RS232/485

Status LEDs
Inputs/outputs

Ethernet TCP/IP
100BaseT

Operation
9-key field

- Highly efficient peak load optimization with innovative control concept

- Integrated energy data management with fully automated collection, recording, and monitoring of central grid and energy consumption data

- Active consumption optimization through integrated energy-saving controllers, energy-saving annual timer, and logic sequence links

- Eco controller function for optimal use of self-generated electricity from PV systems

- Battery storage management

- E-mobility charging-station management

- Number of possible load groups: 128

- Number of possible, configurable controls: 128

Procont®-LMC

Procont®-LMC-LITE

For small and medium-sized enterprises

The Procont®-LMC-LITE load management controller is the ideal solution even for smaller companies. It can be fully integrated and can be expanded to manage and control up to 16 load groups. The Procont®-LMC-LITE is thus the ideal device for peak load optimization and sustainable improvement of energy efficiency.

Used correctly, it helps optimize energy and consumption costs and reduce emissions. It can also record a wide variety of data; for example, environmental and sensor data, such as temperature and fill level, as well as operating hours.

- Highly efficient peak load optimization with an innovative control concept

- Integrated energy data management with fully automated collection, recording, and monitoring of central grid and energy consumption data

- Active consumption optimization through integrated energy-saving controllers, energy-saving annual timer, and logic sequence links

- Eco controller function for optimal use of self-generated electricity from PV systems

- Battery storage management

- E-mobility charging-station management

- Number of possible load groups: 16

- Number of possible, configurable controls: 16

Procont®-LMC-LITE

Procont®-EMC

For the automated recording of energy data

The Procont®-EMC is an intelligent energy management controller designed for automated acquisition and recording of energy data from a wide range of media, such as electricity, gas, water, and heat. It can be used to optimize energy and consumption costs and reduce emissions. Its versatility allows it to capture and record environmental and sensor data, such as temperature and fill level. In addition, it serves as an expansion device for the Procont®-LMC load management controller.

All data is stamped with time and date and stored as performance values. The meter values can be stored as consumption data in different tariff periods. All data can be automatically read out remotely using the Janitza power grid monitoring software GridVis®. Current measurement and performance values can be tracked online on the computer screen in near real time.

- Innovative energy data management with fully automated acquisition, recording, and monitoring of grid and energy consumption data

- Active consumption optimization through integrated energy-saving controllers, energy-saving annual timer, and logical sequence links

- Battery storage management

- E-mobility charging-station management

- PV system control and own consumptionoptimization

Procont®-EMC

Procont®-LMC-008-IO

For switching and monitoring consumers

The Procont®-LMC-008-IO is a compact I/O expansion module for switching and monitoring consumers. It was specially developed for decentralized installation as a substation for the Procont®-LMC and Procont®-LMC-LITE load management controllers. The Procont®-LMC-008-IO expands the controllers by another eight digital outputs for controlling the consumers and four digital inputs for acquiring the feedback signals.

The compact design allows consumers to be switched at close range. This allows you to dispense with complex and expensive cable installations. Due to the rear panel mounting, the expansion module is ideally suited for installation on a DIN rail in one of the existing switchboard cabinets. By means of the Ethernet-TCP/IP interface you can integrate the device into an existing network.

- Immunity from interference: ENV50149, ENV50204, EN-61000-4-4, ENV 50141

- EMC-tested, CE-certified

- RS-232/485 Modbus or Ethernet/TCP-IP

- EEPROM for parameterization values and data storage (10 years)

- Digital inputs for feedback signals 24 V DC, 10 mA delay 10 ms, (10Hz)

- LEDs for status display

- Consumer control through outputs 6 A 250 V AC, 6 A 30 V DC (only in connection with load management controller)
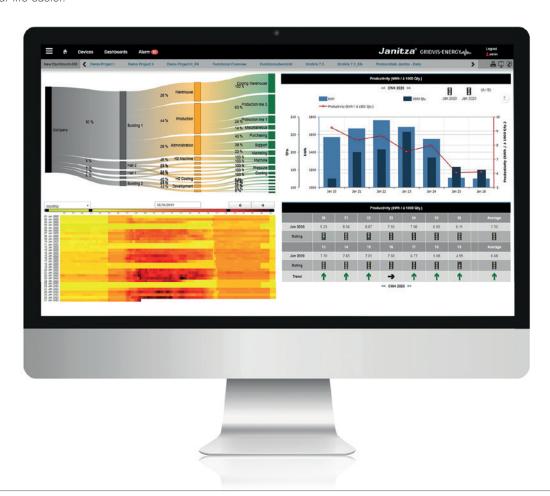
- Manual switch to control the outputs

Procont®-LMC-008-IO

USING ENERGY DATA EFFECTIVELY

STANDARDS-COMPLIANT ANALYSIS AND EVALUATION

The scalable GridVis® power grid monitoring software enables realization of all three applications: energy management, power quality monitoring, and residual current monitoring. Janitza's GridVis® software is certified to ISO 50001 and identifies potential energy savings, analyzes parameters, and helps to optimize the utilization of operating equipment. Automation functions and adjustable alarms make your life easier.

GridVis® offers many options for data access, import, and export, e.g. via REST API, OPC UA, or CSV. The collected data can be evaluated and analyzed using reports and numerous tools. In particular, ready-made reports that focus specifically on certain requirements and standards provide all the information you need quickly and clearly.

SAFETY & ALARM MANAGEMENT

ENERGY MANAGEMENT

CONNECTIVITY

VISUALIZATION & DOCUMENTATION

NETWORK ANALYSIS & EVALUATION

AUTOMATION

EVALUATE DATA EFFICIENTLY

The GridVis® Report Editor

- Numerous functions for creating your own reports and visualizing the data, e.g. tables and diagrams
- Transfer data directly from the software to the report with no intermediate steps
- Embed logos and images
- Create templates and master pages
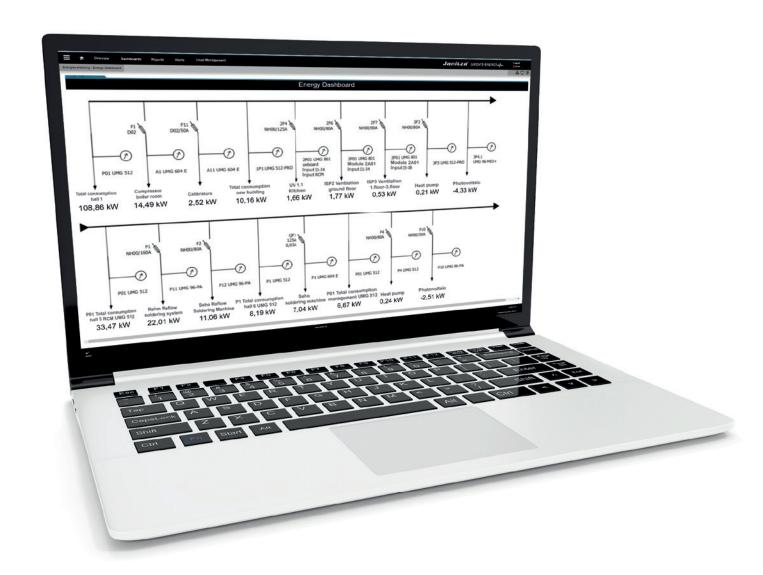- Output and archive reports as PDFs

The GridVis® KPIs

- Create individual performance indicators
- Calculate and visualize directly in the software

- Show changes in key performance indicators using the trend and evaluation system
- Monitor energy efficiency

SIMPLY VISUALIZE

The GridVis® Energy Dashboard

- Representation of consumers and producers in a single-line diagram
- Current live values of power consumption of the individual electrical outgoing feeders

- Quick and simple detection of power-intensive consumers
- Further individual displays and dashboards possible

Power Grid Monitoring Software – GridVis®

The GridVis® load management dashboard

- Display of load groups and prioritized control groups
- Quick overview of the current control status (which consumers are switched on and which are off)
- Synchronization with the load interval of the utility company

- Power triangle visualizes the current power, the defined connected load, and the set maximum power for controlling and avoiding peak loads
- Visual display when target values are exceeded
- Use of objects for individual visualization

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Janitza®