ENERGYCLIPPER
SPECIFICATION SHEET

GRÜNE ANTWORT ENERGYCLIPPER

Energyclipper is a building automation solution that enables the adjustment and integration of existing equipment into a central system. An integrated system like this brings multiple benefits to building automation — from data collection and energy management to intuitive visualization and user-friendly control interfaces.

The aim is to enhance energy-efficient operation, support measurement data processing, optimise maintenance, extend machine life cycles, enable fine-tuning of equipment, achieve additional energy savings, and lay the groundwork for future development steps. Thanks to these benefits, implementing integrated building automation software can offer significant advantages in building operation and maintenance, while also contributing to improved energy efficiency and extended machine life cycles.

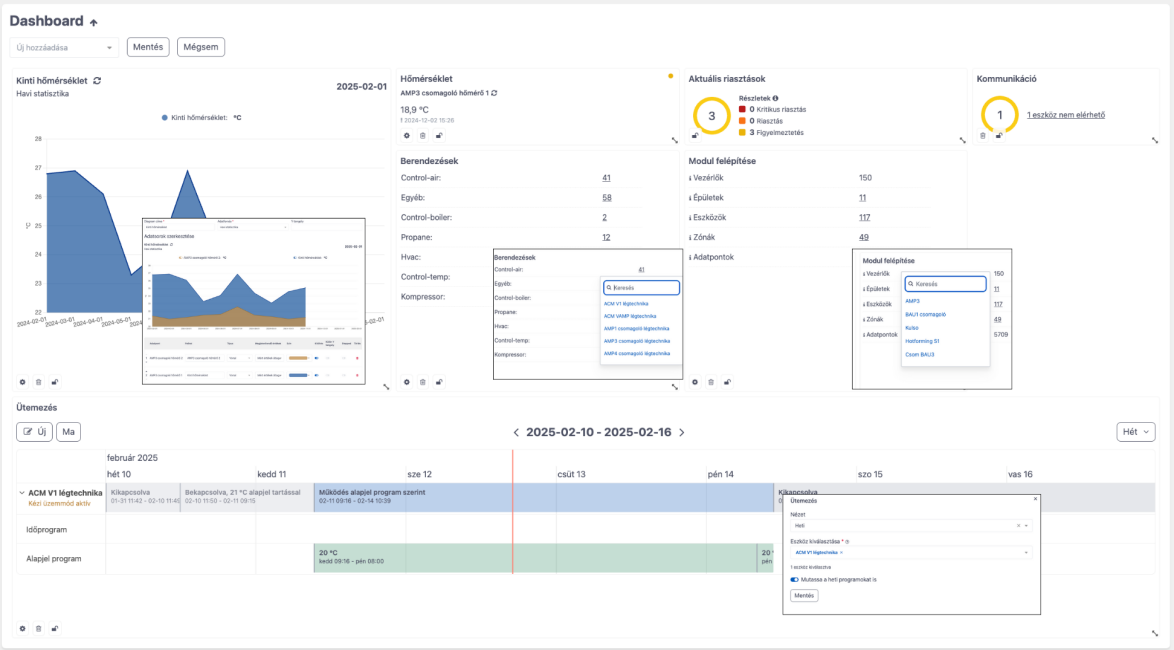
CUSTOM DASHBOARD

The content and layout of the homepage are fully customizable. We have created widgets that allow users to customise their dashboard according to their needs. Each widget can be configured not only in terms of content, but also in size and order. It is also possible to set different layouts for different screen sizes.

Available Widget Types:
(There is no quantity limit — the same widget type can be applied multiple times.)

- **Active Alarms:** The system supports multi-level alarms and presents them in grouped format for easier monitoring. More detailed information can be accessed in a pop-up list.
- **Module Structure:** This widget provides an overview of the components (e.g., zones, devices, sub-meters) and data points within the module. Searchable lists are also available in the pop-up window.
- **Machines:** Similarly to the previous widget, this one also provides a summarized overview of the devices and machines associated with the module, categorized by type. The related searchable lists appear in a pop-up window.
- **Communication:** Displays the number of currently unreachable devices and lists them as well.

- **Scheduling:** Displays the schedules of programmable machines in a single list. Users can choose which machines to include, and they can also switch between weekly, monthly, or daily views. With the appropriate permissions, settings can also be edited.
- **Data Point:** Displays the most recent value of a specific data point. Users can assign a custom label and configure additional settings.
- **Chart:** Allows the display of one or more data points on a single chart. In addition to the default settings, users can set a custom label and appearance.



This customisable system enables each user to personalise their homepage to best suit their needs, allowing them to quickly and efficiently access the information relevant to them.

THE BASIC PACKAGE INCLUDES:

- You can add up to 1,000 data points
  - These data points consist of both physical and GAV (GrüneAntwortVirtual) virtual data points. Physical data points represent actual physical measurements, while virtual data points are derived values that are required for specific modes of operation or functionalities.
  - Statistics can be generated from the data point measurements in quarter-hourly, hourly, daily, or monthly breakdowns. Each data point can be used for statistics, but a maximum of 700 data points can be selected.
  - All building management devices include physical data points that are also writable from external sources, directly influencing the operation of the device. A maximum of 100 such data points can be recorded in the system.

- BMS module configuration
  - 5 active users
  - 5 building entities
  - 50 zone entities
  - 25 machine entities
  - 50 active controllers

- Digital Twin configuration
  - 1 full overview graphic (2D/3D/schematic)
  - 2 building graphics (2D/3D/schematic)
  - 5 zone graphics (2D/3D/schematic)
  - 5 types of machine graphics (2D/3D/schematic)

- Configuration of machine control for 15 machines

Not included in the basic package, available upon request:

- **ENMS – Energy Consumption Monitoring and Control Module**

A smart energy management solution that not only measures consumption but also actively reduces energy usage through intelligent intervention. By adjusting machine performance according to predefined rules, the system effectively cuts energy peaks, optimizing overall efficiency.

- **EHS – Monitoring Module for EHS**

We provide a dedicated user interface for environmental, health, and safety purposes. Factors affecting the safety of workers (e.g., temperature, humidity, air pressure) are monitored, and alarm notifications can be configured accordingly.

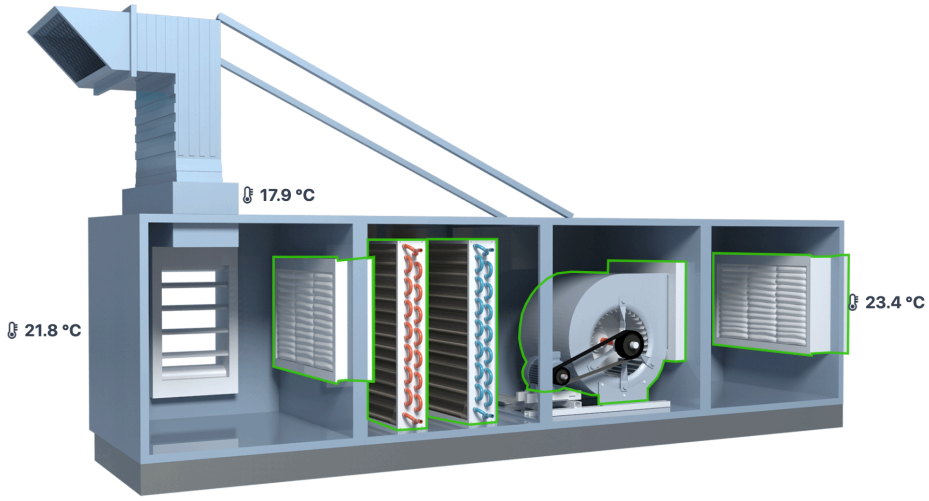
- **Lighting – Module for Lighting Control and Automation**

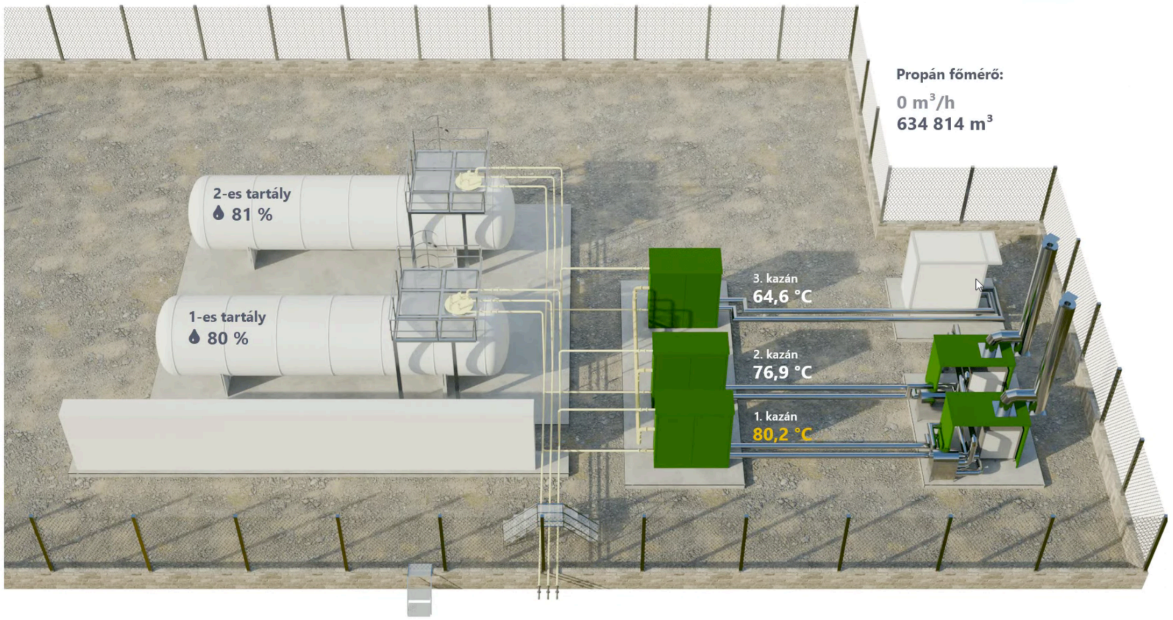
The software's lighting module enables scheduled lighting management, including weekly programming and other scheduled switching options. This ensures energy efficiency and flexible automation.

MODULES OF THE ENERGYCLIPPER

FACILITY – included in the basic package

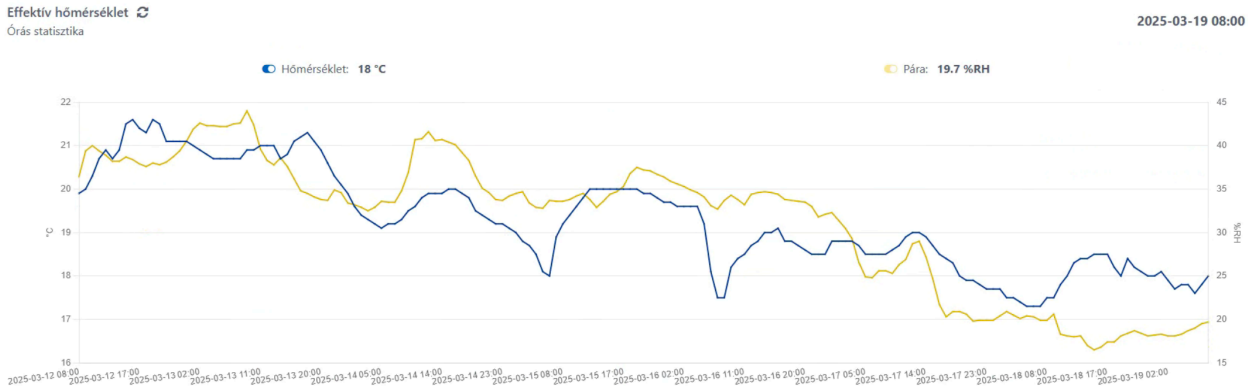
Comprehensive visual overviews at every level of the system, displaying real-time values of key data points, alarm indicators, and the option to create a custom dashboard. The plant's engineering and service systems can be managed from a single interface





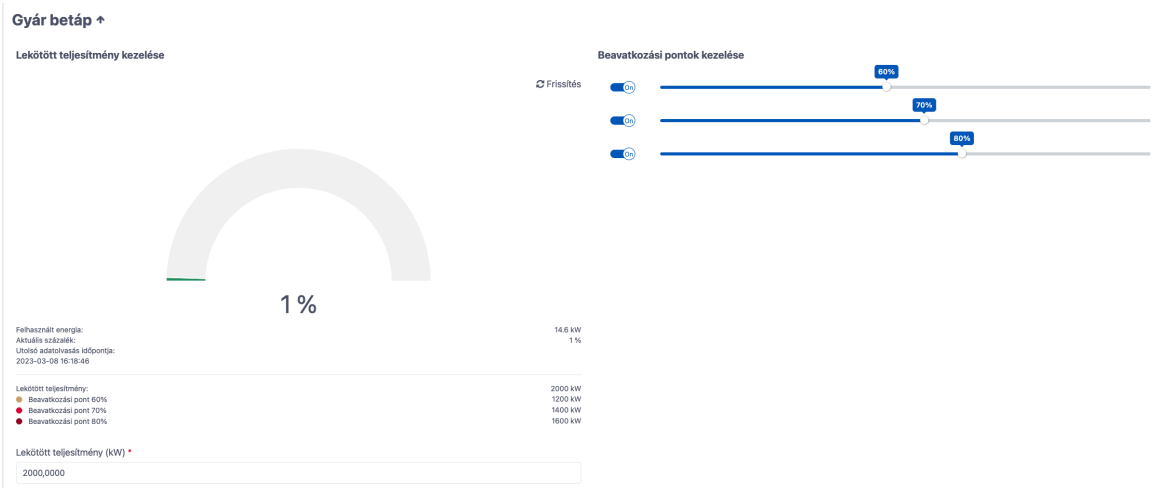
EHS: (ENVIRONMENT, HEALTH AND SAFETY) – optional feature

We provide a dedicated user interface for environmental, health, and safety purposes. Factors affecting the safety of workers (e.g., temperature, humidity, air pressure) are monitored, and alarm notifications can be configured accordingly.



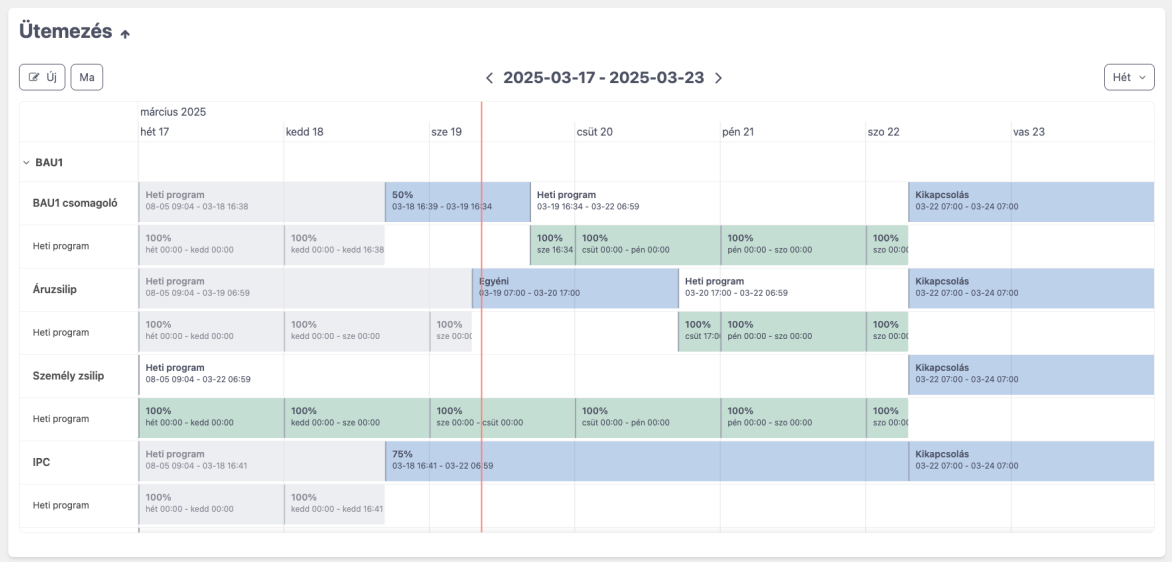
ENMS: (ENERGY MANAGEMENT SYSTEM) – optional feature

A smart energy management solution that not only measures consumption but also actively reduces energy usage through intelligent intervention. By adjusting machine performance according to predefined rules, the system effectively cuts energy peaks, optimizing overall efficiency.



LIGHTING – optional feature

The software's lighting module enables scheduled lighting management, including weekly programming and other scheduled switching options. This ensures energy efficiency and flexible automation.



COMPREHENSIVE FEATURE LIST

User Management – Including the following features:

- Active users as defined in the package
- Multi-level permission management (User, Manager, Admin)
- Management of users controlled by admin authority (registering new users, disabling/enabling existing users, managing privileges, managing GA BMS module access)
- Management of notifications that can be defined individually for each user
    - Support for SMTP, Mailgun, Postmark, Amazon SES, and internal email sending
    - WebSocket support
    - Support for additional solutions available as a custom offer (own SMS, API endpoint support, etc.)
- Customizable notification handler per user
- Password recovery
- An overview and a user profile view

Basic building management functions – which include:

- 1000 data points in total, including:
    - up to 700 data points available for statistics
    - up to 100 read/write data points
    - up to 100 logical (GAV) data points

- 50 active controllers
    - Supported standard protocols: BacNET TCP/IP, MODBUS TCP/RTU

- DigitalTwin module – which includes:
  - 1 full overview graphic (2D/3D/schematic)
  - 3 building graphics (2D/3D/schematic)
  - 5 zone graphics (2D/3D/schematic)
  - 5 types of machine graphics (2D/3D/schematic)
  - Settings interface
    - Freely configurable data points to be displayed
    - Measurement type (last measurement, statistical measurements)
    - Colour, size, position, icon
    - Option to upload custom graphics as a background

- Data visualization module – which includes:
  - 3 configurable graphs per dashboard
  - 3 configurable graphs for each building view
  - 3 configurable graphs for each zone view
  - 3 configurable graphs for each machine view
  - Data from the graphs can be exported (e.g., xls(x), csv)
  - The graphs can display data for any selected time period.
  - Settings interface
    - Adding new graphs
      - Adjustable X and Y axes with customizable labels
      - Multiple graph types (bar graph, line graph, stepped line graph, etc.)
    - Modification of existing graphs
    - Datasets can be freely configured for selected data points
      - Multiple dataset types (bar, line, etc)
      - Colour, data to display (e.g. average, sum), and label
    - Deleting existing graphs

- Alarm module - which includes:
  - Predefined multi-level alarm types:
    - Threshold alarms
    - Value alarms
  - Alarms with delayed activation/deactivation
  - User-configurable notification centre
  - Filterable, retrievable, and exportable alarm log

- Monitoring module - which includes:
  - Predefined operation monitoring per machine with statistics (e.g., off, comfort mode, reduced mode)
  - Individually customizable data point list per machine
    - Filterable, and searchable
    - Detailed measurement statistics
    - Detailed data point datasheet
      - Editable name, description
      - Direct data point writing from BMS
  - Definition of 100 GAV (GrüneAntwortVirtual) virtual data point based on existing data points and the set of rules defined by the client
  - List of machine blockings
    - Detection and warning of machine remote control disablement
    - Filterable, retrievable and exportable logs
  - Automated report module
    - 2 pre-generated report types
      - Active alarm and mode operation reports
      - Custom report templates available on request
    - Report subscriptions can be set by the users
    - Generate and send reports on a daily, weekly, or monthly basis

- Control module - which includes:
  - Calendar-based schedule setup, monthly, weekly, and daily views
    - Transfer configured schedules to any machine
  - Weekly scheduler for setpoint and status-based machine control
    - Transfer configured programs to any machine

- Data browser module - which includes:
  - A report generation interface that can be freely customized by the user
  - A user-defined time interval setting
  - Multiple measurement types (raw data, statistical data)
  - Data can be exported in multiple formats (xls, xlsx, csv)

EXTRA MODULES

ENMS module, which includes:

- Overview based on energy aspects
  - Statistics relative to contracted power
  - DigitalTwin module – which includes:
    - 1 full overview graphic (2D/3D/schematic)
  - Submeter list

- Peakshaving module:
  - Displaying statistical values of consumption measured relative to contracted capacity
  - Configurable contracted power value (supporting multiple power sources, if required)
  - User-definable intervention thresholds
  - Override of operation modes by machine and by level

- Alarm module - which includes:
  - Predefined multi-level alarm types:
    - Threshold alarms
    - Value alarms
  - Alarms with delayed activation/deactivation
  - User-configurable notification centre
  - Filterable, retrievable, and exportable alarm log

- Relational graph view of submeters
- Submeter views

EHS module, which includes:

- An overview structured around EHS (Environment, Health, and Safety) criteria
  - Calculation and statistics of effective temperature
  - DigitalTwin module – which includes:
    - 1 full overview graphic (2D/3D/schematic)

- Alarm module - which includes:
  - Predefined multi-level alarm types:
    - Threshold alarms
    - Value alarms
  - Alarms with delayed activation/deactivation
  - User-configurable notification centre
  - Filterable, retrievable, and exportable alarm log

- Automatic report module
  - 2 pre-generated report types
    - Active alarm report
    - EHS-specific report
  - Custom report templates available on request
  - Report subscriptions can be set by the users
  - Generate and send reports on a daily, weekly, or monthly basis

Lighting module, which includes:

- Configuring lighting zones and their hierarchical relationships
  - An overview structured around lighting concepts
  - Zone-specific overview
  - DigitalTwin module – which includes:
    - 1 full overview graphic (2D/3D/schematic)
    - Module-specific digital twin configuration based on existing graphics, for up to 5 zones

- Interface for configuring weekly programs
- Interface for configuring calendar-based scheduling of programmes

- Alarm module - which includes:
  - Predefined multi-level alarm types:
    - Threshold alarms
    - Value alarms
  - Alarms with delayed activation/deactivation
  - User-configurable notification centre
  - Filterable, retrievable, and exportable alarm log

- Automatic report module
  - Pre-generated report types
    - Active alarm report
  - Custom report templates available on request
  - Report subscriptions can be set by the users
  - Generate and send reports on a daily, weekly, or monthly basis

SERVER REQUIREMENTS, COMPATIBILITY (RECOMMENDED MINIMUM REQUIREMENT)

Supported operation systems:

- Linux distribution (min. 2021)
    - Ubuntu 22.04 LTS (recommended)
- Microsoft® Windows Server 2019 64-bit
- Microsoft® Windows 10 64-bit (Professional and Enterprise)

Minimum hardware requirements:

- Storage: application requirement of 40GB (SSD recommended), database requirement of 20GB per 1500 data points per year.
- RAM: 16 GB (for small and medium BMS systems) - 32 GB (recommended for large systems)
- Processor: 4 core > 2.6 GHz - 8 core > 2.6 GHz (recommended)

Supported databases:

- MariaDB 10.2 + (default)
- MySQL 5.7 +,
- Postgre SQL 9.2 +
- Microsoft® SQL Server 2016 (Express, Standard, and Enterprise)
- Microsoft® SQL Server 2017 (Express, Standard, and Enterprise)
- Microsoft® SQL Server 2019 (Express, Standard, and Enterprise)

Other service requirements:

- Redis 5.x or later (version 7 recommended)
- PHP 8.1.X NTS
- Python 3.11.X
- Node JS 18 LTS