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Ingenuity for life

Powermanager Power Monitoring Software

Technical Overview

2018

powermanager power monitoring software
Top highlights at a glance

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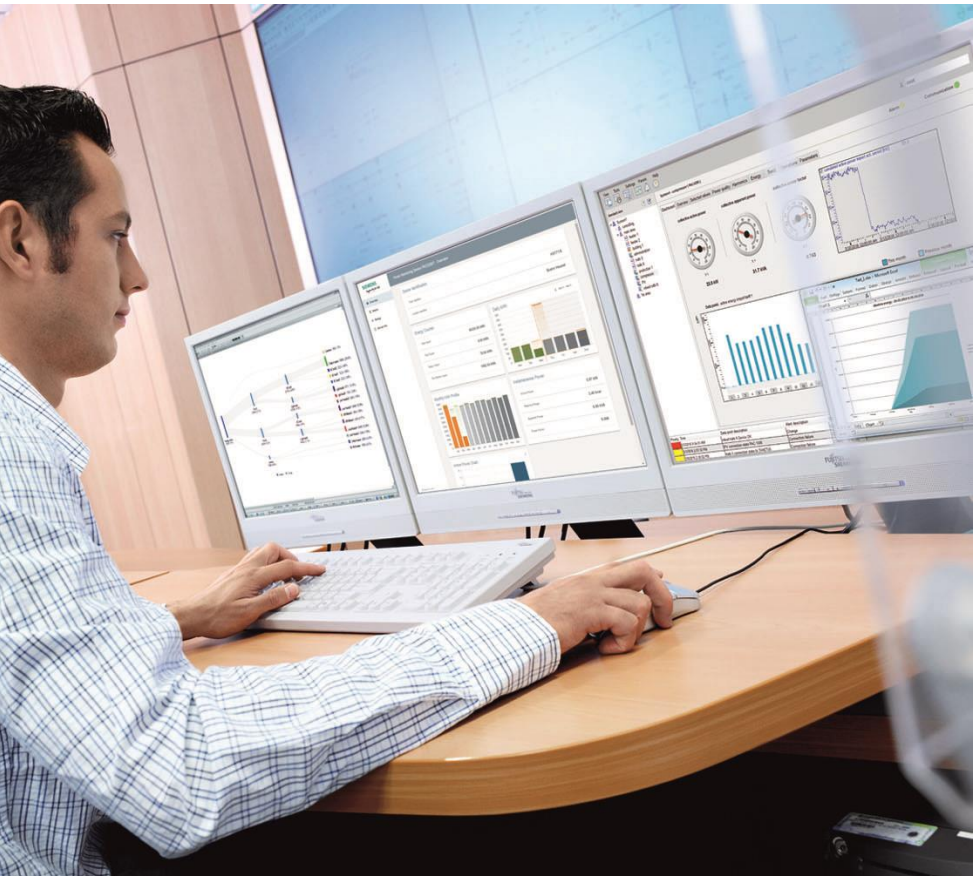

- Minimized engineering costs due to comprehensive preconfigured software settings
- Assigning and comparing power consumption and cost for relevant cost centers
- Preventing load peaks and monitoring the operating states of the power distribution
- An important function block for energy management systems, e.g. for designs in accordance with the ISO 50001 standard
- Logging and visualizing energy and power data from the 7KM PAC measuring devices

Power monitoring software powermanager V3.4

Top highlights at a glance

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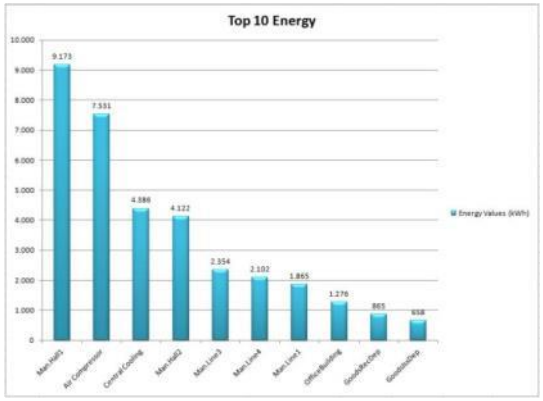

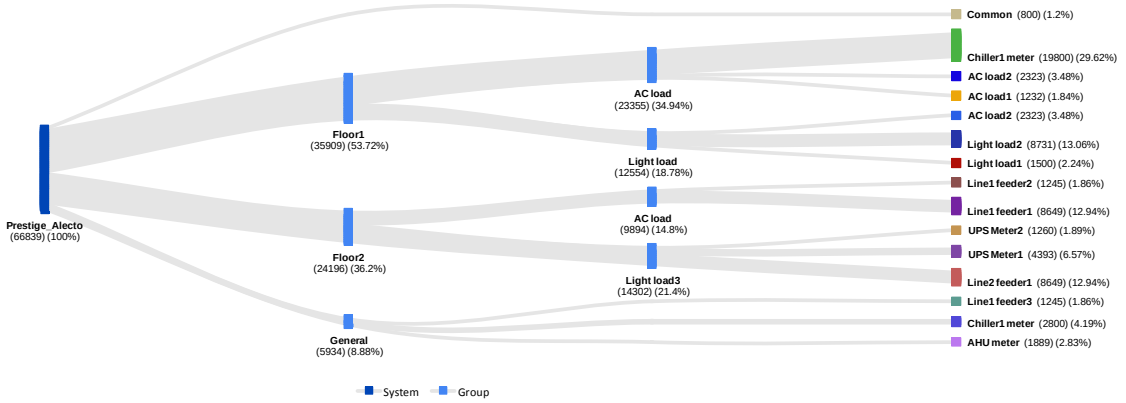

- Device integration of new devices
  - 7KM PAC 3200T
  - 7KT PAC 1200
  - 7KM PAC expansion module I(N), I(Diff), analog
  - SEM3 (UL-applications)
- Extended integration of:
  - 3VA/3WL breaker

- New standard reports
  - Templates:
    - KPI report
    - Sankey report
    - Top 10 consumers
  - Web-based
  - Email, pdf, xls, csv, no EXCEL needed

- Windows 10 support

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Top highlights

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Feature/function	Benefits
• Preconfigured project settings	• Fast commissioning and easy startup
• Visualization of the load profile and measured values in characteristic curves	• Deriving energy-saving measures
• Reports for consumption and cost allocation to specific cost centers	• Identification of unnecessary consumption • Quick pinpointing of faults • Promoting energy-conscious behavior
• Limit value monitoring with freely configurable alarms	• Adapting energy consumption behavior • Avoiding load peaks

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System configuration

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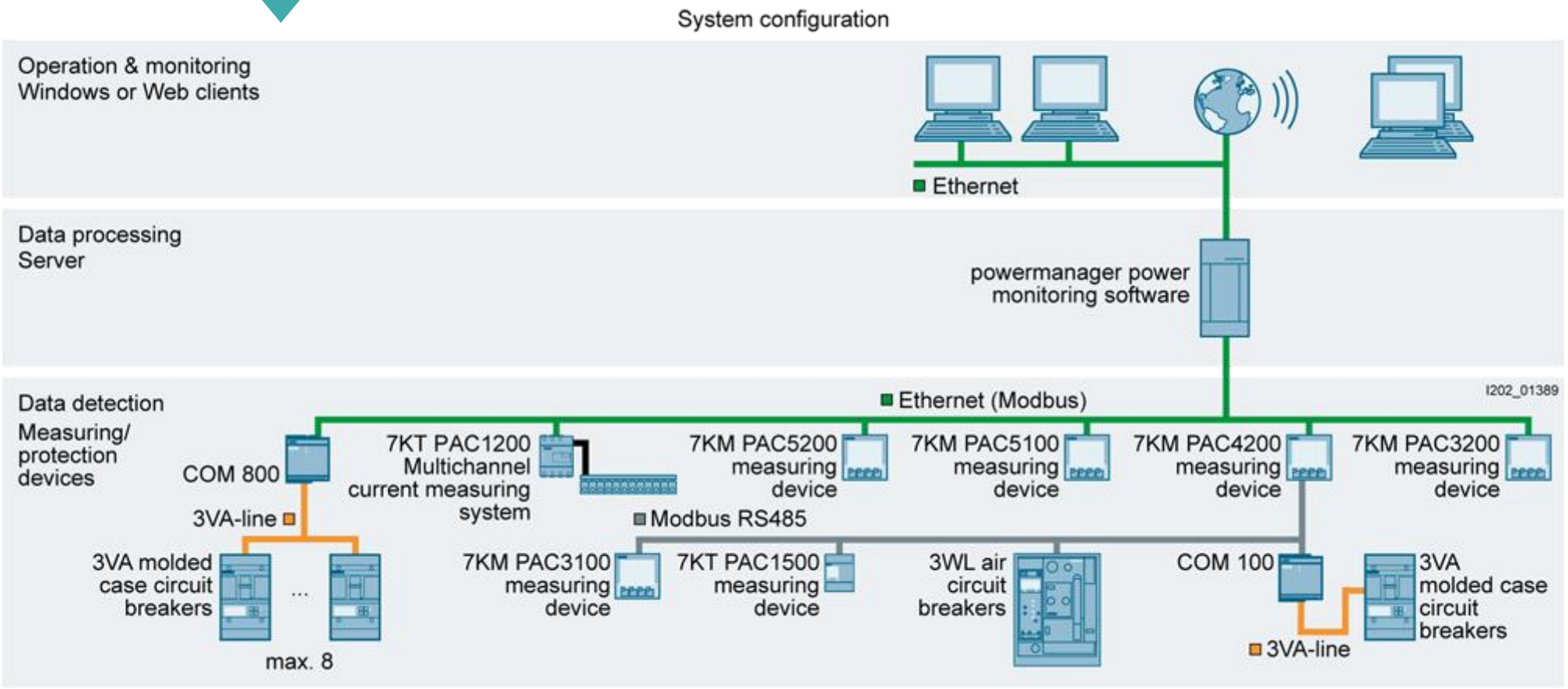
Standalone, PC-based power monitoring software based on Modbus communication



powermanager power monitoring software
Modular and scalable software

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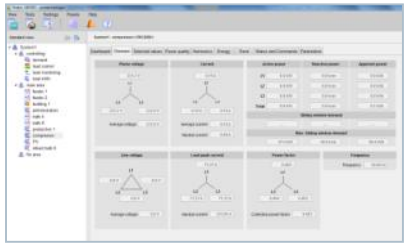
From the simple standard application to the fully flexible customer solution

Basic Package
- Simple engineering
- Measured value display by technology type
- Pre-defined alerts, archives
- Easy indication of trends
- Web client included
- Reports creation



Full modular expansion capability

“Expert” option package
- Free configuration of any graphic image types (e.g. single-line visualization)
- Graphic objects for measuring devices/switches
- creating proprietary graphic objects
- Integrated script language for customer-specific adaptations (Email, SMS)

powermanager power monitoring software
Dashboard, KPI

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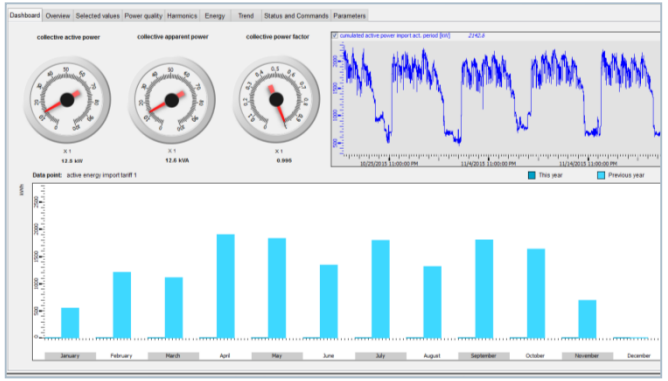
Data evaluation with dashboard displays and KPI calculation

The **dashboard display** provides a quick overview of the most important values

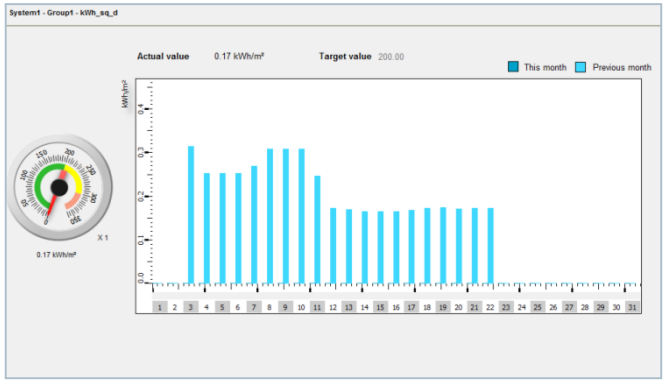
- Online values in gauge objects with colored ranges
- Power demand values of the load profile
- Energy consumption values for comparison of two periods (e.g. this year/last year monthly)

Dashboards are available on system and device level



The **KPI view** provides the possibilities to calculate individually key numbers for further evaluation of energy consumption, e.g. “kWh/employee” or “kWh/m²”

- Online values in gauge objects with colored ranges for the target value of the number
- Historical view of this period and last period values



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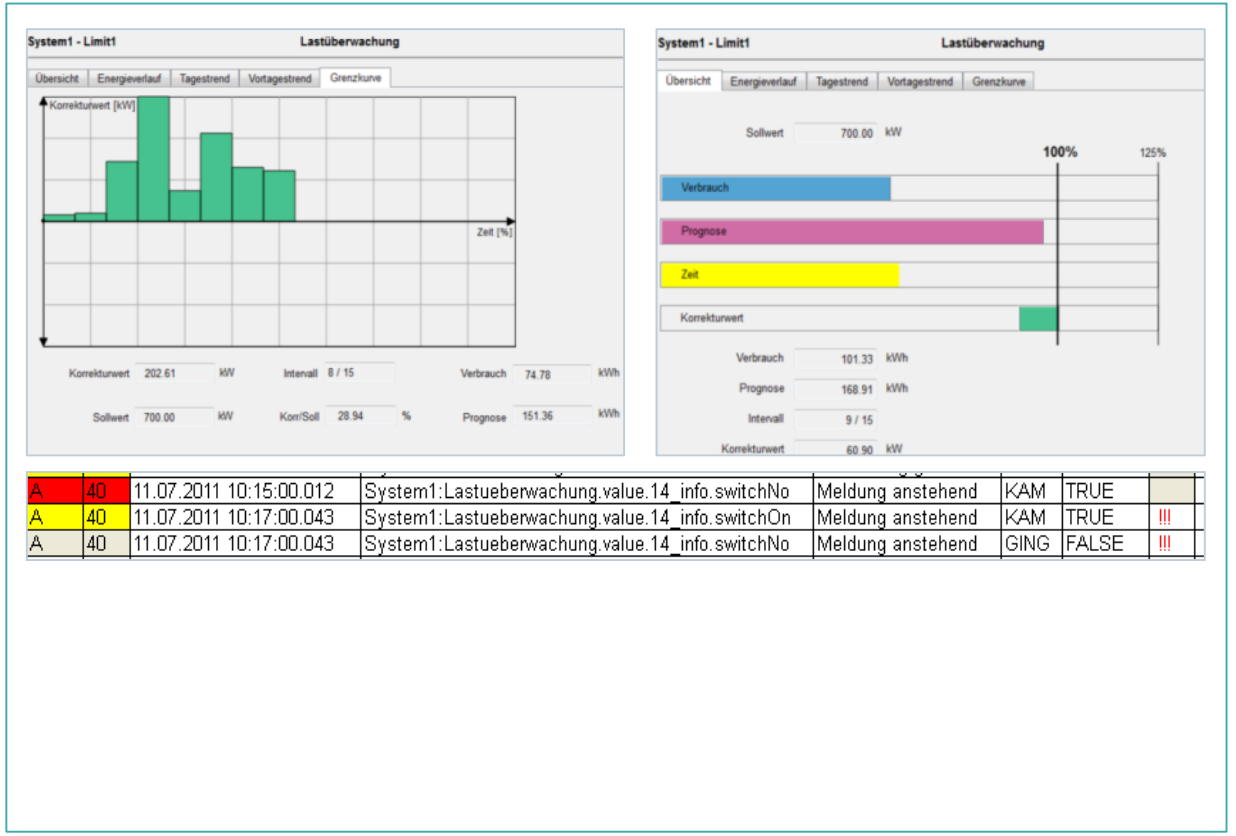
Monitoring for compliance with power limits

Object for power limit compliance

- Setpoint values or schedule values for power limits, period lengths and calculation frequency can be parameterized
- Limit value curve can be defined for “Do not switch”
- Signals are generated for “Disconnect”, “Connect”, “Do not switch” and “Switch soon” – signals can be interlinked with the digital outputs of devices in order to trigger them
- The user is provided with information about consumption in the current period, the anticipated consumption and a possible correction value



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Reporting – integrated, web based

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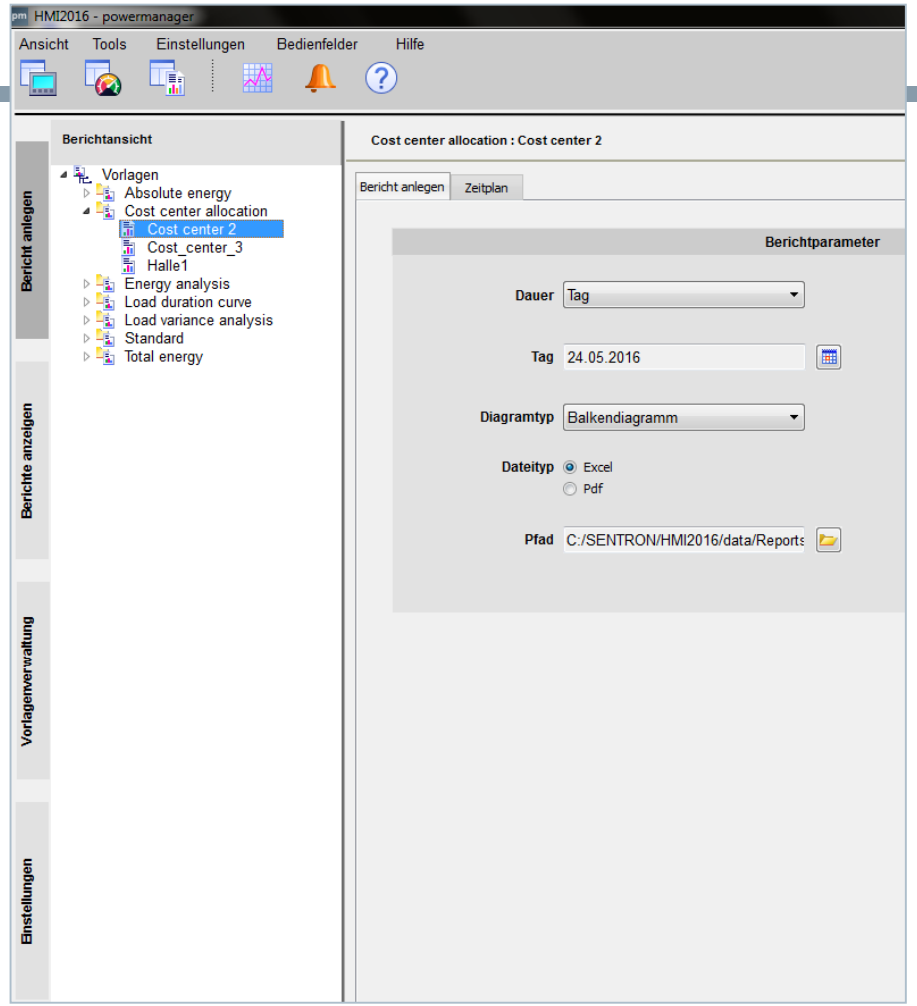
Reporting view

- Reporting is integrated in the standard powermanager as view
- Integrated report engine, no EXCEL needed
- Reports can be created as xls, pdf
- Scheduled or manual trigger for report creation
- Templates:
  - Cost center allocation
  - Duration curve
  - Absolute, total energy
  - Variance analysis
  - Yearly evaluation
  - Standard
- Email with final report via SMTP server (w/o login) – no MS outlook needed
- Web-based (creation, execution, viewing)
- Data point selection based on project tree with language specific device and data point names



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Reporting – Cost Center Allocation

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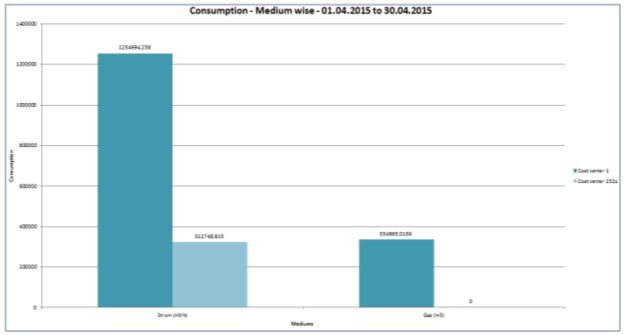
Pre-configured reports – Cost Center Allocation

- For energy consumption values
- Calculates based on the tariff settings and cost centers the consumption and costs for different time periods (e.g. month, year)
- Medias can be setup individually
- Up to 10 tariffs per media with sub intervals
- Single or multiple data points can be selected and assigned to cost centers
- Display can be in different ways:
  - Bar chart
  - Pie chart
  - Table view



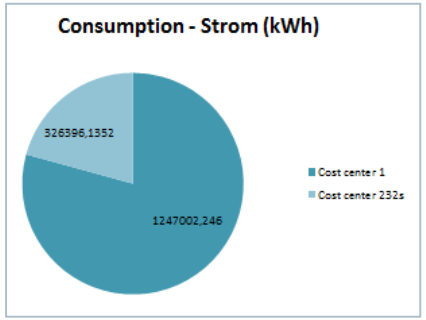
Consumption table

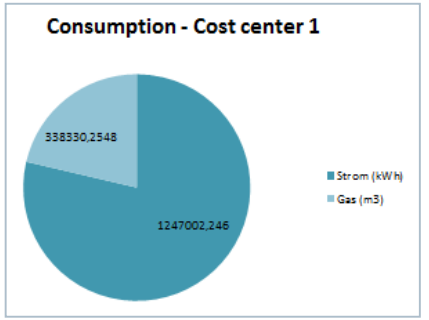
Cost center 1	Strom	Gas
Data point	kWh	m3
Main Feeder 1 active energy import tariff 1	1254994,256	
Trafo 2 active energy import tariff 1		334863,0139
Total	1254994,256	334863,0139

Cost center 232s	Strom	Gas
Data point	kWh	m3
Trafo 1 active energy import tariff 1	322748,815	
Total	322748,815	

Cost table

Cost centers	Strom	Gas	Total
	EUR	EUR	EUR
Cost center 1	138049,3681	334863,0139	472912,3821
Cost center 232s	35502,36964		35502,36964
Total	173551,7378	334863,0139	





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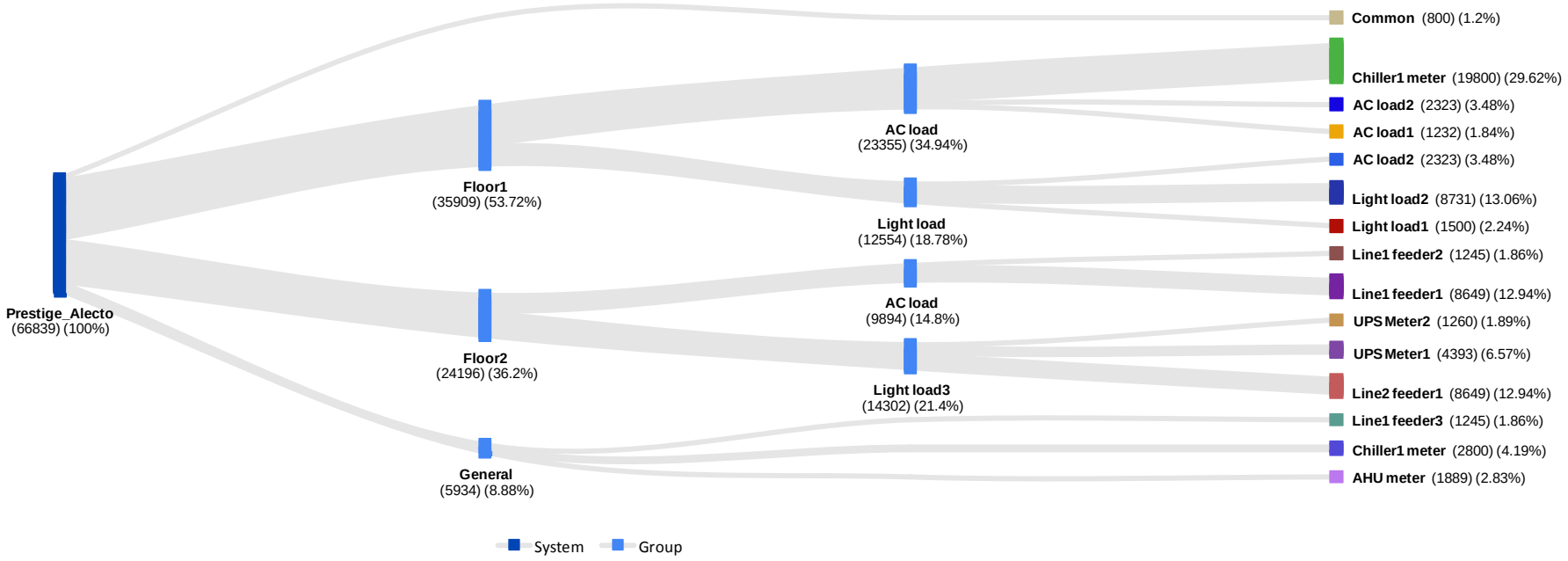
Pre-defined reports – Sankey diagram

- Calculates active, apparent and reactive consumption values for a certain time setting range – day, week, month, year or customer-specific
- These consumption values are structured based on groups and subgroups
- The data points are assigned to groups
- Graphic visualization – See example on the right
- The "width" of the energy flow stands in proportion to actual consumption, i.e. the wider the branch, the more energy is assigned to the group



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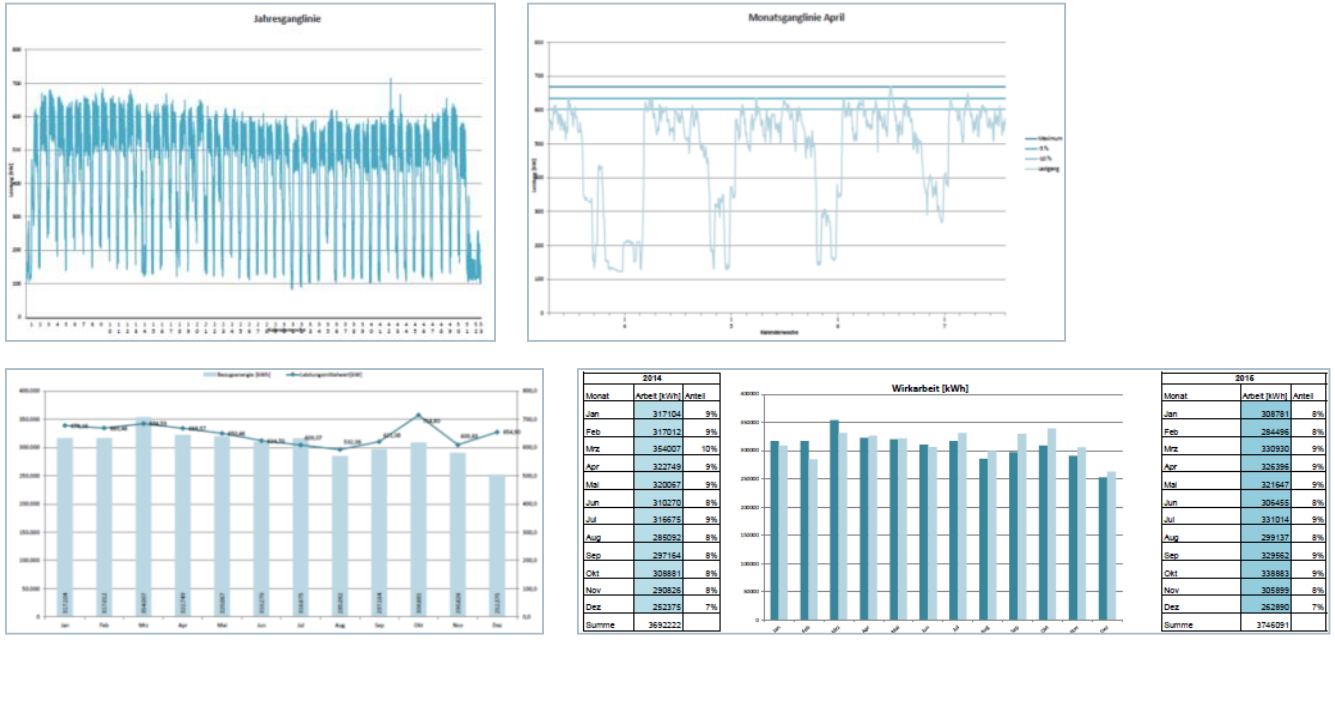
Preconfigured reports – Energy Analysis

- For energy and power demand values
- For one data point at a time only
- For a period of one year only
- Comparison to a second year possible
- Displays of:
  - Yearly load profile (power demand)
  - Load profile for each month of the year
  - Consumption and highest power demand value of each month of the year
  - Calculation of min, max, average power demand and time of usage for each month of the year
  - Comparison and difference calculation between two years for power demand and consumption of each month of both years



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Advanced Reporting – based on EXCEL

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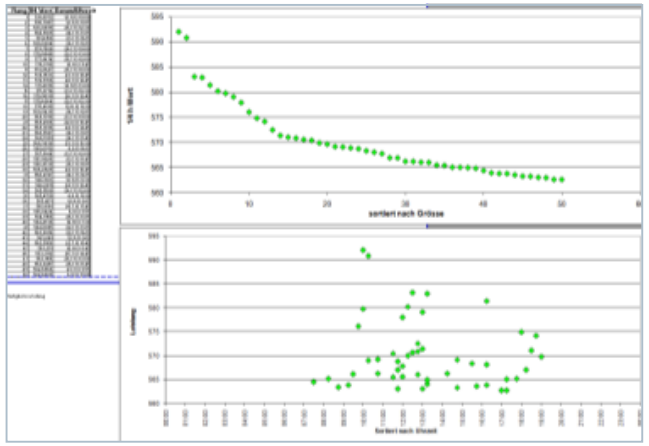
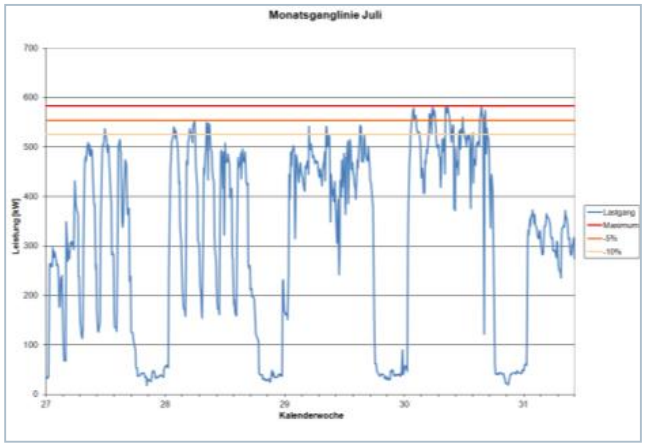
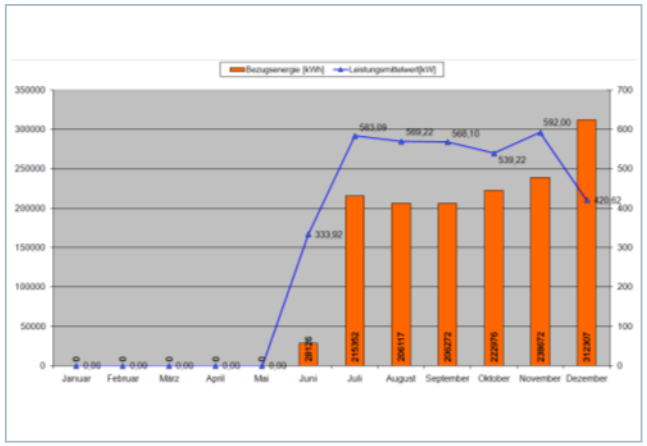
Freely configurable reports

- Report templates can be created and stored via EXCEL
- The standard protocol allows users to export any included data type for individual visualization
- Optional automated generation of curves or diagrams
- Exported data can be settled before visualization
- Optional automatic creation and sending of user-defined reports via email (MS Outlook needed)







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Web client

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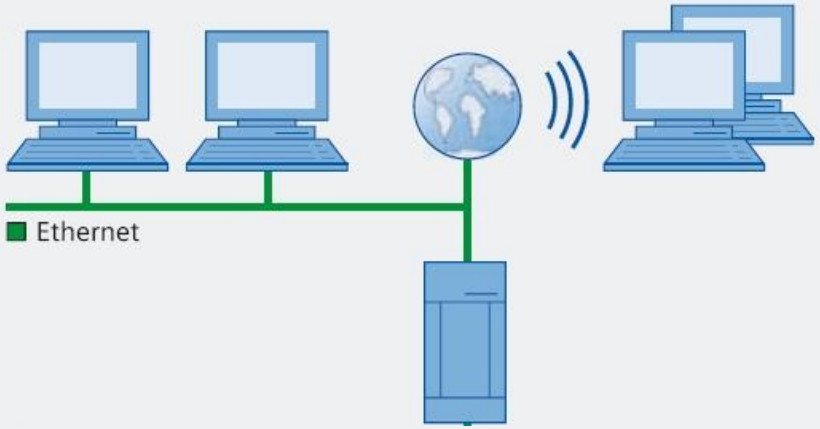
Display of power data/system status via a standard web browser

Functionality:

- Access to the measured data and the system status via a standard browser
- Visualization of trends for comparing load curves
- Accessing the basic reporting
- Performing commands on devices
- Warning/alarm display and acknowledgment option
- No parameterization options



Requirements:

- No full software installation needed (download of necessary files at first connection to server)
- License Integrated in the basic package
- Licensing with User interface (Client) licenses

powermanager power monitoring software
“Distributed Systems” option package

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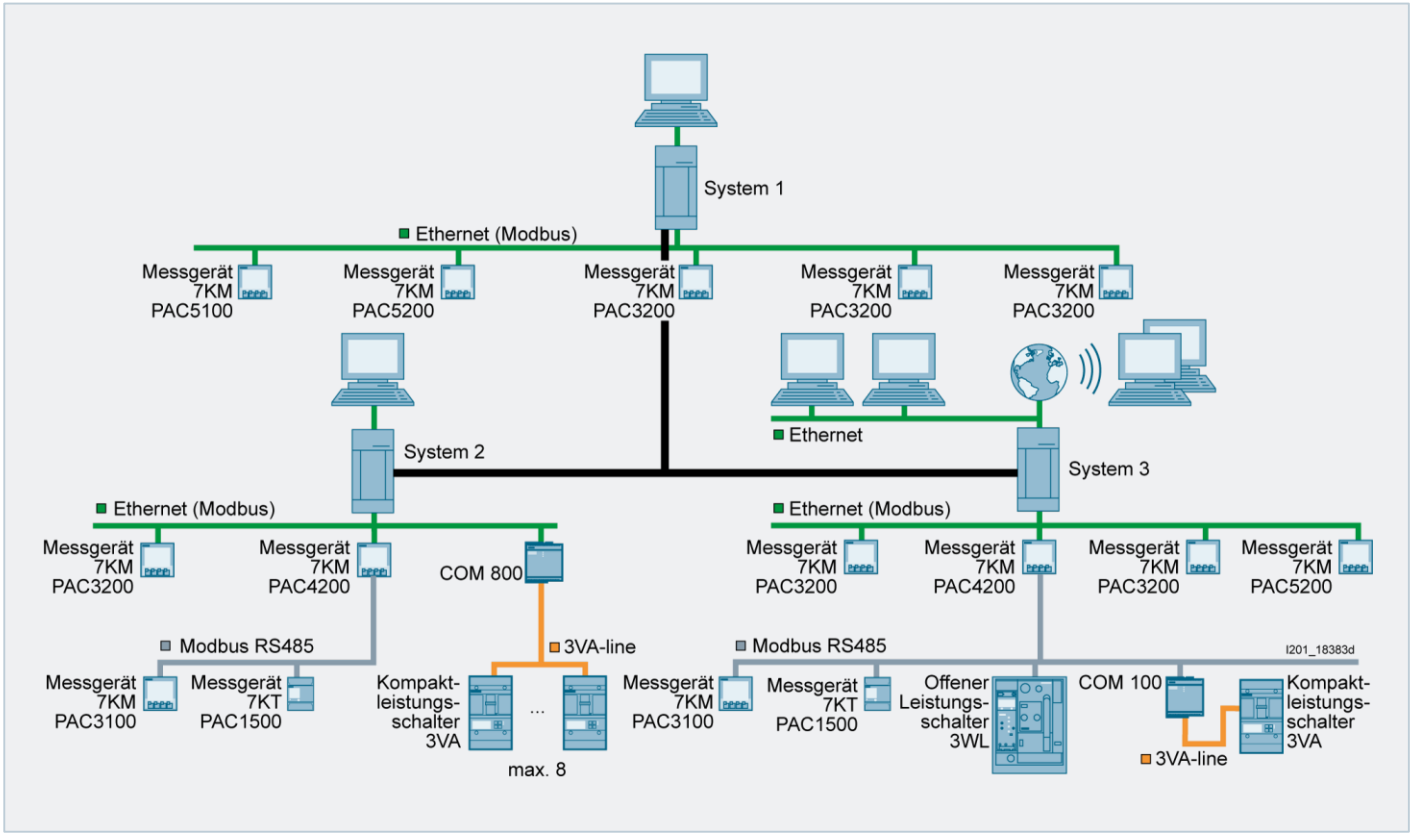
Coupling several powermanager systems

- Coupling several, independent powermanager systems
- Each system can access the measured values and alarms of the other systems and visualize them
- Cross-system report creation
- Increase the maximum number of devices by way of load distribution



Power monitoring application
Distributed locations

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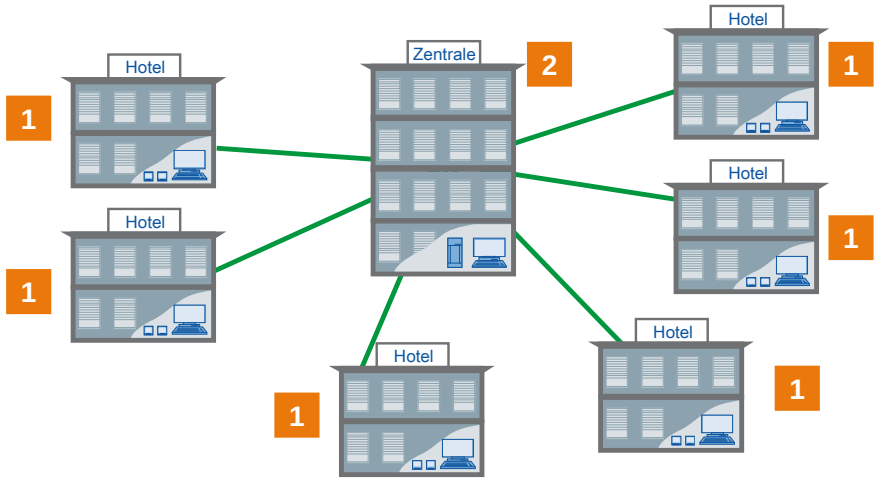
Require-ments	Companies with several locations and centralized reporting, e.g. hotel or supermarket chains
Imple-mentation	• Each location is equipped with their own measuring devices, switches, and associated visualization options • Local configuration rights • Cross-location data exchange via standard IT networks
Benefits	• Exchange of data between individual locations and the central office in addition to local power monitoring • Company-wide reporting across locations • Benchmarking of individual locations • Bundling of energy purchases – optimization of supply contracts

Example of a hotel chain



Description:

In each hotel, there is a local powermanager installation with measuring and protection equipment. Data storage 1 is local.

For company-wide analyses and comparisons, it is possible to access the data of the various locations 2 to generate reports and evaluations.

Power monitoring application
Department store

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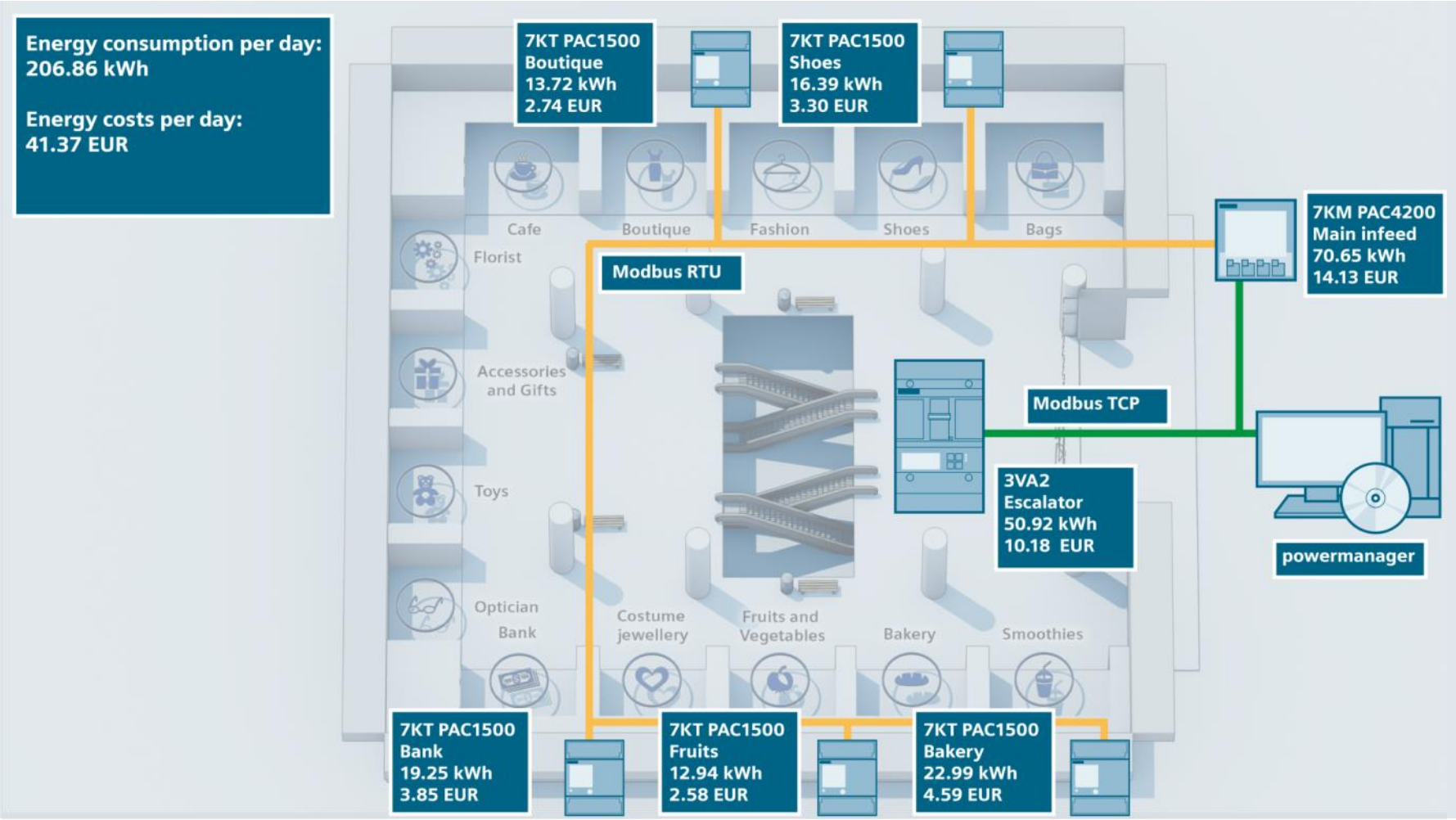

Power monitoring application
Industry

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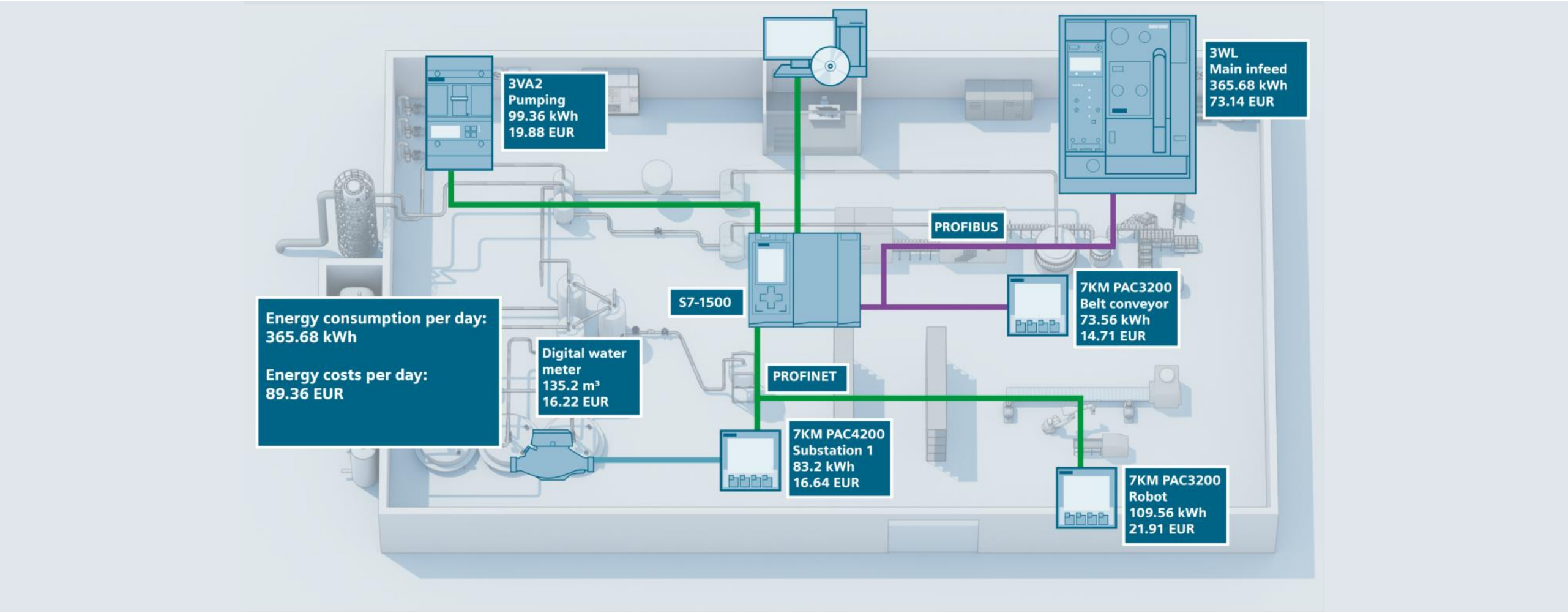

Power monitoring application
Distributed locations

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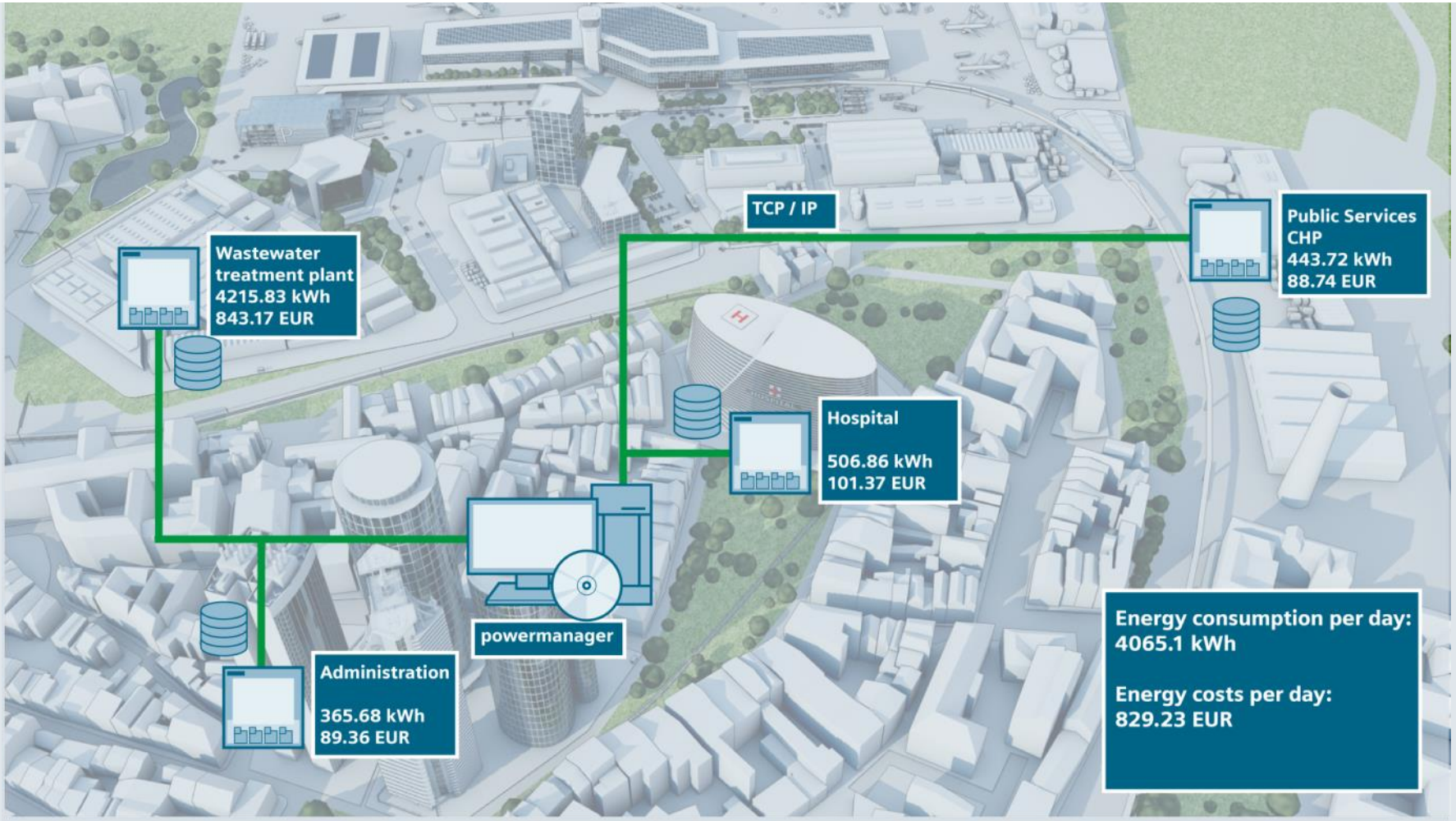
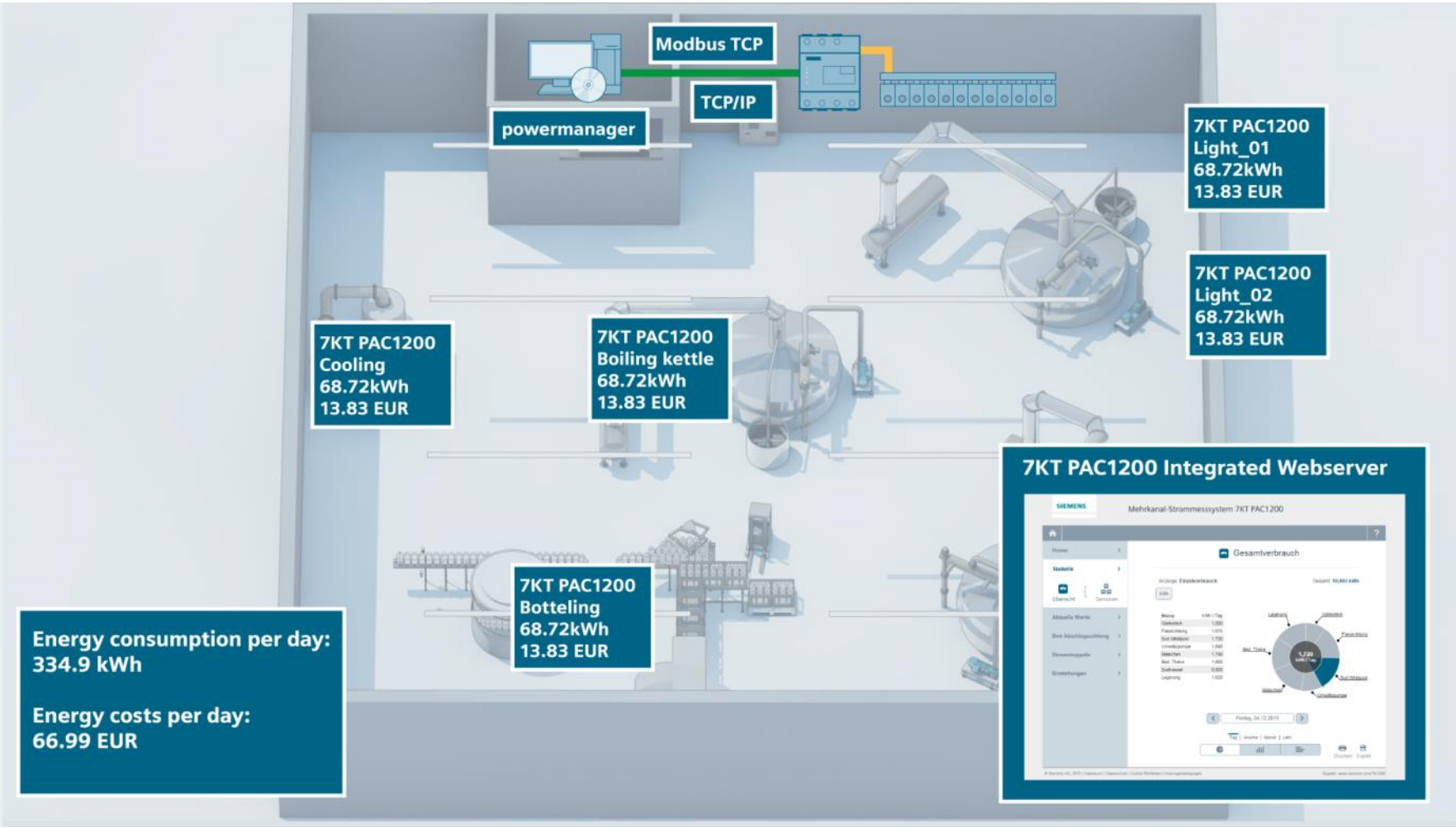


Power monitoring application
Brewery



Power monitoring application
Office building

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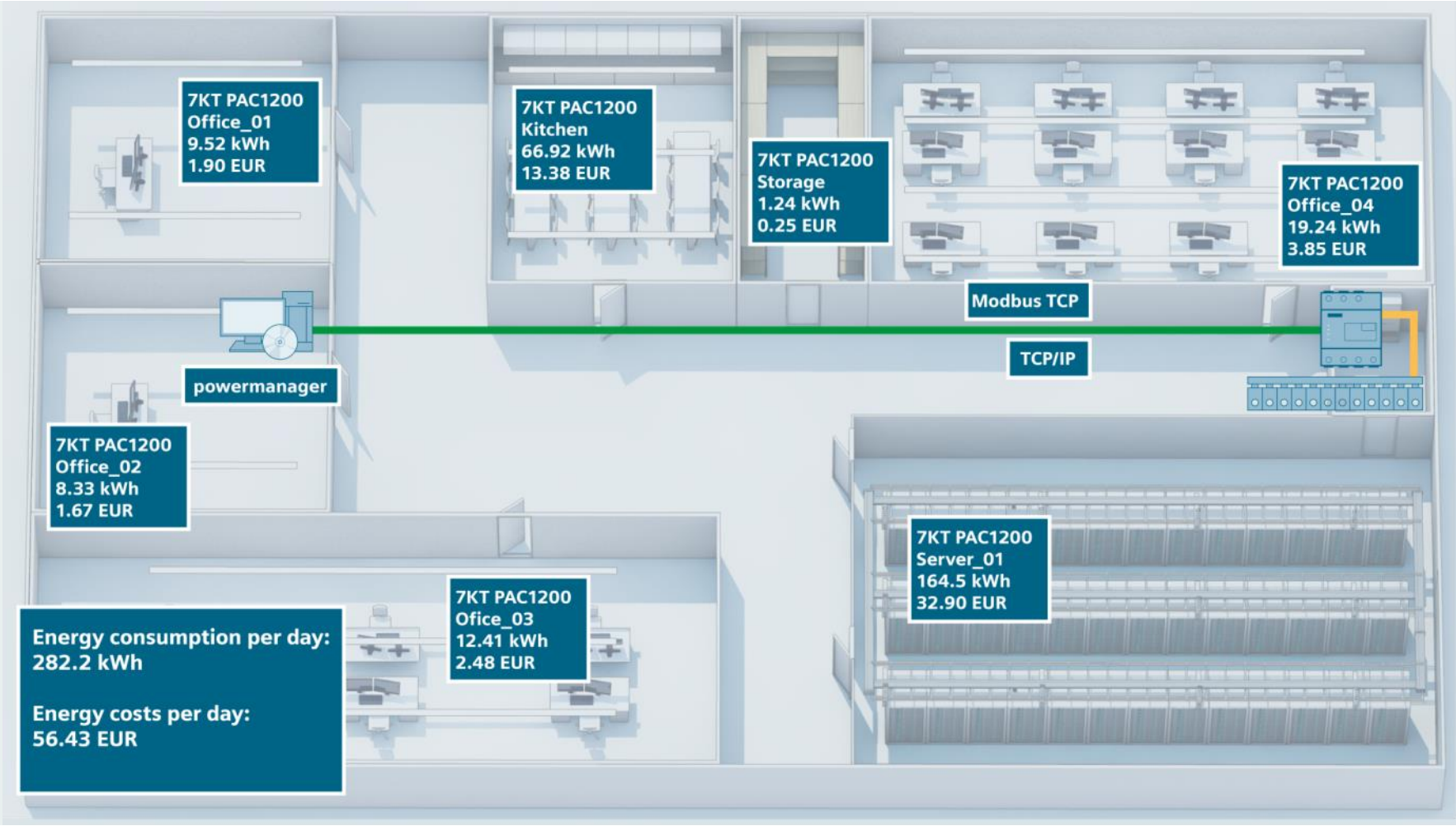

Thank You

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