BU Management and Communication
Technology, Control engineering

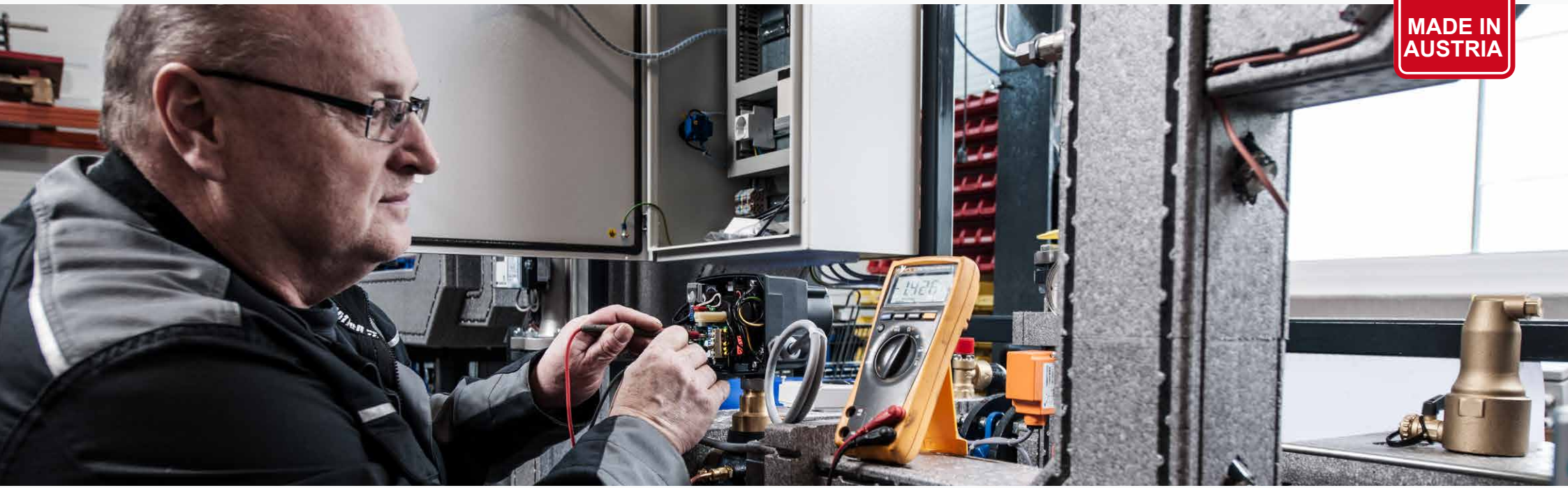
BUSINESS DIVISION MANAGEMENT and COMMUNICATION TECHNOLOGY CONTROL TECHNOLOGY

Intuitive tools for perfect energy management as well as network and station control

TAKING
THE LEAD.
NOW.

SCAN ME

Legal notice:
aqotec GmbH
Vöcklatal 35, 4890 Weißenkirchen im Attergau, Österreich
Telefon: +43 7684 20400, Fax: +43 7684 20400 100
office@aqotec.com, www.aqotec.com



Management and Communication Technology

Management and communication systems serve to solve overarching, complex control and regulation problems.
The aqo360° system engages already during power generation while optimising the use of primary energy. Energy generation, the heating network, and house connections are monitored and regulated. All relevant data are visualised via a clear graphical software interface.

aqo360°
Next generation visualisation.

Your benefits

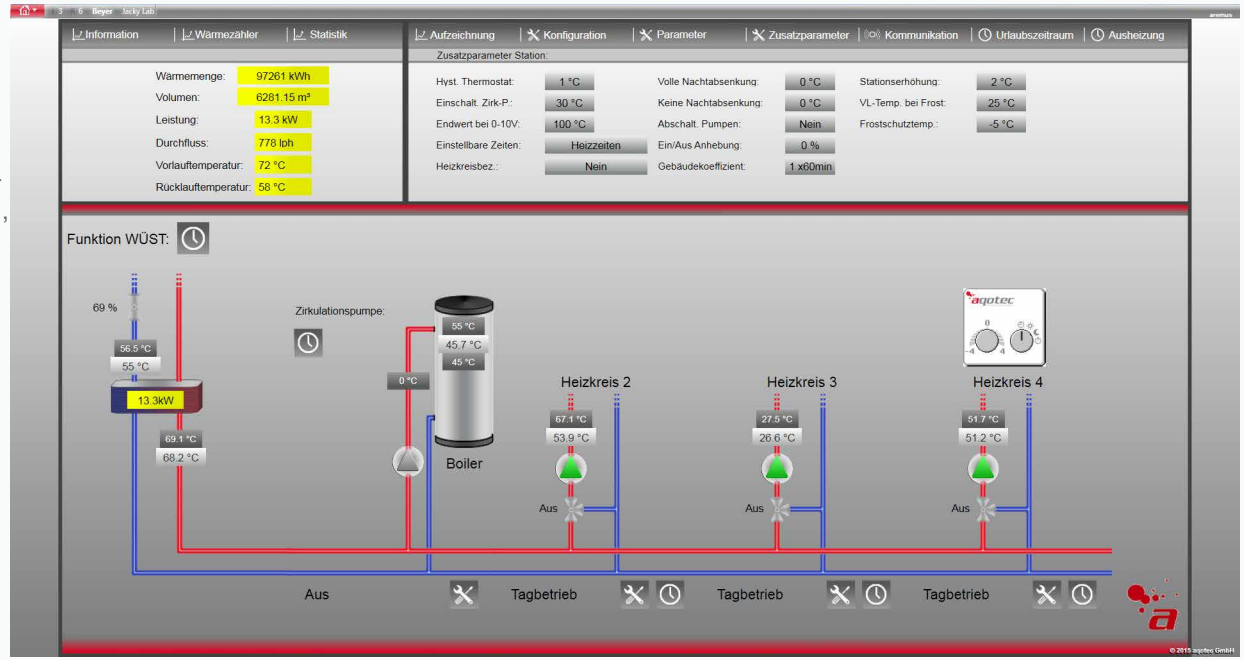
- ✓ Readable from **various regulation devices and manufacturers**
- ✓ Full responsive design
- ✓ Optimised touch controls
- ✓ Recording via SQL database
- ✓ Automated backup with adjustable schedule
- ✓ Server solution
- ✓ Compatible with Windows 10 and Windows 2012 Server
- ✓ Authorisation via Windows user administration
- ✓ Optimised for client-server configurations

VISUAL SOLUTIONS - TAILORED TO YOUR NEEDS

aqo360° BASIC	aqo360° PRO	aqo360° SERVER
For "standard" district heating requirements (PC-solution, only works with SQL Express)	For advanced district heating requirements (Data stored on an SQL database)	Data is stored on a database server, which can be accessed by different clients.

The data acquisition and visualisation program serves to display all detected values from the district heating plant. All connected controllers of the house transfer stations appear in separate windows and tables on the Windows screen. In principle, any customer can configure the entire systeme as desired. Both system visualisation and integrated overall regulation cover energy production at the heating plant, targeted and optimal use of energy resources, distribution of thermal energy into the grid, all the way to regulating house transfer stations, secondary-side control circuits, leak warning monitoring, and consumption billing.

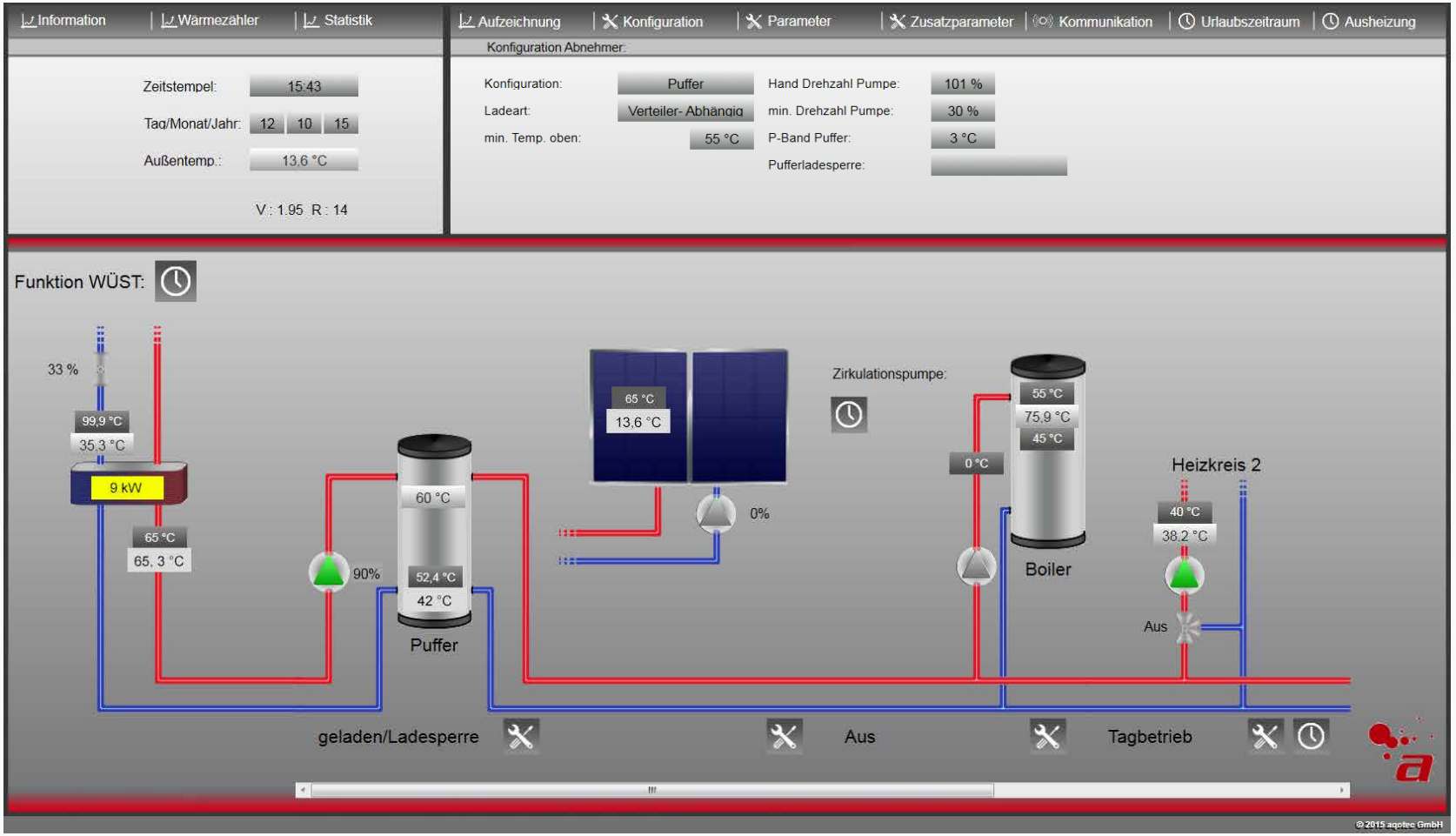
All processes can be transparently documented. Operating data of individual system components are continuously logged, becoming thus available for dynamic analyses.



- ✓ "Visualising" processes
- ✓ Consumption analyses
- ✓ Remote control of all system components
- ✓ Regulation optimisation
- ✓ Engagement option and parameter adjustment
- ✓ Remote maintenance via software
- ✓ Detection of transfer station regulations
- ✓ Display of all actual values and setpoints
- ✓ Logging
- ✓ Alerting

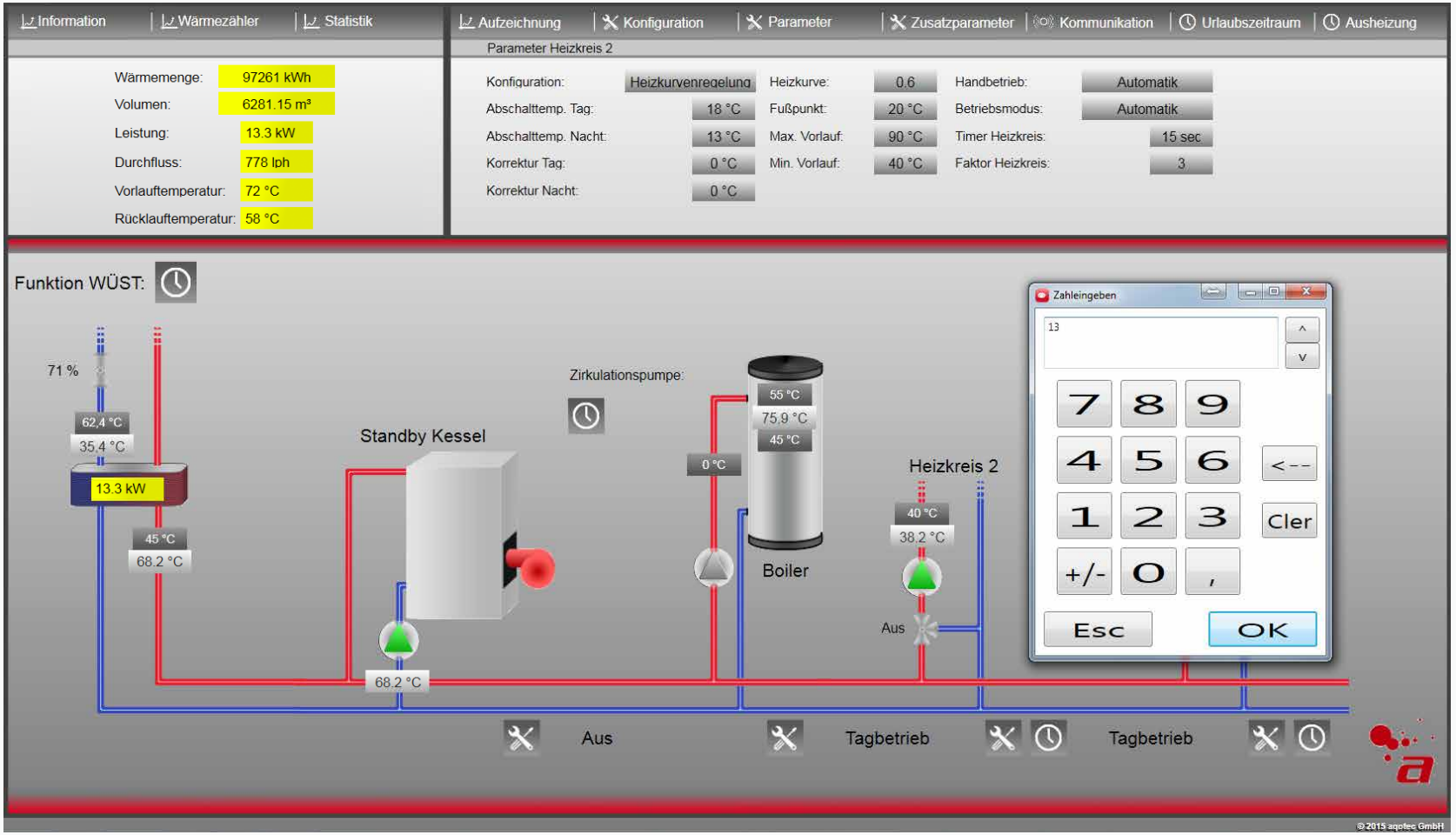
Aqo 360° features the following areas:

aqoControl ***aqoData*** ***aqoRecorder*** ***aqoInformer*** ***aqoManager*** ***aqoViewer*** ***aqoTransponder***



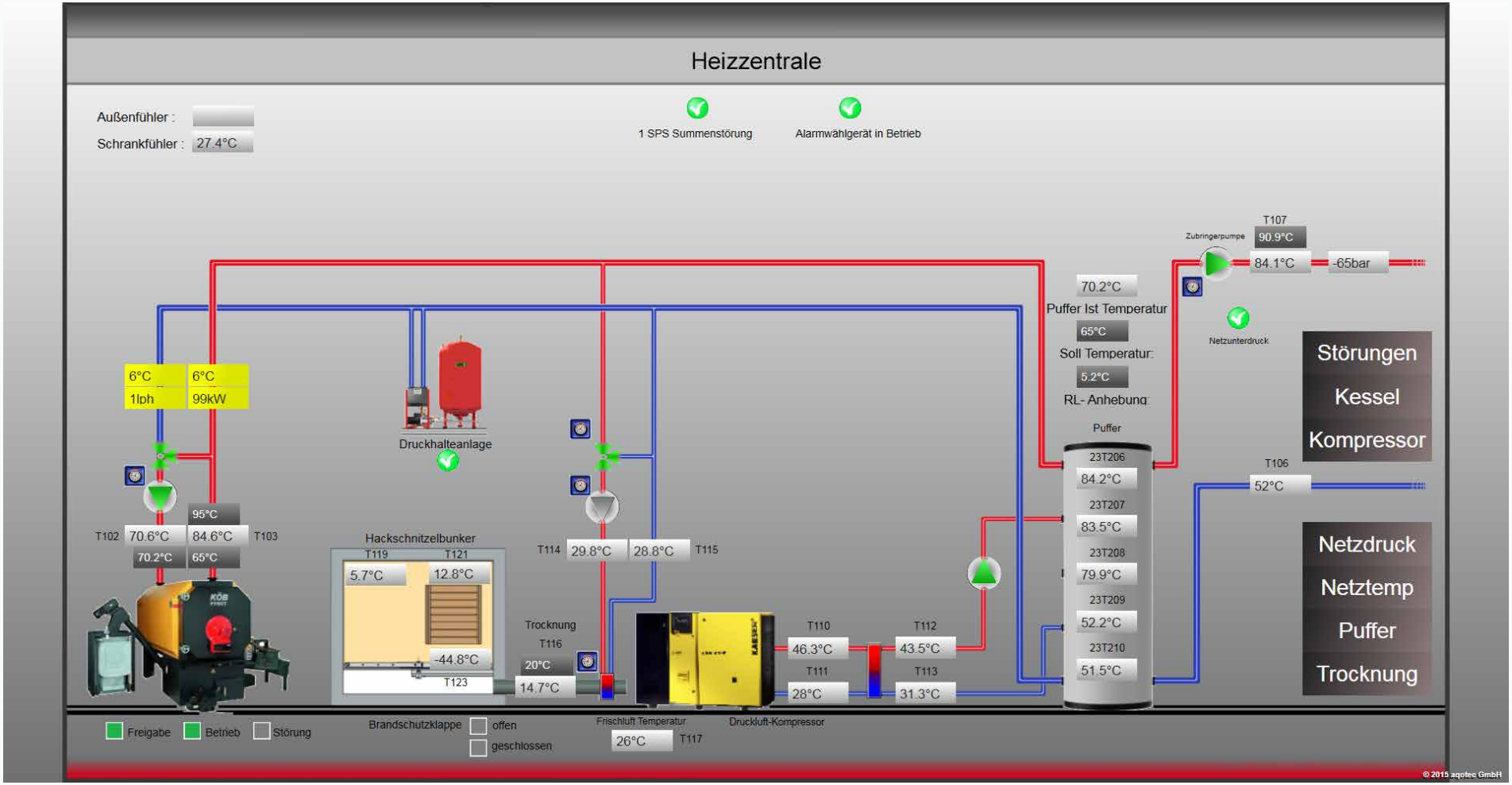
aqoViewer

Top left: Information window (WMZ data, timestamp, outdoor temperature, controller version, and controller type)
Top right: Parameter window (all settings are made through this window)
Below: Graphical overview of the hydraulic heating system.



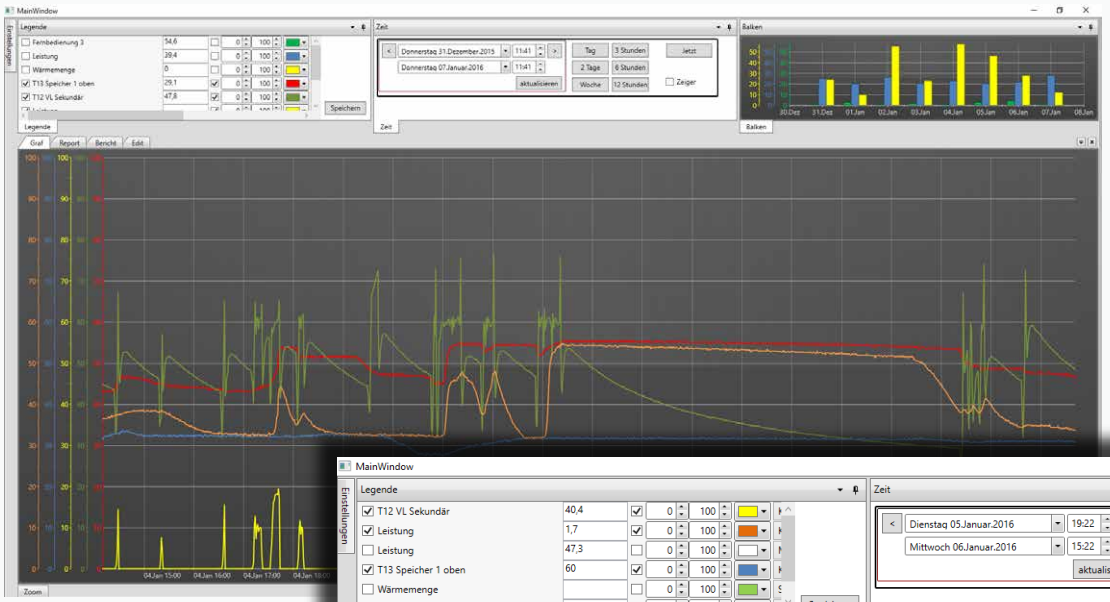
aqoViewer

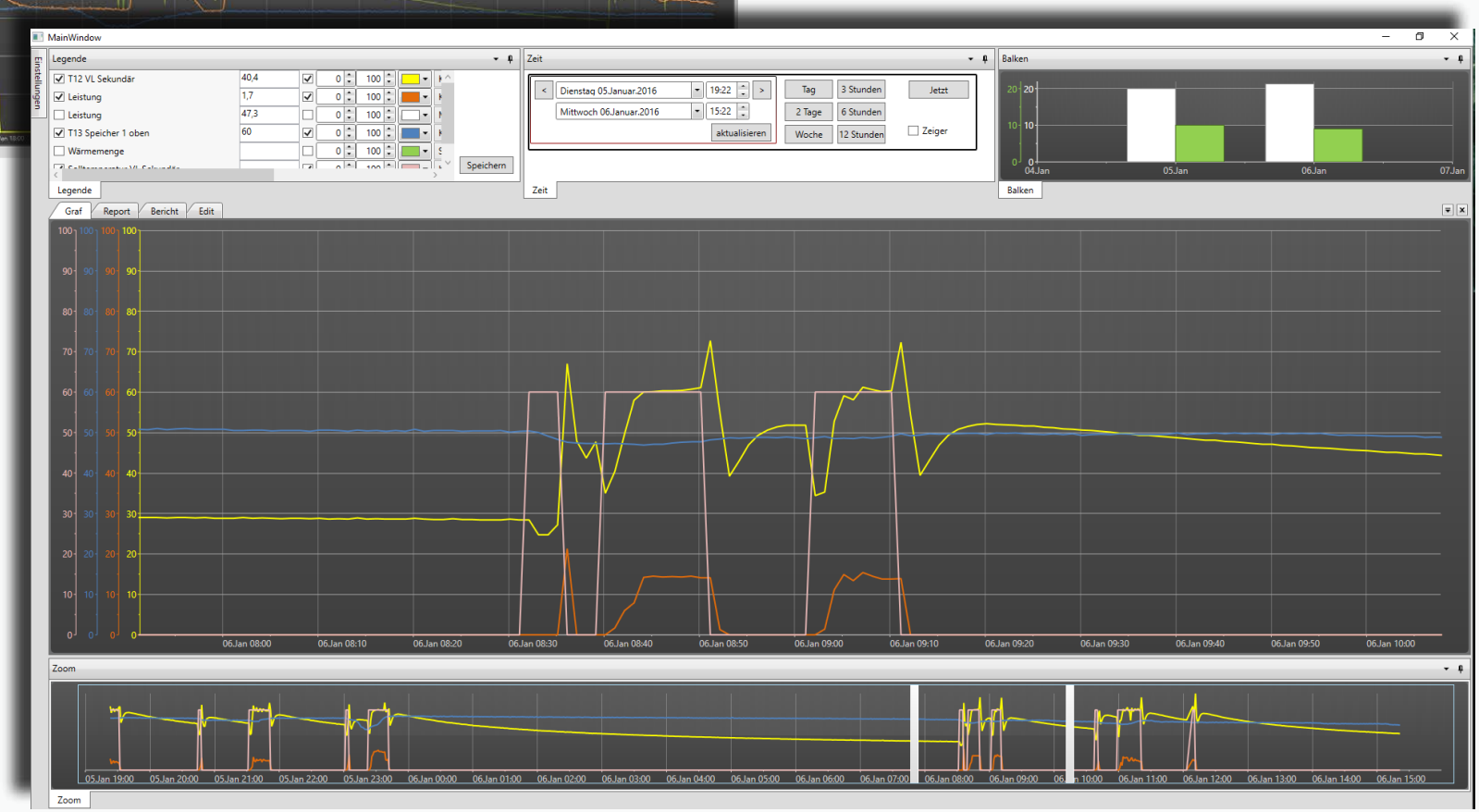
The input window of aqo360° is optimised for touch applications and allows user-friendly operation of integrated systems. aqo360 ° Viewer automatically generates images for the hydraulic system.



aqoViewer

Power plants or special systems can be represented and visualised individually.
It is possible to integrate data from existing or installed on-site controllers (PLCs) and represent them via visualisation.



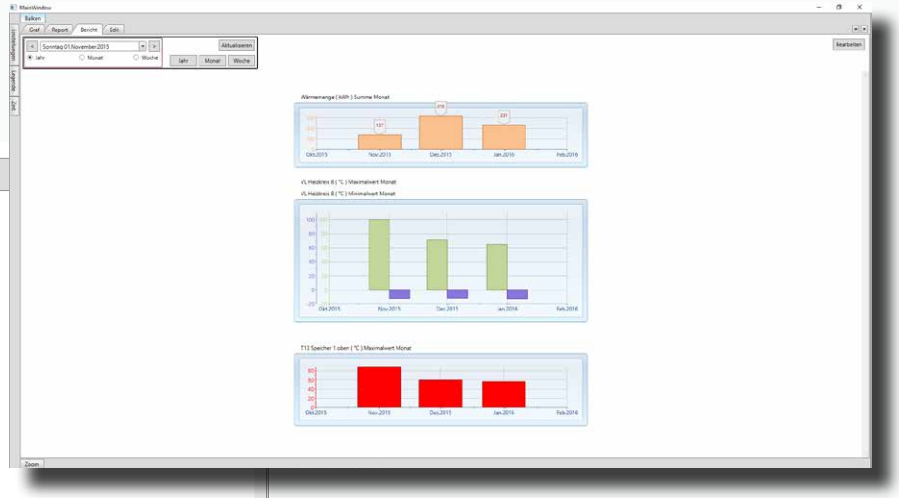


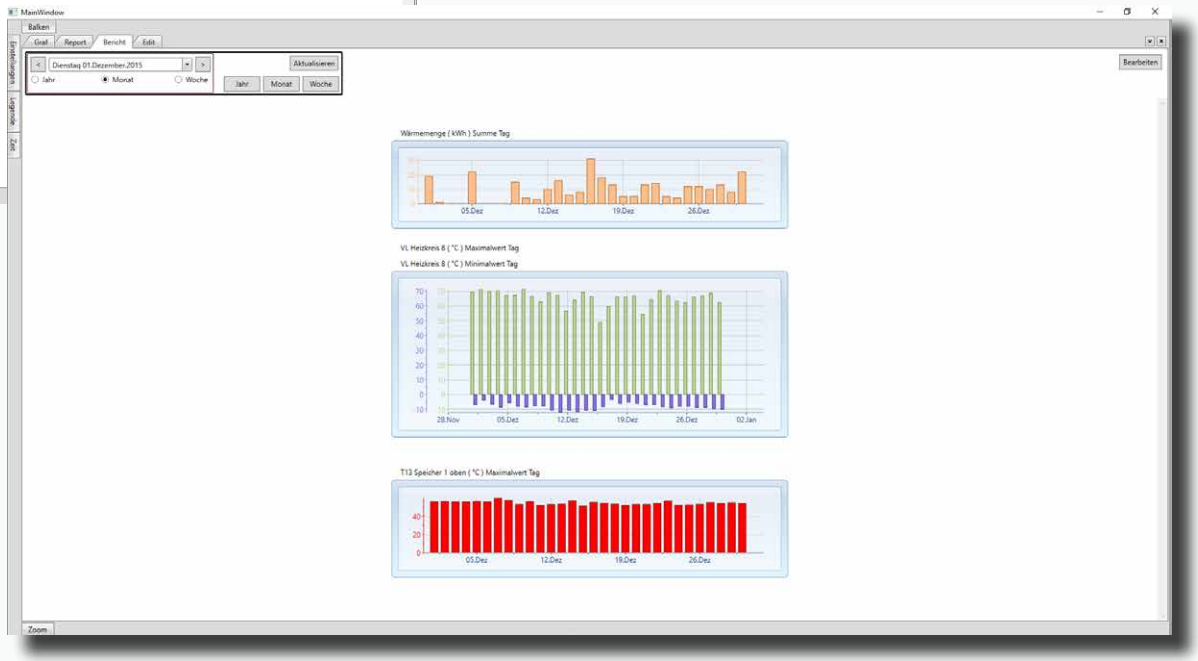
aqoInformer

All display options are customisable with the "Informer" data recorder. "Full responsive" provides a new data visualisation option.

- ✓ Maximum / minimum values
- ✓ Daily consumption
- ✓ Switching cycles

The Informer features an extended timeline for faster period selection.





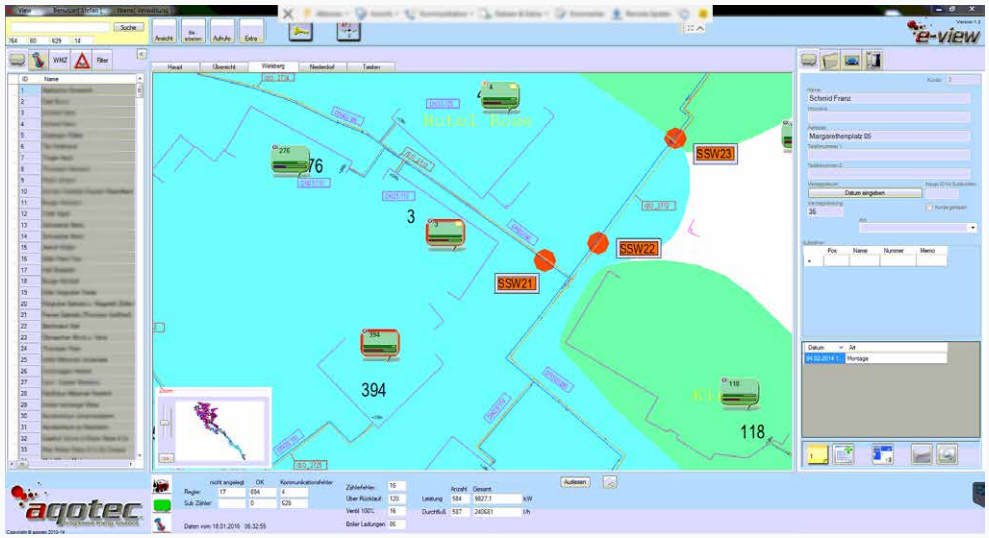
Informers allows the automatic generation of various reports, which can be weekly, monthly, or annual.
Report design can be customised.

agoInformer

e-view

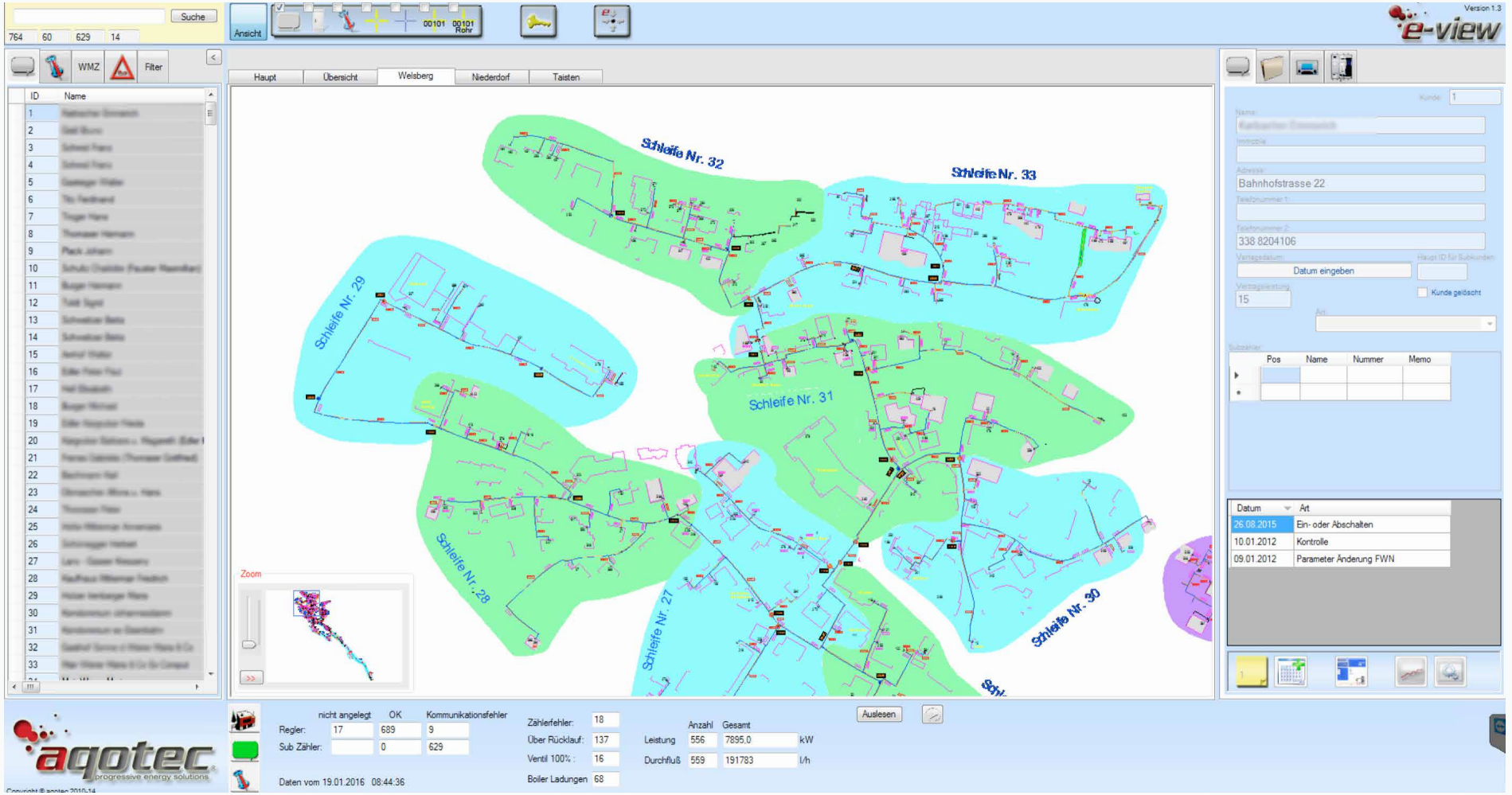
process-optimised engagement.

"e-View" is an extension tool for visualising software and serves inter alia to optimise network operations. The program features a dynamic network whereby current operating conditions are displayed. As you click on a customer, the corresponding item is automatically called up in the visualisation program.



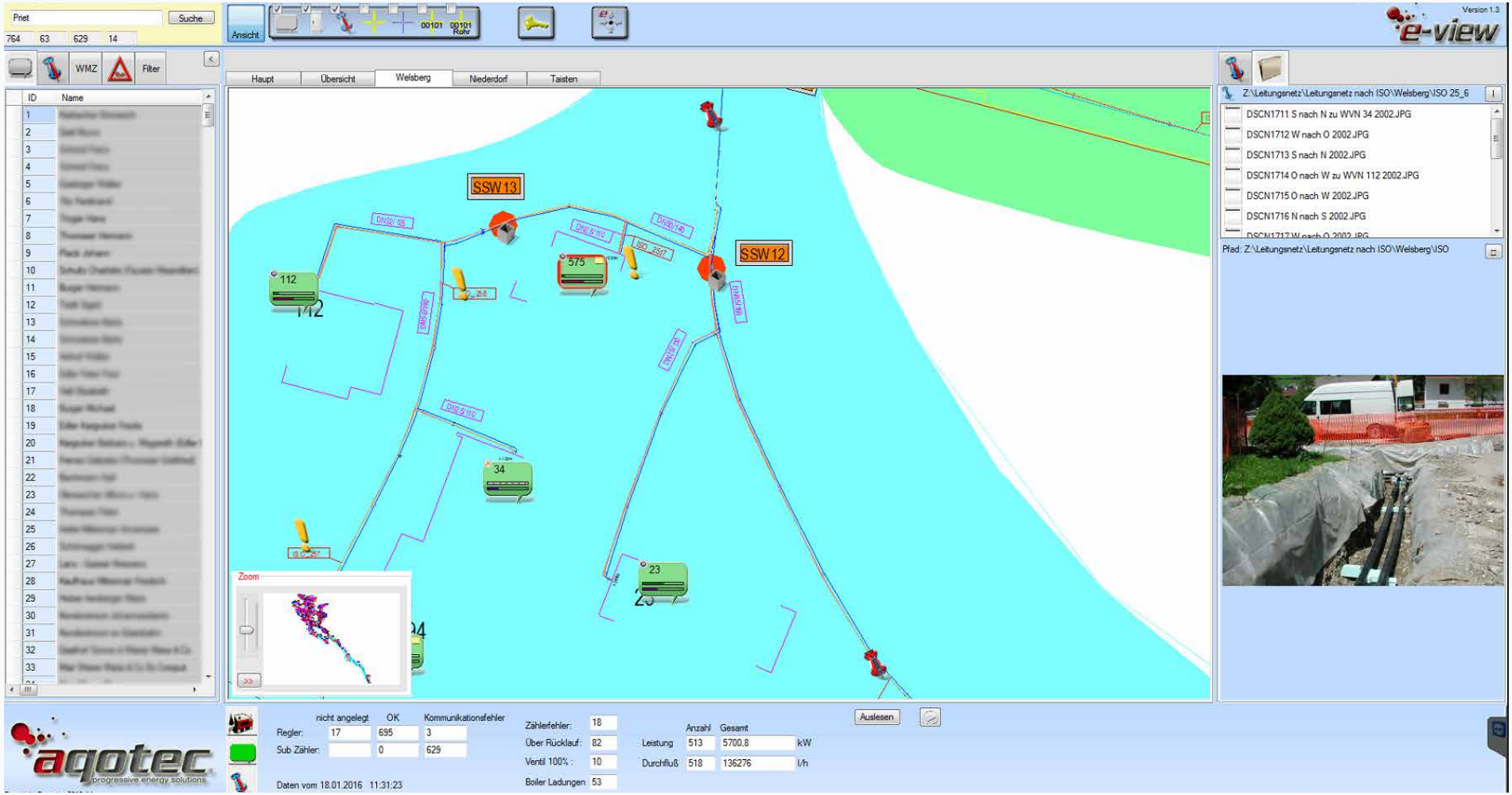
The following functions can be represented on the network:

- ✓ **Tabular customer overview:** Sort by street and name
- ✓ **Notes:** Used for logging (e.g., faults)
- ✓ **Calendar:** Appointments and tasks (e.g., maintenance dates) for operational personnel
- ✓ **Individual information for each customer:**e.g., name, address, telephone number
- ✓ **Shortcut:** Access to strategically important customers
- ✓ **Data cable layer:** Overview of the data cable installation incl. junction boxes and ducts
- ✓ **Empty pipe layer:** Overview of the empty pipe installation incl. junction boxes and ducts
- ✓ **Storage:** Document storage (JPEG, PDF, ...) directly at the customer or at an arbitrary network location
- ✓ **Status:** Indication of customer status (on/off, failure, ...)
- ✓ **Hubs:** Calculation of dynamic hubs (flow, kW, ...)



- ✓ Customer list (can be sorted by name and street)
- ✓ Network overview incl. customer and network status
- ✓ Customer data (name, address, phone, ...)
- ✓ Tasks, notes, calendar

Data storage



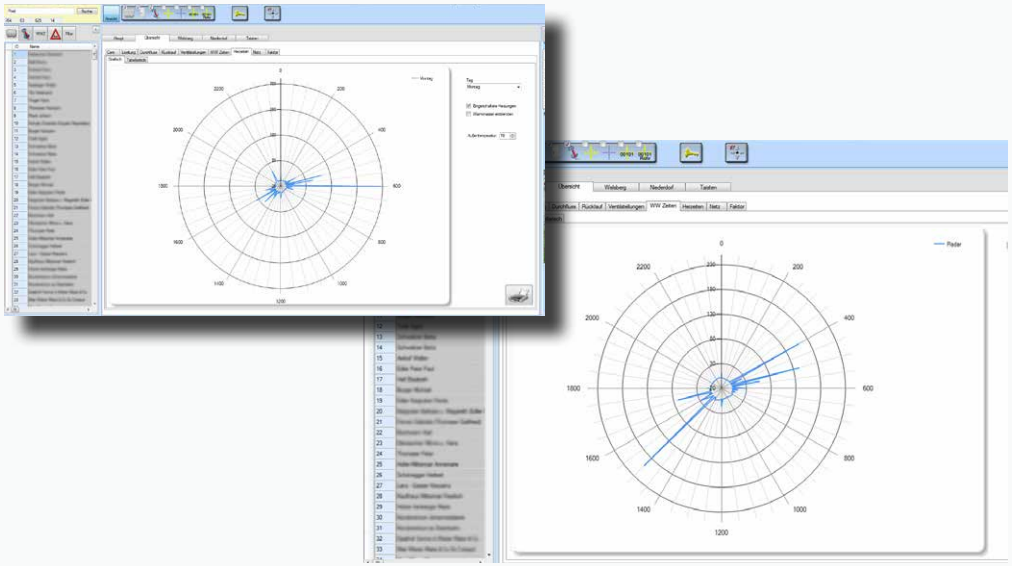
Pictures and documents are stored in data archives anywhere on the network. This allows rapid access to the relevant information during operation.

The zoom function allows rapid position change.

Status

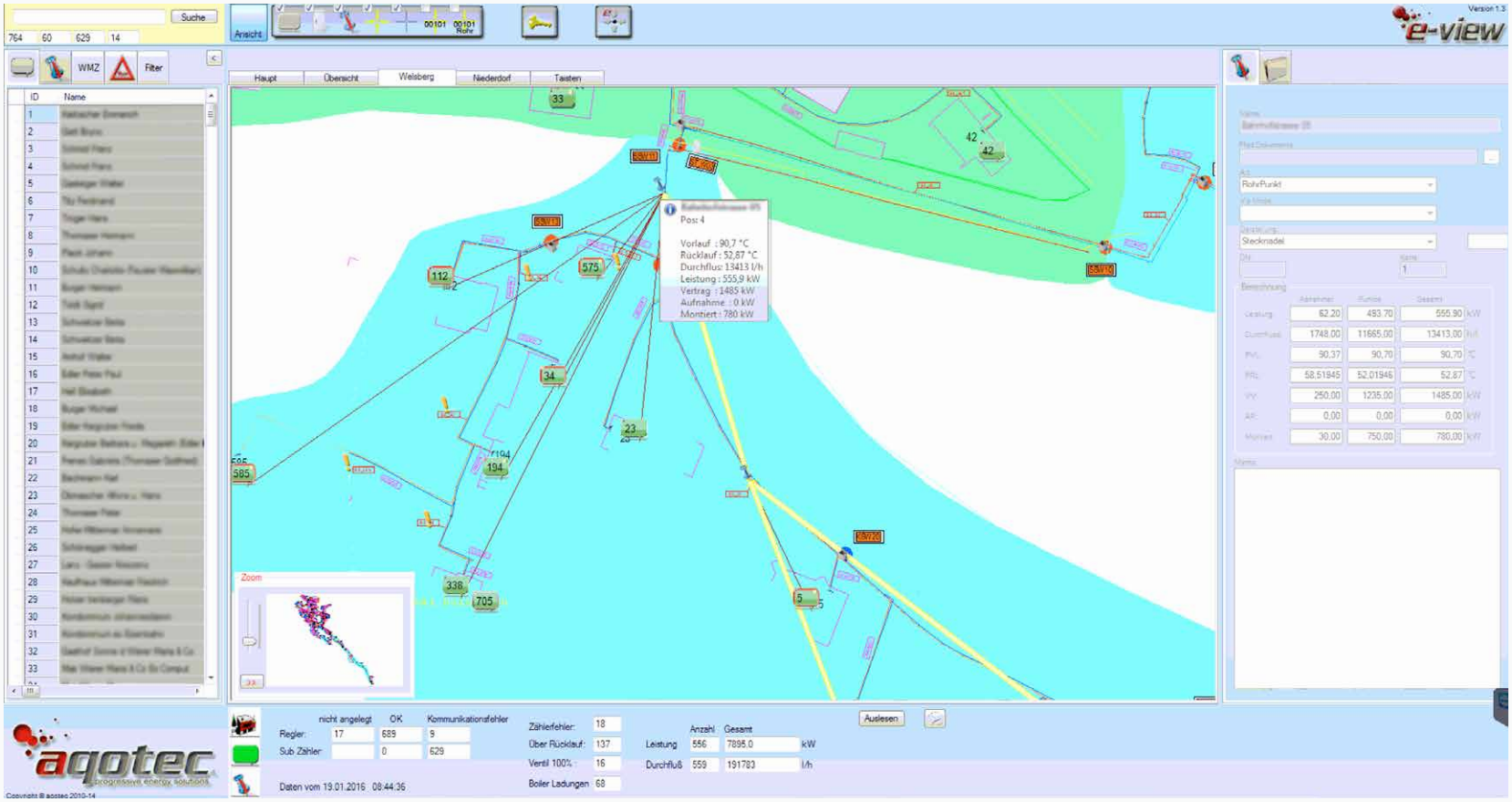
Additional functions

- ✓ Direct access to counter report for every customer
- ✓ Clear presentation of monthly or daily consumption
- ✓ Groupable two-year period overview
- ✓ Comparable customer values
- ✓ Allows daily reporting
- ✓ Storage or customer's controller values



Radar

The radar function is intended for the simultaneous simulation of hot water requirements of all customers and operating cycles depending on the outside temperature.



Hubs

"E-View" allows generating network nodes with the corresponding down-stream customers and associating them with one another.

The following aggregated node values can be displayed:

- ✓ Flow temperature
- ✓ Return temperature
- ✓ Flow rate
- ✓ Performance
- ✓ Contractual performance

Data cable plan

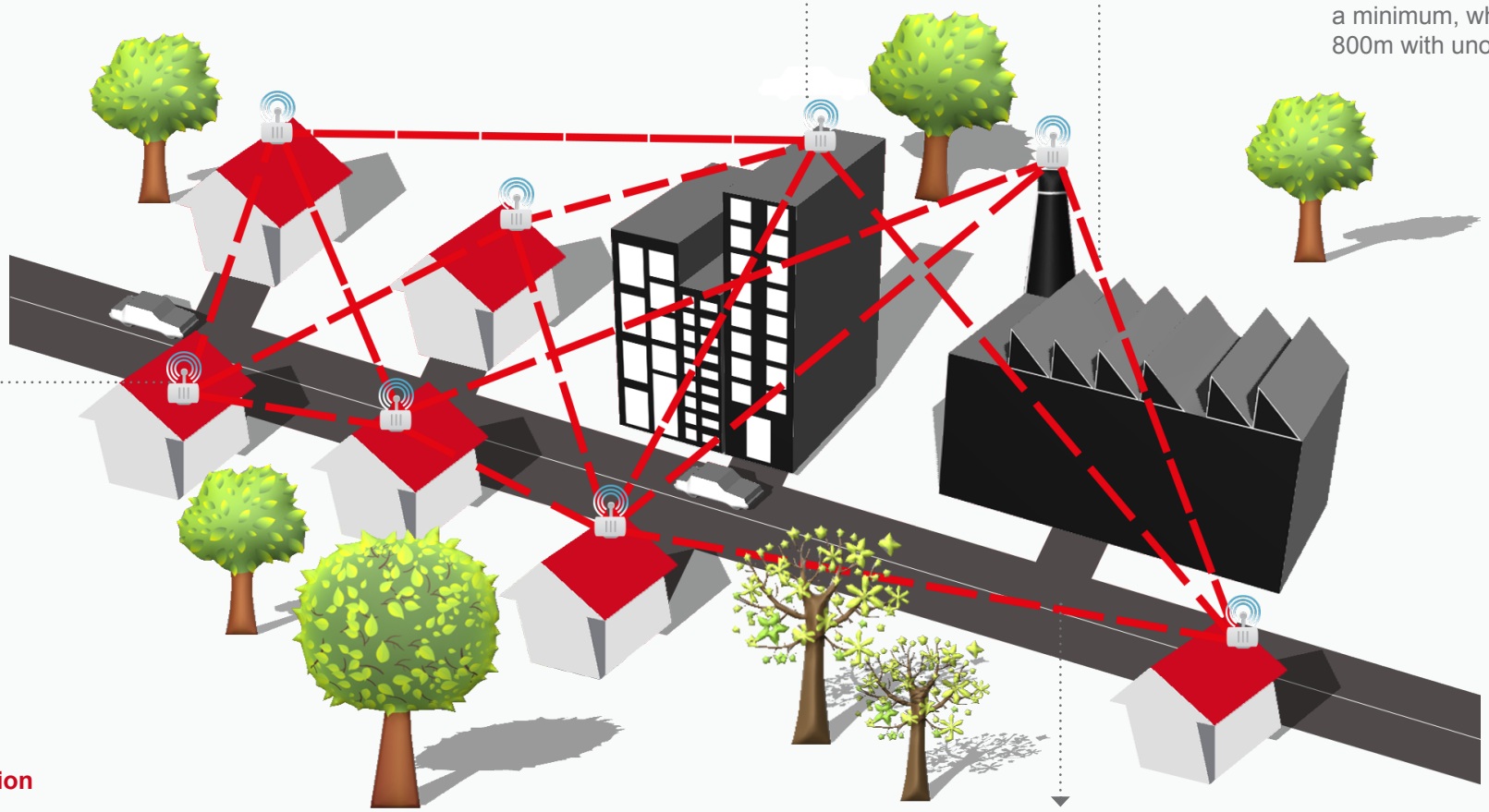
The cabling diagram including junction boxes and ducts can be displayed by connecting additional layers.

128-bit AES encryption-

Data security is provided via the restricted block and key length to 128 bits.

Best connectivity

The built-in module operates as router and client at the same time. Power losses are thus reduced to a minimum, while range may reach 800m with unobstructed way.



Easy installation

The weatherproof enclosure with antenna allows installation on the building exterior.

Smart system

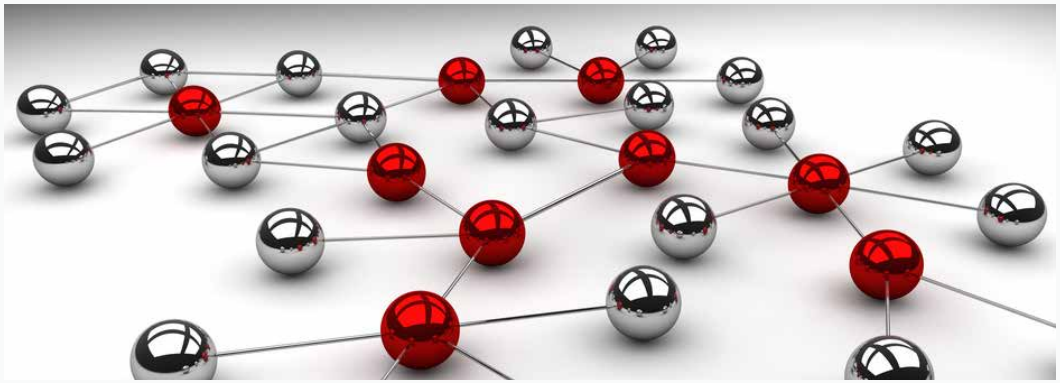
The network is self-healing and therefore very reliable. Upon failure, data are automatically redirected and the network remains operational.

aqoConnect

Connections with indications..

Your benefits

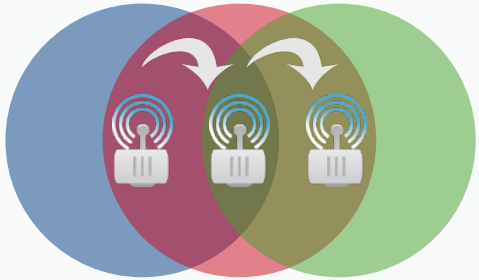
- ✓ Optimal retrofit option for existing projects
- ✓ 100% compatible with the visualisation software "aqo360°" of aqotec
- ✓ Parallel operation on TCP/IP or copper
- ✓ Easy installation
- ✓ High data security through 128-bit AES encryption
- ✓ Error-prone network cable unnecessary
- ✓ Operation also possible with older controllers



This module card uses wireless technology with mesh function (meshed, self-building and configuring ad hoc networks) for data transfer. Free wireless networks allow connecting various wireless access points to each other.

Here, each network module is connected to one or more modules. Information is forwarded from one module to another until they have reached the goal.
In this context, the module operates as router and client at the same time. This technique offers an extended range and ensures a "self-healing" network, which in turn increases overall reliability in this kind of networks. Upon connection failure or blocking, data are automatically redirected and the network remains operational.

Weatherproof outdoor unit with antenna, integrated base board and an interface board



Left and right participants are too far apart to connect directly with each other. However, mutual communication is possible given that the participant stands in the middle of both ranges and, therefore, can transmit data from the left participant to the right one.

aqoControl RM01/02

Intuitive and user friendly.

Your benefits

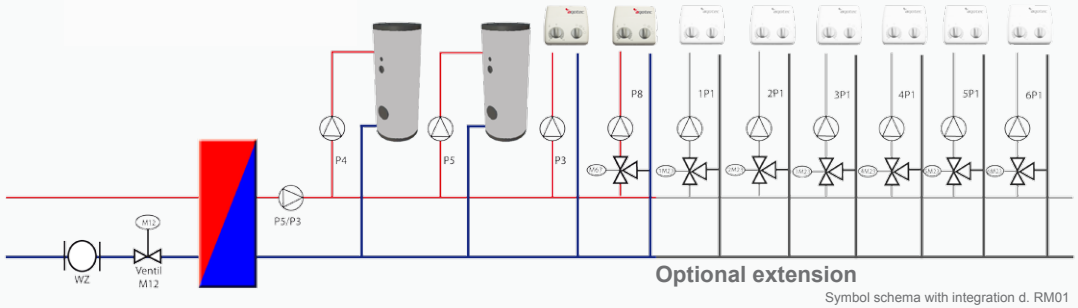
- ✓ Easy handling
- ✓ Clear menu navigation
- ✓ Pre-programmed SD card
- ✓ Perfect display

The microprocessor-controlled regulator aqotec serves to control district heating transfer stations with the option of modular expansion to a total of ten heating circuits. Allows the activation of M-Bus devices (heat meter, ...), as well as the presentation of all data in a higher-level visualisation. The controller features a modular design and may, in its maximum configuration, control and regulate a direct heating circuit, seven mixer circuits, two boiler circuits, or a circulation circuit.

Fitted with a pre-programmed 2 GB SD card, which can be used as program memory, parameter memory or trend memory, the controller leaves nothing to be desired. This simplifies the commissioning of standard systems. The SD card will also be used as a data storage for the graphical display on the controller, and as a foreign language memory.

Uploading new application programs can be accomplished in two ways:

- ✓ Installation of a new SD card
- ✓ Upload a program via the data interface and the heating house computer



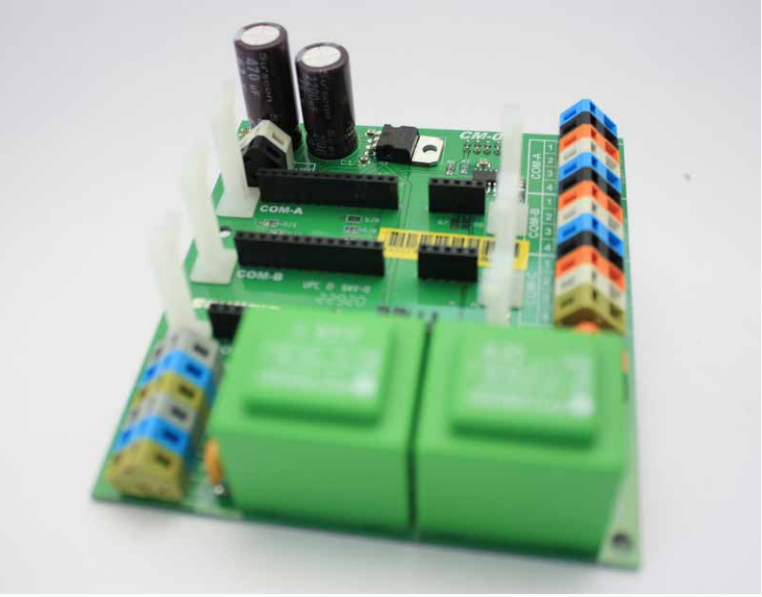
Symbol schema with integration d. RM01

Basic design controller

Standard design with up to max. two boilers, direct heating circuit, and mixed heating circuit

Heating controller base unit

- ✓ Three-point output for primary valve
- ✓ Two-point output for boiler
- ✓ Two-point output for circulation circuit
- ✓ One (RM02) or six (RM01) mixed heating modules additionally connectable
- ✓ Each heating circuit can be connected to a remote control
- ✓ Two analogue inputs for desired temperature setting via 0-10V (4-20mA)
- ✓ Extra capture for secondary return temperature
- ✓ Two temperature inputs for visualisation purposes (RM01)



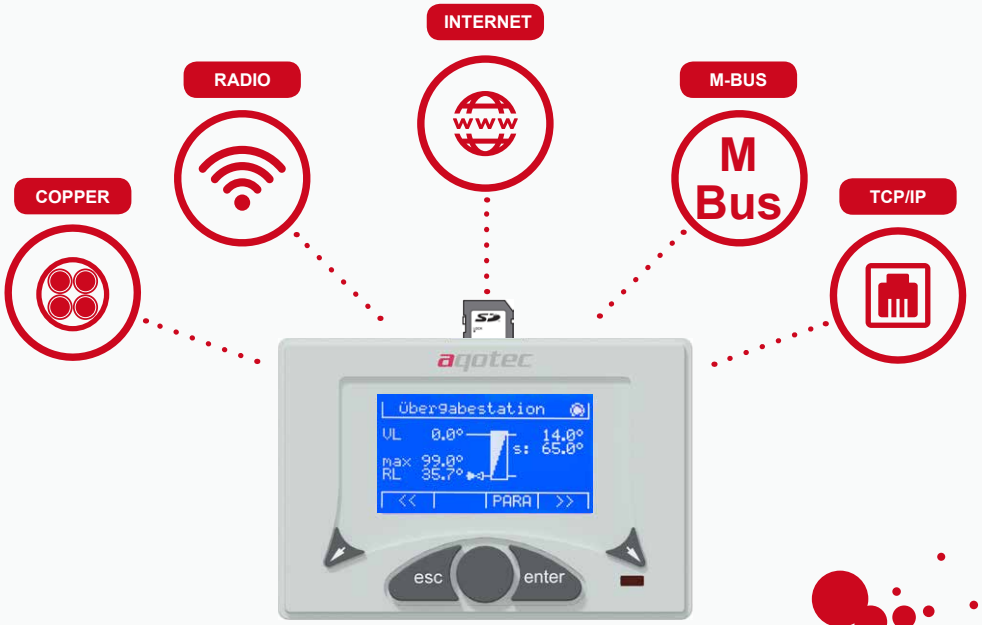
Additional options RM01 and RM02 aqoControl

Communications base module

Serves as an interface between the controller and the various communication plug-in cards and their power supply. The COM port C allows setting up a sub-communication to a customer PC. The communication board allows equipping the base module controller with up to three bus interfaces.

Heating controller base unit

- ✓ Standard bus for controller networking and system visualisation
- ✓ Standalone bus for direct interrogation of controller data
- ✓ Bus interface for querying external bus components (e.g., counter)
- ✓ Internal controller bus for control technology networking



Heating circuit module

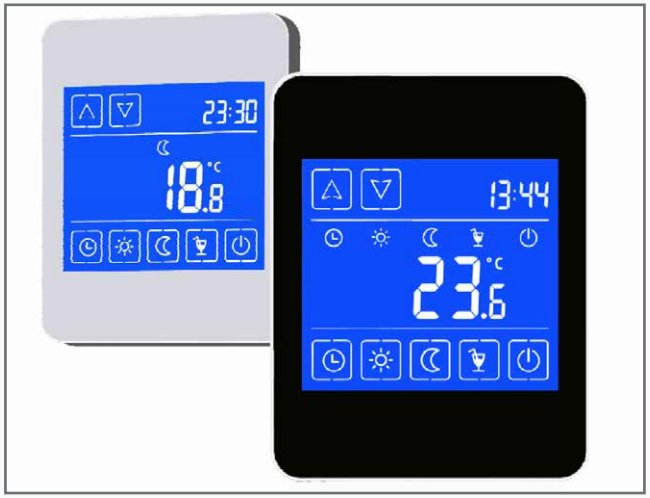
Further heating circuits can be connected as required thanks to the modular controller design. Each heating circuit module can be connected to a pump (~ 230V, 1A), a mixer (230 V ~, 3 pts.), a flow temperature sensor (Pt 1000), as well as to a room sensor (Pt1000), or a FBR6 remote control.
One heating circuit can also be controlled via enabling contact (e.g.: room thermostat).

FBR6 remote control

The FBR6 remote control is compatible with all aqotec controllers. The system is provided with an OFF / DAY / NIGHT / AUTOMATIC selector switch for pre-selecting the operating mode. Target room temperature can be adjusted via a setting potentiometer with +/- four-degree Celsius range. The remote control features a room sensor that can be used for application of various heating control programs, and for controller optimisation.

FBR7 remote control

The aqoFBR7 remote control is connected to the aqotec regulator RM01 (prerequisite: 485 module card in sub-comm) and compatible with SCHNEID controllers of the module series MR08 with CM06 and CM08 base. The touch-screen control panel provides a more convenient customer system management. The remote control features a room sensor that can be used for application of various heating control programs, and for optimisation of aqotec controller devices.



aqoSwitch

Perfect down to the last detail.

Customised control concepts are created and implemented with the aqotec PLC for power stations or tailored applications. Thus, there is a 100% compatibility with the used visualisation software of the transfer stations.

We only use high-quality components from renowned manufacturers. Compact design and separately installed cables ensure minimal interference. Our flexible processes allow customising the cabinet to meet any customer requirement.

A an option, manual control switches of all field devices, controls / frequency converters, alarm systems, cabinet lighting, climate control cabinets, and PCs can be installed.
Documentation and planning documents are created using the latest CAD software. This includes circuit and, wiring diagrams, as well as lists for parts, cables, inputs / outputs, and parameters.

Top service
Our services include the training of users and operators during commissioning, as well as our assistance to them via remote maintenance or by phone. As an extension, we also offer customer support around the clock

Network regulation

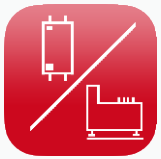
Serves as an overarching regulation of all components, as well as to collect all signals necessary for district heating plant operation.

Network pumps:
Pumps are controlled depending on load and according to the valve position at the district heating plant, pipe network characteristic curve, and/or differential pressure

Network temperature:
Controlled by outside temperature or on demand

Generators (boilers):
Controlled on demand depending on load

Special station regulation:
Designed to regulate a feed-in station (external heat supplier in the district heating network) or pressure boosting station (decoupling of district heating network)



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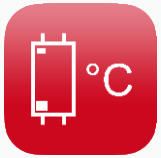
SMALL and LARGE SYSTEMS
Compact district heating transfer stations, individually designed to meet customers' needs.



BUSINESS DIVISION
CONTROL TECHNOLOGY
Intuitive tools for network and special station regulation for best heat operation

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HOME STATIONS
Sophisticated and user-friendly solutions for heat and water transfer

BUSINESS DIVISION
PLANNING and DESIGN
Heat production solutions - from idea to start-up

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Total solutions for the optimisation of heat distribution and supply

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Austria
aqotec GmbH
Vöcklatal 35
4890 Weißenkirchen i. Attg.

T +43 7684 20 400
F +43 7684 20 400 100

South Tyrol
aqotec GmbH
Klosterweg 30
39035 Welsberg (BZ)

T +39 348 92 91 934

Czech Republic
aqotec s.r.o.
U Sladovny 425
67125 Hodonice

T +420 515 294 462
F +420 515 230 624

France
aqotec France
8, rue du Rempart
68000 Colmar

T +33 389 23 73 19

Germany
aqotec Consulting GmbH
Otto-Hahn-Straße 13b
85521 Riemerling/Ottobrunn

T +49 89 608 755 58
F +49 89 608 755 59

Poland
aqotec Polska Sp. z o.o.
ul. Urzędnicza 26 lok. 1
30051 Kraków

T +48 791 029 103
T +43 699 18 58 77 81

Italy
aqotec Italia s.r.l.
via della Mendola 48
39100 Bolzano

T +39 345 463 68 26

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