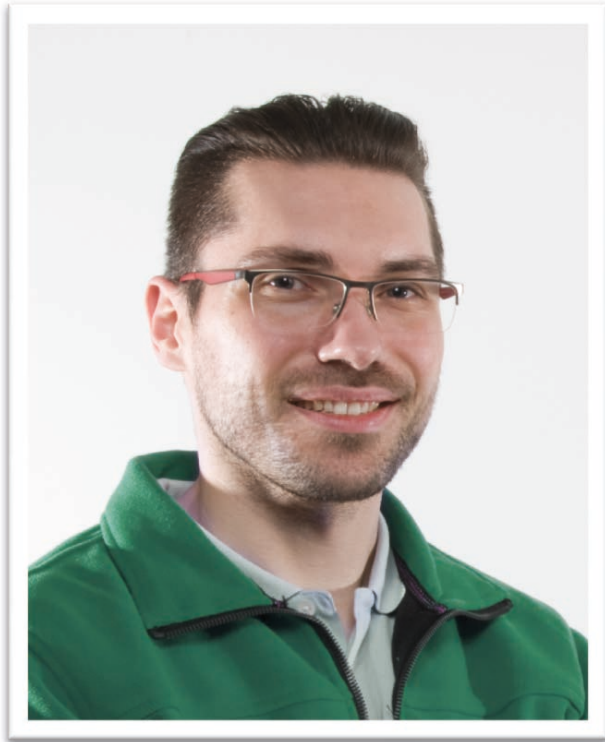


RESOL®
CONTROL TECHNOLOGY



Your competent partner in solar and heating controllers,
visualisation and more

Welcome!



I am your host today

Tobias Jung

Product Manager

E-mail: tobias.jung@resol.de

Phone: +49 (0) 2324 / 96 48 767

RESOL – Your partner in solar thermal and control technology



Customised hardware design – the optimum basis for your product



Our standard softwares can be extended to suit your individual wishes



Controls after each individual manufacturing step warrant a 100 % quality assurance

We develop your product – custom-made, if you wish!



All products are tested in our in-house EMC and hydraulics laboratories



Pre-connected sensors and cables to suit your requirements



Adaption to your Corporate design and target markets

Production



We set standards...

- Modern production technology and a high production depth
- Up to 2000 controllers per day
- 100 % Germany-based production
- State-of-the-art quality assurance technology such as an AOI station, etc.
- TÜV-certified according to ISO 9001



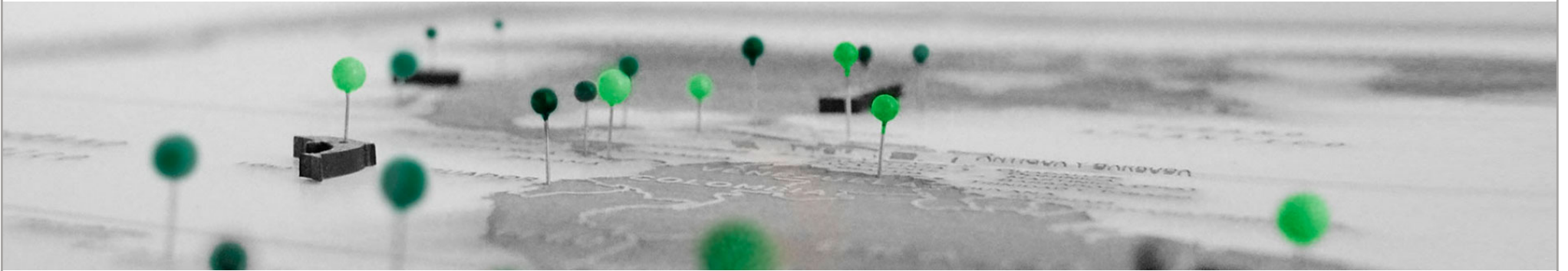
Research & Development



Our own ideas...

- In-house Research & Development division
- Cooperations with universities and research institutes
- Extensive in-house lab facilities for electromagnetic and hydraulic testing
- Testing of our own as well as, if our customers so wish, third-party products under real-life conditions

RESOL international



- Partners for distribution and support in 20 countries on 5 continents
- Market-specific developments and certifications



Our products

Perfectly matched...



Discover our product portfolio



- Solar & system controllers
- Heating controllers
- DHW exchange controllers
- Pump stations
- PV heating
- Heat transfer

Our products

Perfectly matched...



Accessories around solar and heating systems



- Dataloggers/ communication modules
- Sensors, valves and thermostats
- Measuring instruments & calorimeters
- Tools & HE accessories

Our products

Perfectly matched...



Visualisation & data evaluation



- VBus.net Internet portal
- EnOcean
- VBus®Touch apps
- BACnet

Solar & system controllers



We offer the right controller to suit your system...

- From simple controllers for standard solar thermal systems up to individually programmable system controllers
- Up to 14 relay outputs, with extension modules even up to 39
- Many different sensor inputs: Pt and semiconductor temperature sensors, Grundfos Direct Sensors™, impulse inputs, etc.
- Pump speed control of high-efficiency pumps

Heating controllers



Space and DHW heating

- From small water heating stoves up to large multivalent systems
- With extension modules up to 7 heating circuits possible
- Your advantage for energy labelling: Energy efficiency contribution of up to 5 %
- The DeltaTherm® HC / HC MAX is available in different ErP kits with the accessoires required for different temperature controls classes

Customised developments

Individual solutions to meet your requirements



DeltaTherm[®] DH

Controller concept for district heating stations



DeltaSol Fresh[®]

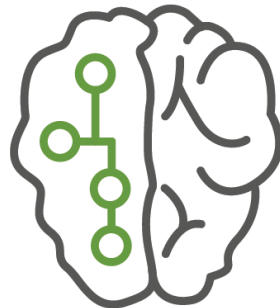
DHW exchange controller platform

Customised developments

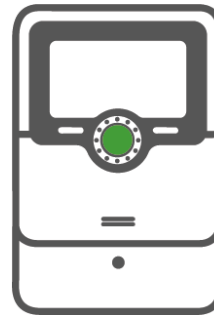
New comfort demands and ecological requirements



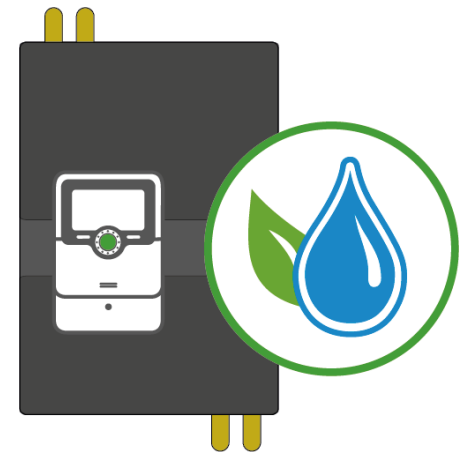
Intelligent control



System-specific developments



DHW exchange module with modern comfort and energy-saving functions



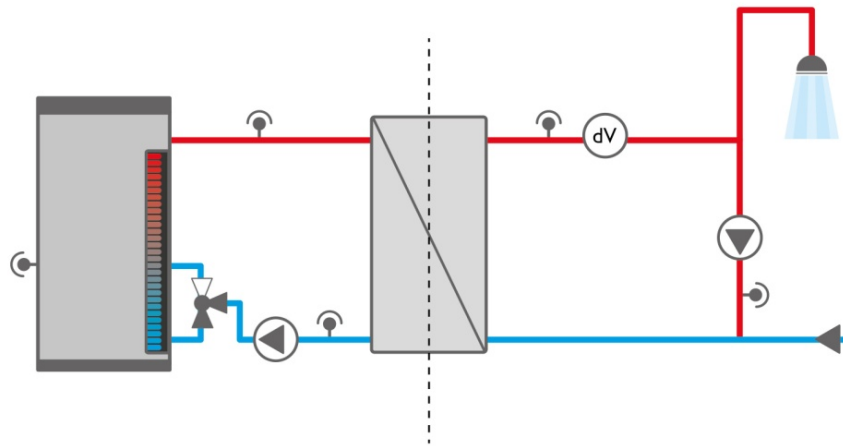
Customised developments – DHW exchange controllers



Individual solutions for the control of OEM DHW exchange modules

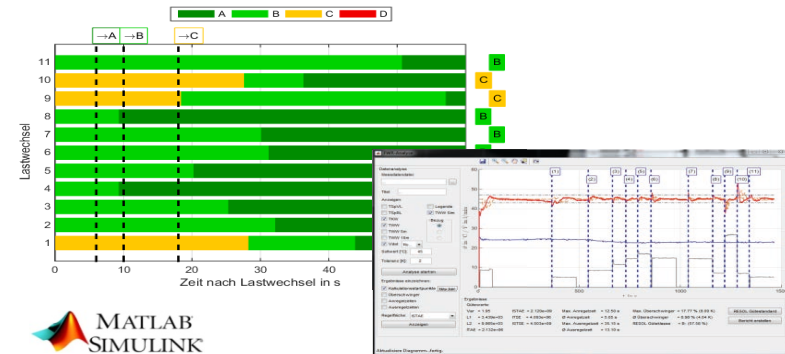
- Precise and energy-efficient control of the draw-off temperature
- Fast R&D process to meet your product requirements
- Cascades to meet special requirements of large systems

Customised developments – DHW exchange controllers



Compatible with different sensors and actuators

- Pt1000
- Sika
- Huba
- FlowRotor
- LIN pumps
- PWM pumps
- PWM valves

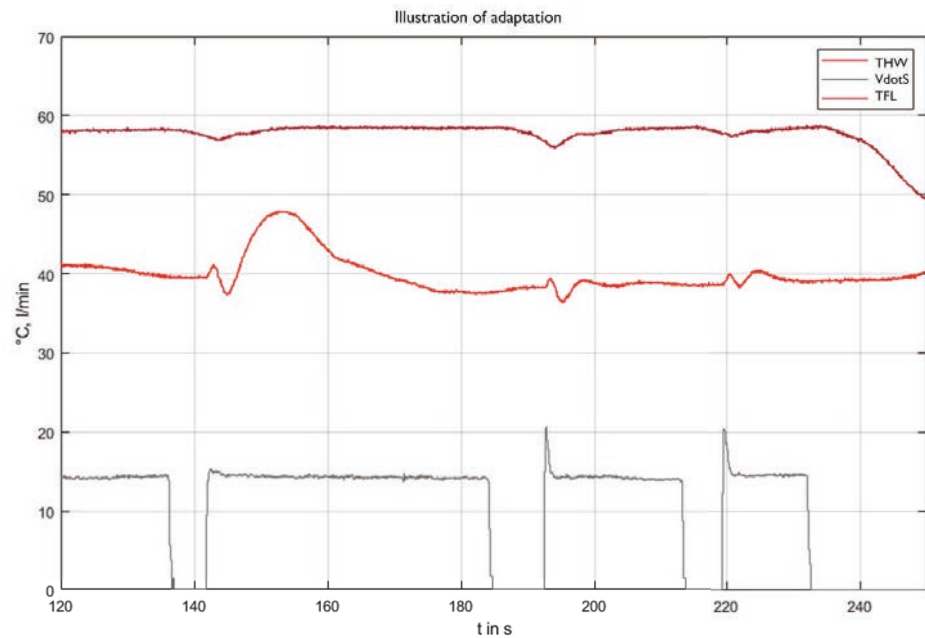
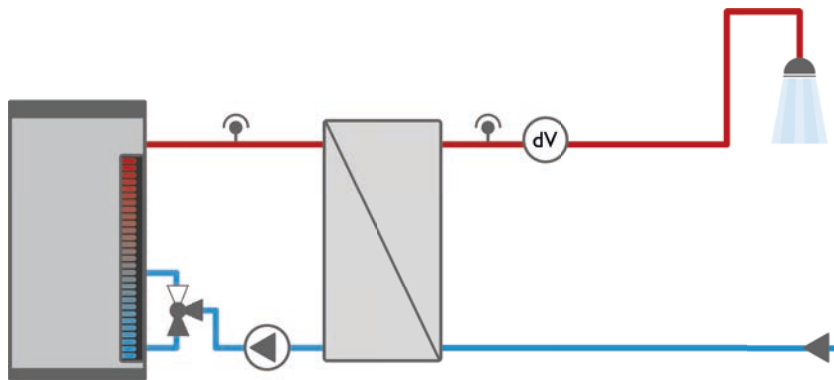


Simulation-aided development



Customised developments – DHW exchange controllers

– Adaptation to system characteristics



Customised developments – Controllers for heat transfer



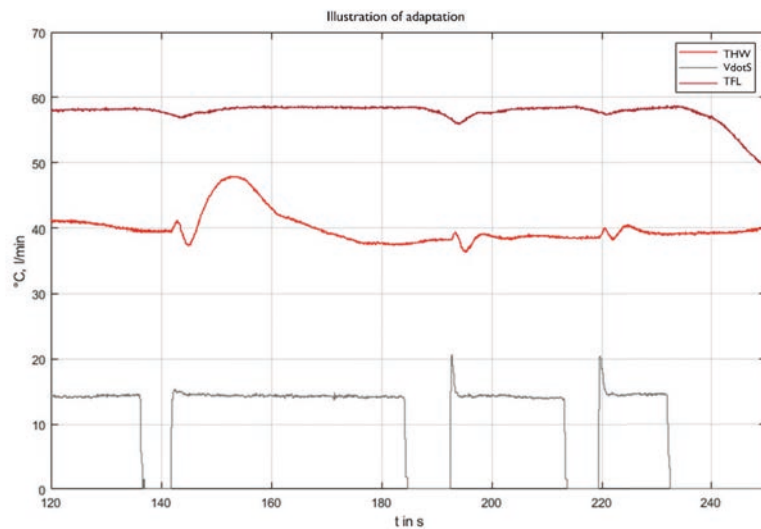
DeltaTherm® DH

Controller concept for district heating stations

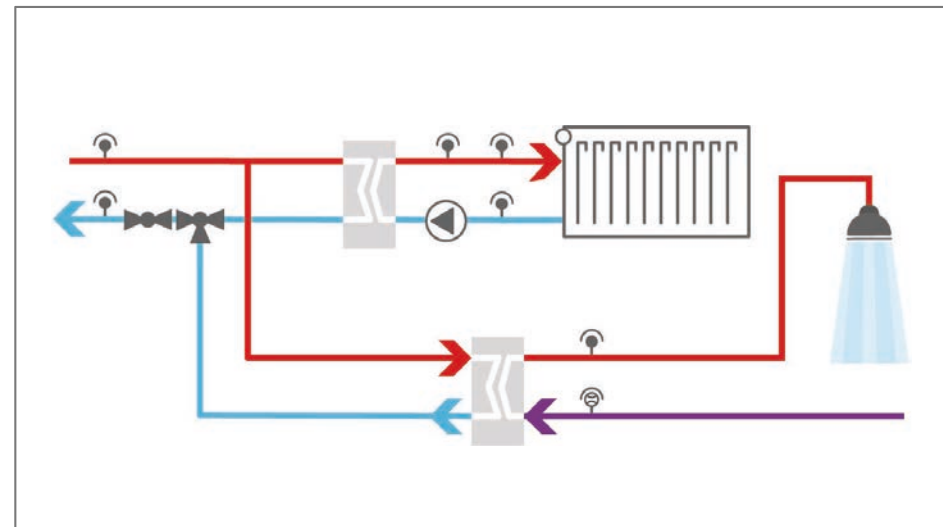
- Pre-programmed functions such as return limitation, power limitation, etc.
- Control with room influence
- Up to 3 heat quantity measurements can be read via M-Bus
- Control of PWM pumps and valves
- Adaptable to many commonly used flow rate sensors
- Commissioning menu for easy configuration
- Remote access with a room control unit

Customised developments – Controllers for heat transfer

Precise DHW exchange control



Heating circuit control



RESOL Highlights



Extended heating circuit functions



Cooling function with dew point monitoring

- Automatic or manual cooling operation
- Humidity-dependent flow temperature



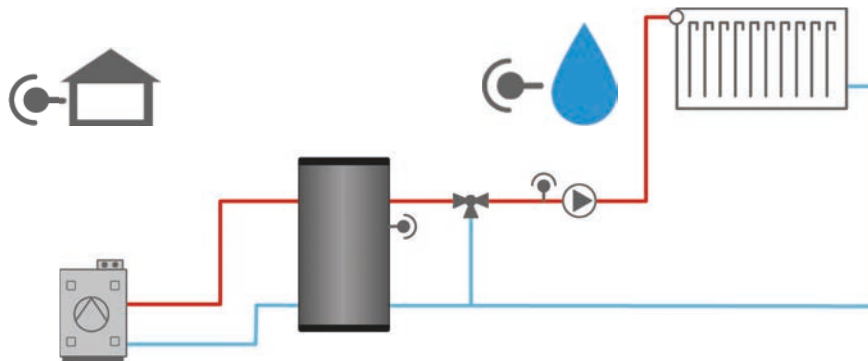
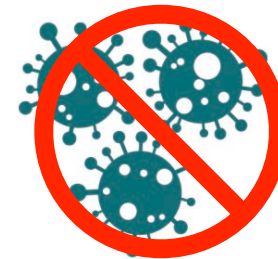
New room control units for wireless connection

- RPF Repeater
- BSF Wireless base station
- RF Wireless room control unit (analog)
- RDF Wireless room control unit (LC display)

DeltaSol[®] MX and DeltaTherm[®] HC MAX 2.07 with dew point monitoring



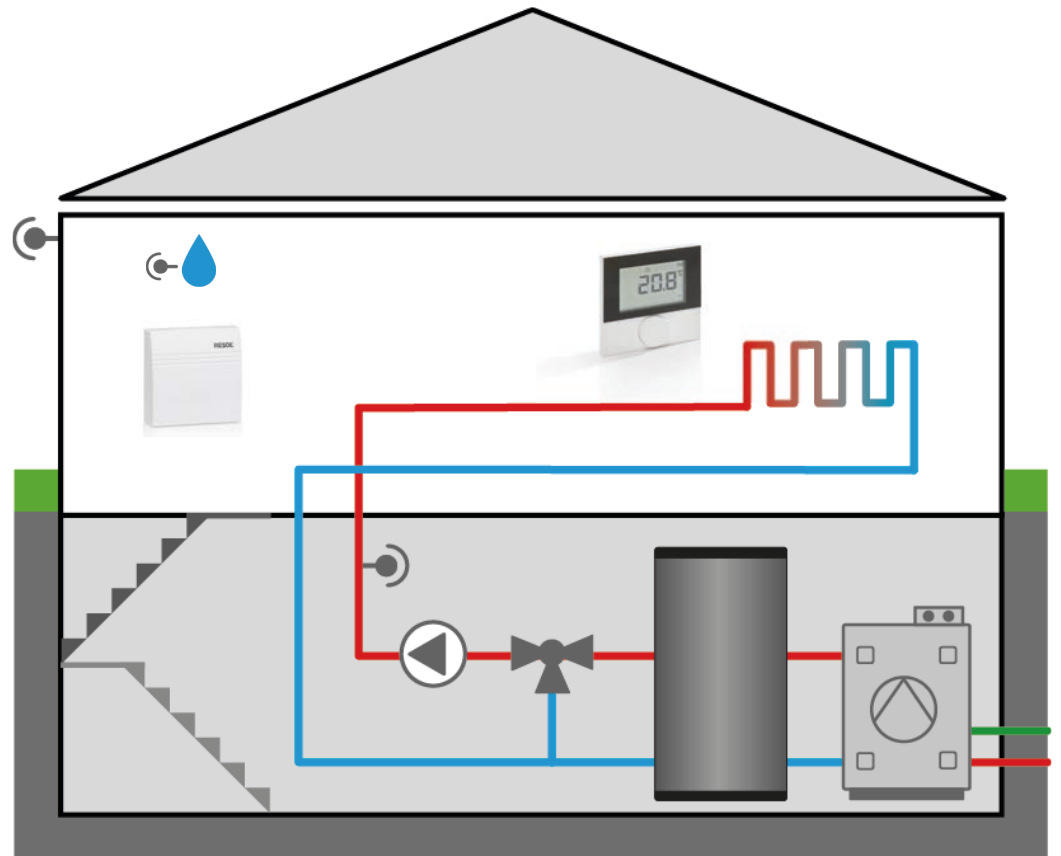
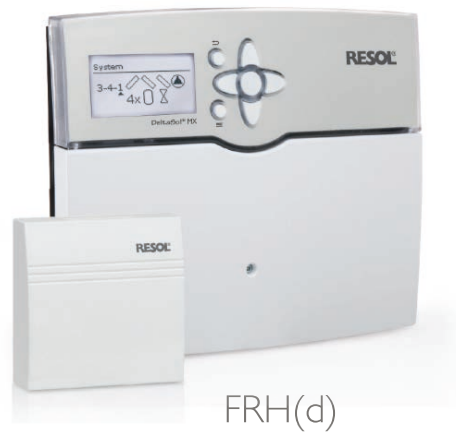
FRH(d)



Cooling function with temperature adaptation

- Avoids condensation
- Prevents humidity and reduces
 - mould formation
 - danger of slipping

DeltaSol[®] MX 2.07 with dew point monitoring



PV heating

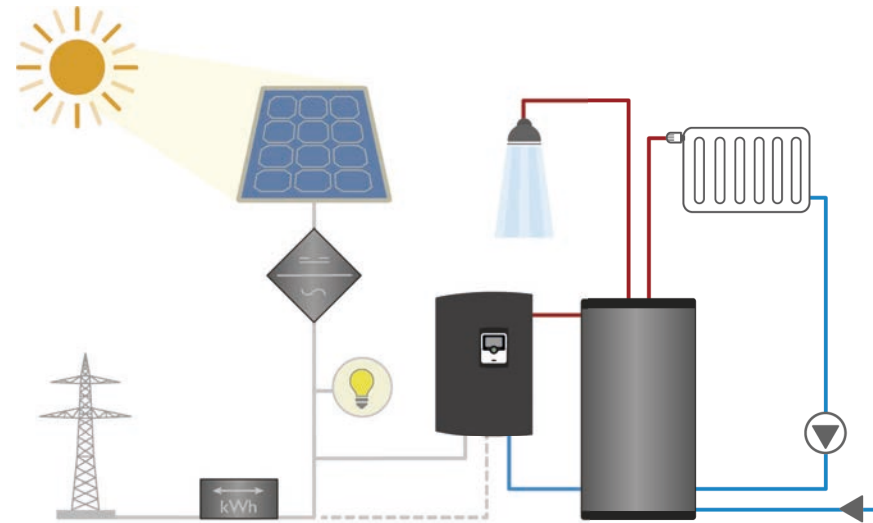


POWER TO HEAT
Use excess energy!

- Especially designed for using excess power produced by PV systems
- Electrothermal station and Power-to-Heat controller

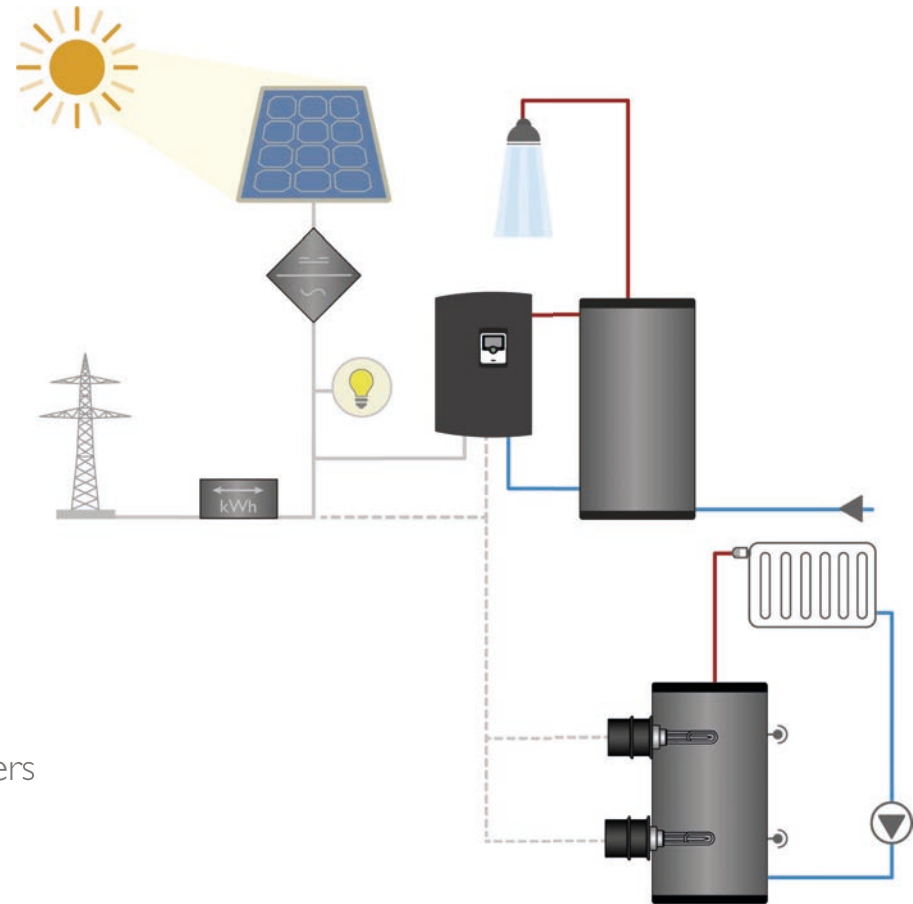
The connection between PV system and heat generator – for more independence, lower heating costs and less CO₂ emissions.

PV heating – FlowSol® E



- Especially designed for using excess power produced by PV systems
- Electrothermal station and Power-to-Heat controller
- DeltaTherm® E sensor

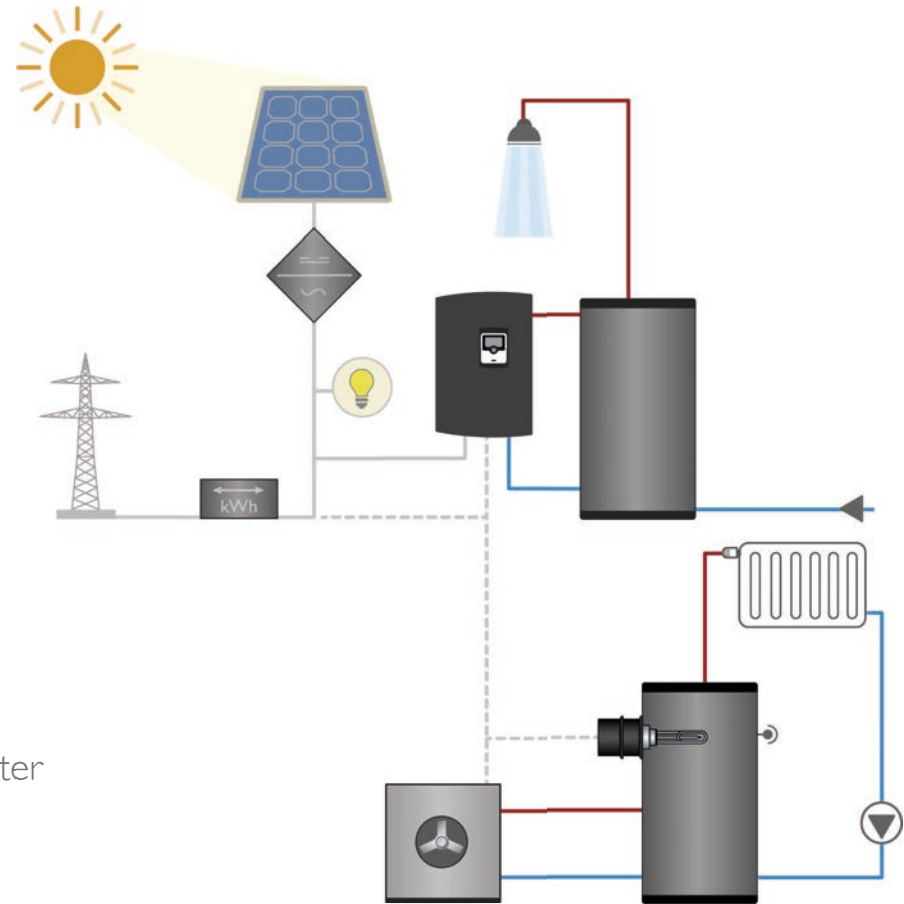
PV heating – FlowSol® E



→ New: Control of external loads

- Example 1
- Control of 2 electric immersion heaters
 - Adjustable power
 - Priority control of loads

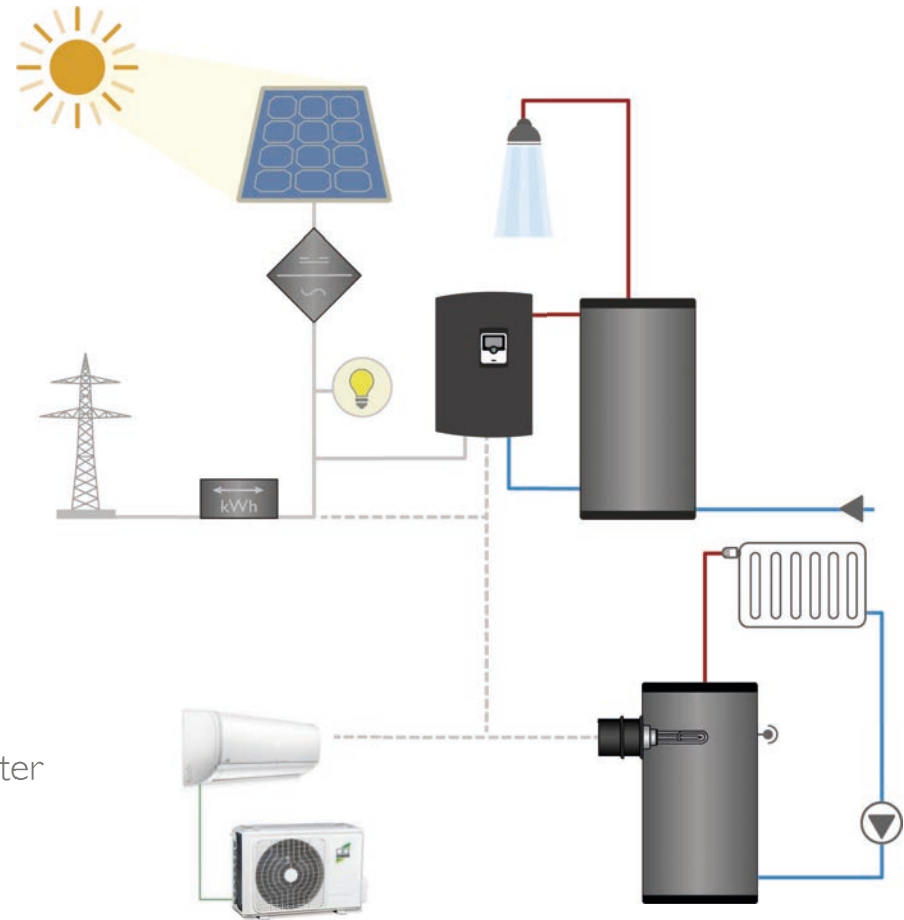
PV heating – FlowSol® E



→ New: Control of external loads

- Example 2
- Control of an electric immersion heater
 - Control of a heat pump
 - Adjustable power
 - Priority control of loads

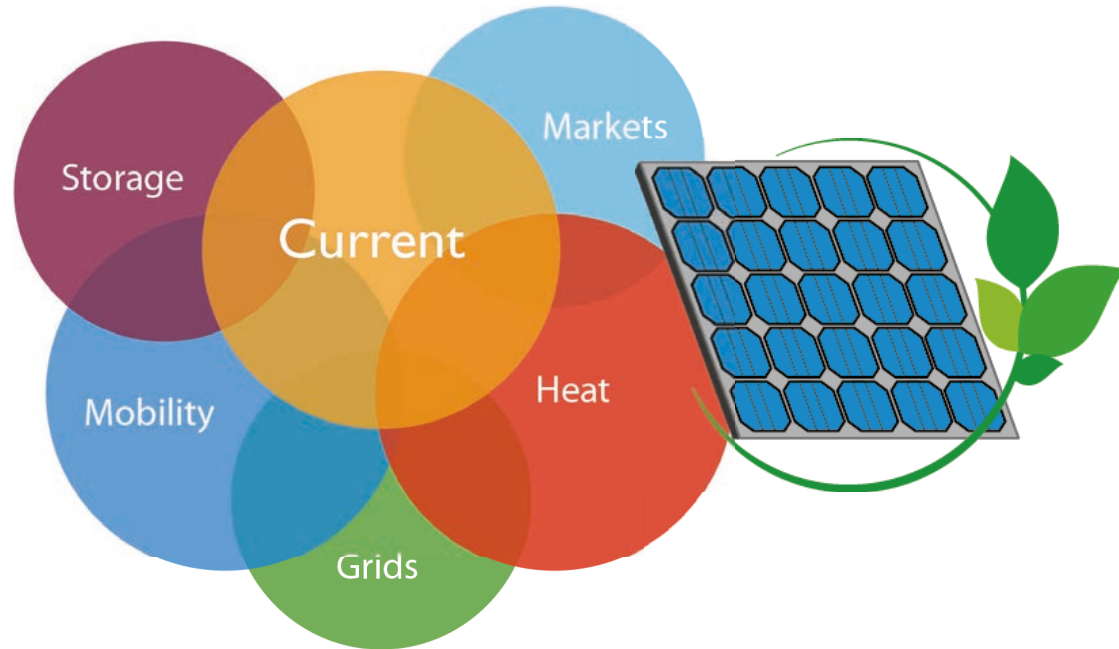
PV heating – FlowSol® E



→ New: Control of external loads

- Example 3
- Control of an electric immersion heater
 - Control of an air-conditioning unit
 - Adjustable power
 - Priority control of loads

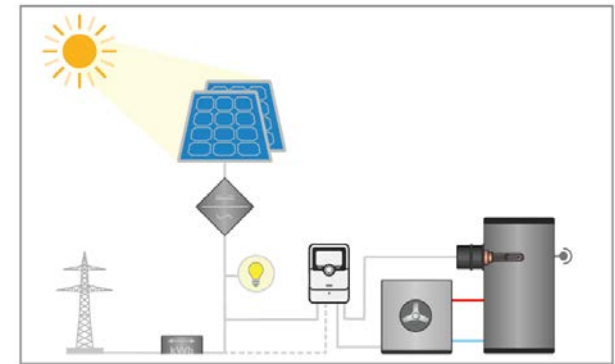
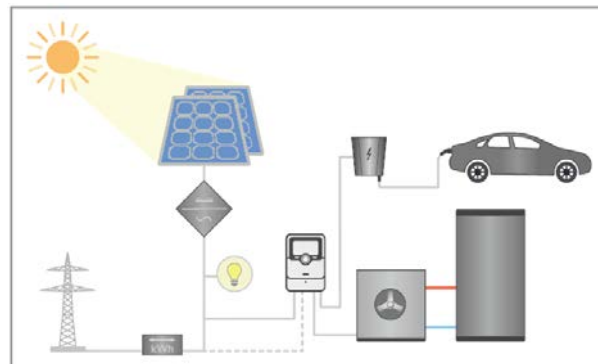
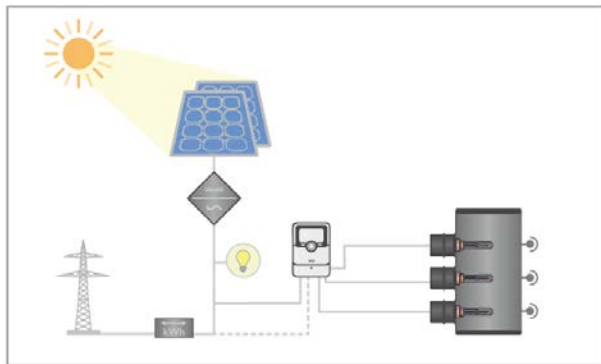
PV heating – DeltaTherm® PHM



Power-to-Heat Manager

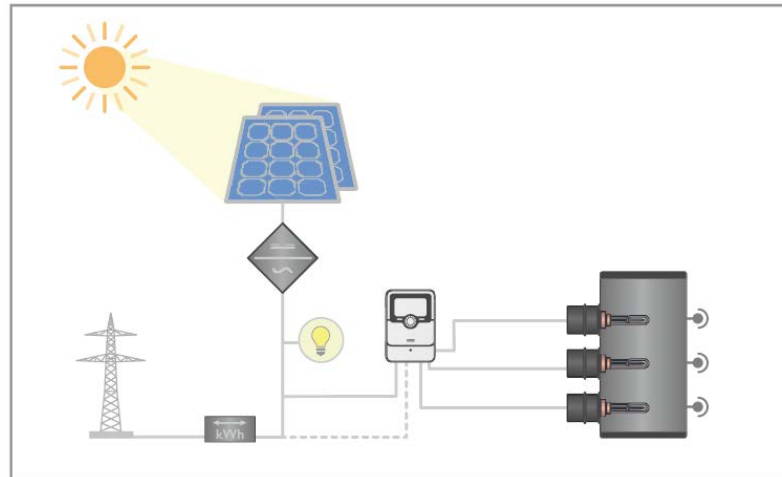
- Ideal solution for using excess PV current
- Control of different loads
- Priority control of loads

PV heating – DeltaTherm® PHM



PV heating – DeltaTherm® PHM

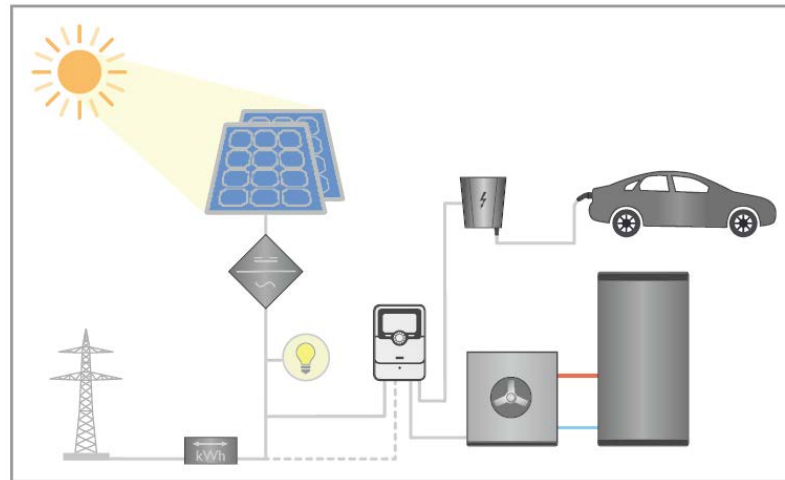
Example 1: 3 electric immersion heaters



- 3 relay outputs with adjustable power
- Priority control of loads
- Temperature-dependent control
- Backup heating with mains current

PV heating – DeltaTherm® PHM

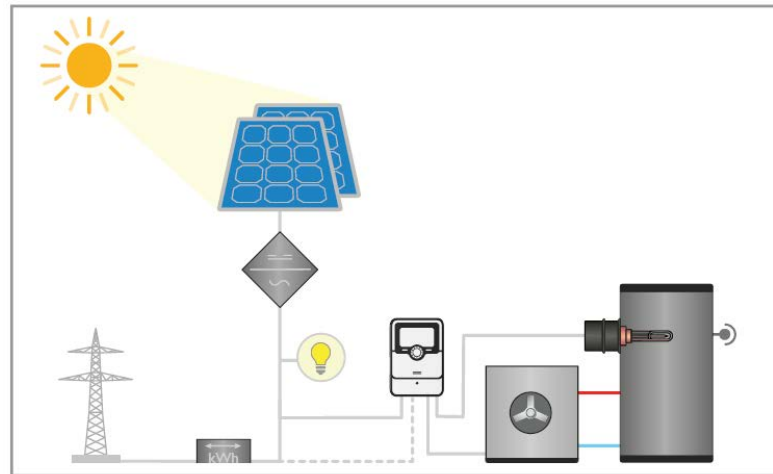
Example 2: heat pump & wallbox



- Control of a heat pump (SG ready)
- Control of a wallbox for electric vehicles
- Priority control of loads

PV heating – DeltaTherm® PHM

Example 3: heat pump & electric immersion heater



- 3 relay outputs with adjustable power
- Temperature-dependent control
- Electric immersion heater as temperature booster (up to 90 °C)
- Priority control of loads

PV heating – DeltaTherm® PHM



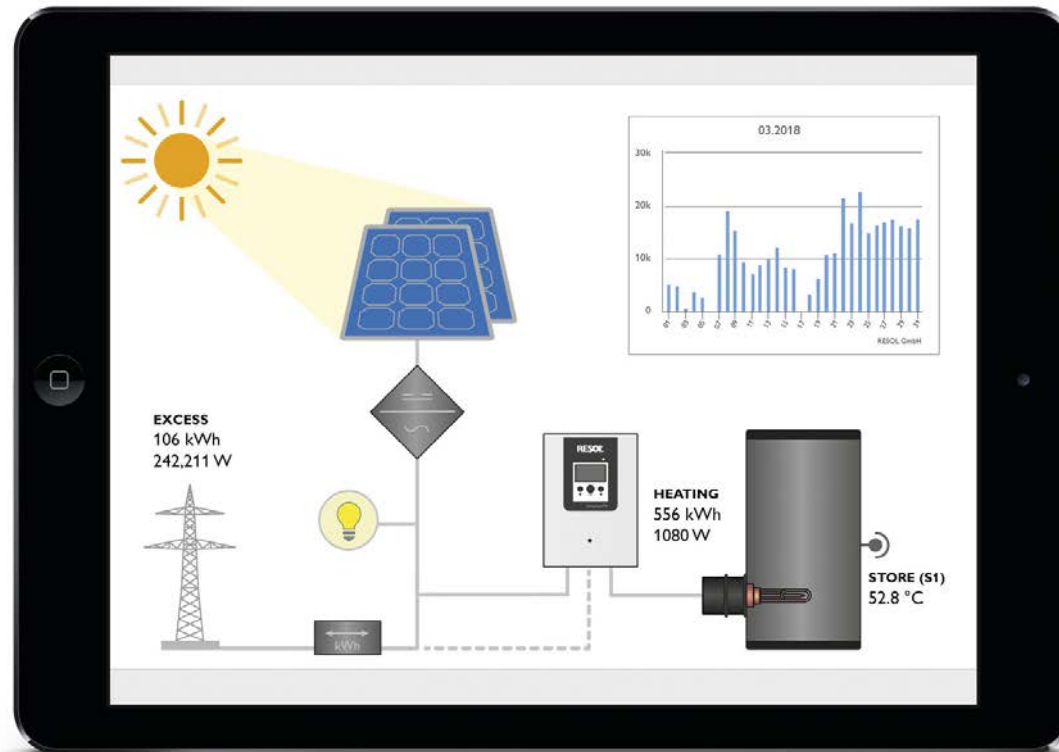
POWER TO HEAT

Use excess energy!

Intelligent distribution of excess PV current

- Increase in self-consumption
- Reduction of heating costs
- Control of a heat pump
- Control of a wallbox
- Control of up to 3 electric immersion heaters (via auxiliary relays)
- Household current priority
- Can be used with all PV systems
- Time-controlled backup heating (with mains current)

PV heating



Expert advice all over the world



We will be there for you
– on-site as well as online!



Have a look – our Youtube channel shows our company and products in videos

www.resol.com

