SAM DISTRICT ENERGY

SAMSON

Solutions for Heat Communities
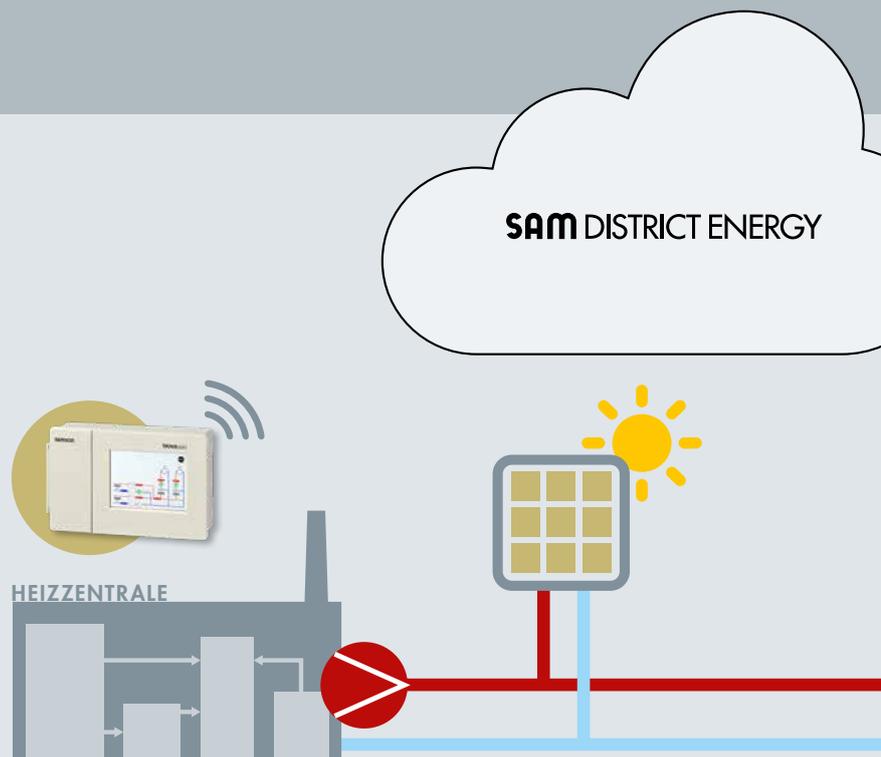## and Local Heat Networks

SAM® DIGITAL

COMPREHENSIVE DIGITAL SOLUTION FOR YOUR LOCAL HEAT SUPPLY

Mr. Harald Rapp, AGFW
Digital technology adds intelligence, efficiency and reliability to the entire energy system and it pushes the integration of renewable energies.*

SAM DISTRICT ENERGY

Digital heating stations

- Demand-driven management of heat generation and buffering
- Wireless data exchange between heat generators and domestic substations
- Flexible monitoring of different generators
- Optimum control of the pumps in the network
- Determination of performance indicators

HEIZZENTRALE

* Refer to energate messenger. 2020-10-14. Interview with Mr. Harald Rapp, AGFW – Digitale Technik macht Fernwärme effizienter. https://www.energate-messenger.de/news/206251/-digitale-technik-macht-fernwaerme-effizienter- [German only]. Retrieved on 2021-07-26

Our digital SAM DISTRICT ENERGY solution helps achieve an optimized heat supply and lays the foundations for a sustainable, customer-focused solution for community heat using local heat supply and district energy networks.
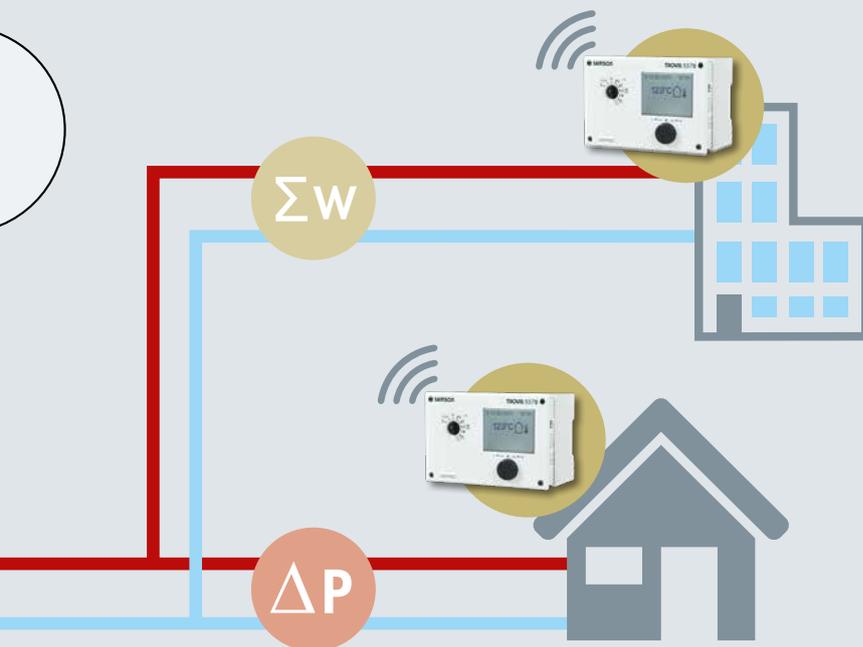
Smart domestic substations

– Energy-efficient heat supply without sacrificing convenience

– Customer-focused services

– Monitoring of DHW temperatures

– Smart buffer tank charging

– Automated continuous monitoring

– Remote polling of meter data for billing

SAM DISTRICT ENERGY AT A GLANCE

SAM DISTRICT ENERGY is a web-based solution for managing, controlling and optimizing heating and cooling systems. All key data on connected controllers, utility meters, PLCs and electric actuators are saved at one central location.
Our gateways enable you to easily digitalize your heat supply and interact with the connected devices using SAM DISTRICT ENERGY using a wireless connection.
An ideal solution for upgrading existing systems
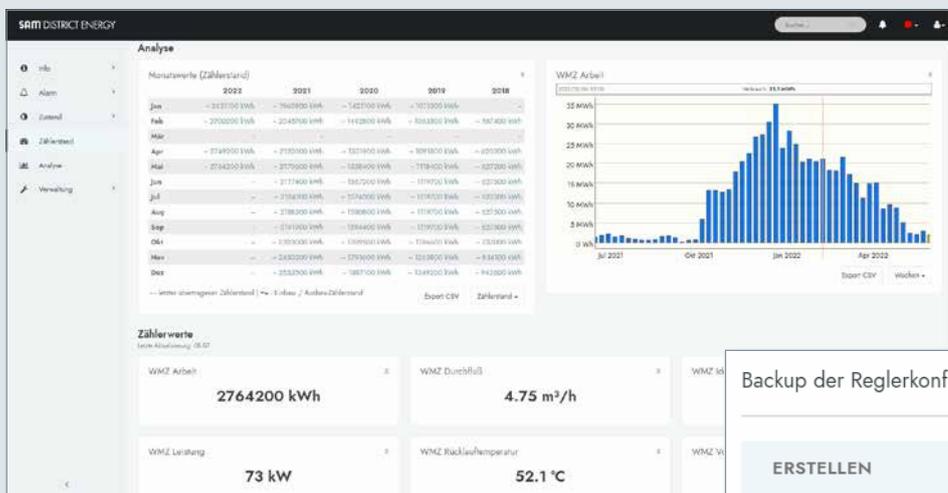
Analysis of consumption data

Our customers have been using SAM DISTRICT ENERGY in numerous different applications for several years.

Automated management of controller backups
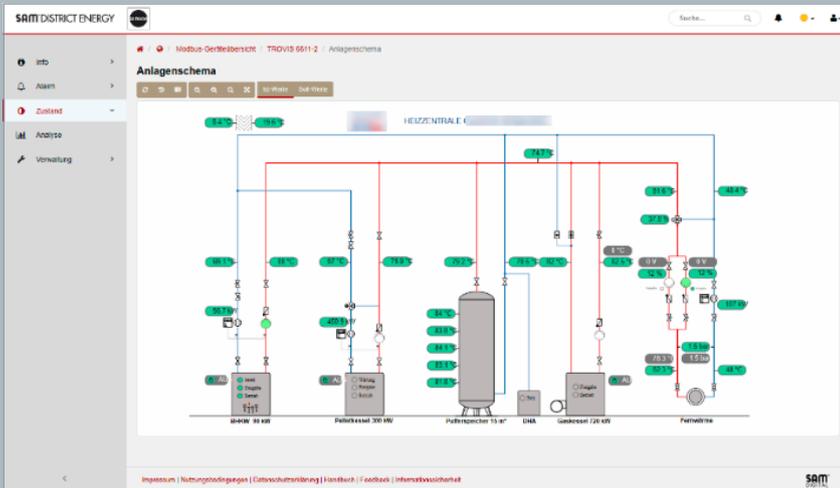
Customized plant schemes
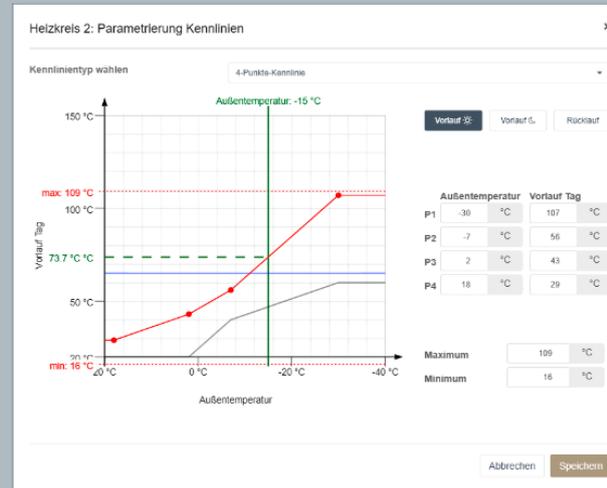

Intuitive adaptation of heating characteristics

SAM DISTRICT ENERGY enables you to optimize and monitor your heat supply using clearly structured, professional interfaces.
For example, you can do the following:

– Automatically generate comparative invoices for different buildings (benchmarks) and further reports

– Remotely adjust heating characteristics on cold days

– Coordinate service calls

– Set up different user levels to allow customers to access their systems

– Monitor different types of heat generators by different manufacturers, such as combined heat and power plants, wood pellet burners

– Manage decentralized buffer storage units to ensure an efficient use of resources

– Generate and send alarm notifications depending on customized thresholds

– Exchange data over cross-traffic without requiring complicated wiring

– Set up automated management of controller backups

HEAT GENERATION
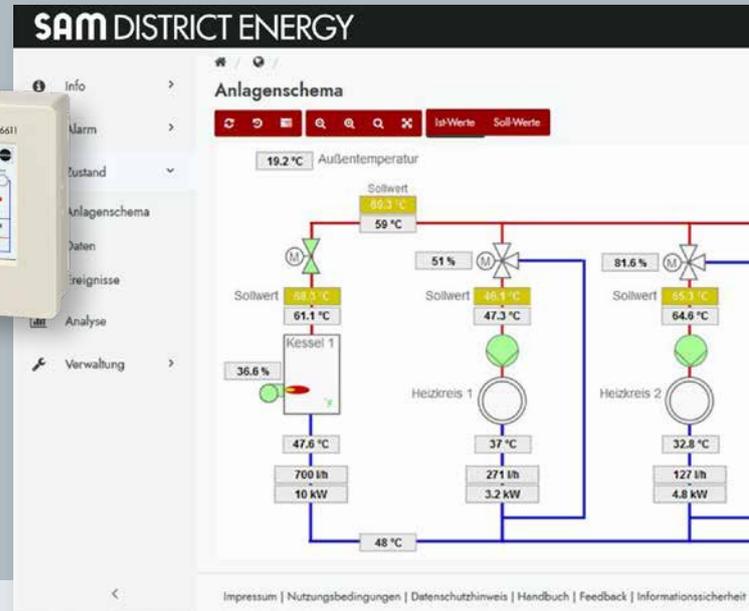
A climate-friendly, affordable energy supply begins in the heating station ...

– CHP plants fired by natural gas or biogas
– Wood chips or wood pellets
– Solar heat
– Heat pump

... with proven systems engineering hardware and software ...

– Freely configurable control and automation unit
– Standardized protocols: MQTT, OPC UA, BACnet, Modbus TCP/RTU
– Standard applications available
– Outdoor-temperature-compensated control
– Demand-driven speed control of the network pumps
– Prevention of peak loads and connection of peak-load generators
– Long lifetime of the CHP plant e.g. thanks to decentralized forced buffer charging
– Energy management: generator control
– Parameter settings to implement different control strategies
– Over 100 years of experience in local and district heating
– Made in Germany
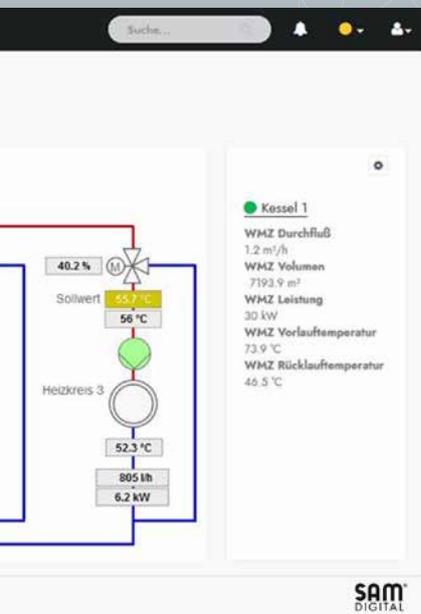
... as the basis for future digital innovations.

– Utility meter data recording, heat exchanger sequence, boiler sequence, DHW, heating control and thermal solar power plants

– Buffer management (predictive charging and discharging)

– Efficiency analyses for heating station and the heating network

– Optimized routing of decentralized supply networks

– Demand-driven heat supply

– Interfaces to cloud computing and ERP systems

– Integration of decentralized generators, such as thermal solar energy

– Control operation for local energy transition

– Efficiency and resource friendliness

– Fully fledged graphical web interface

FROM SIMPLE STATUS MONITORING
TO COMPLEX CONTROL OPERATIONS

**Easy status monitoring
in domestic substations**

Boiler house automation for demand-driven management of heat generation and buffering

**Boiler house
control
(stand-alone
systems)**

HEAT DISTRIBUTION

Communication of demand requests for heat generation using cross-traffic of domestic substations

**Demand
requests/control**

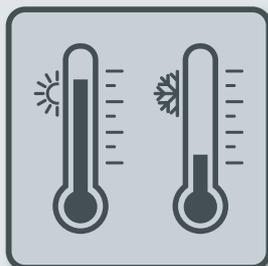**Convenient, easy-to-operate control**

Central and decentralized control with modular expansion using TROVIS 5578-E and Modbus I/O

Convenient and resource friendly

CO$_2$ REDUCTION

Optimum operating conditions of the entire system thanks to AI-supported control operations

E-mail us at samdistrictenergy-de@samsongroup.com if you have any further questions.

PRACTICAL IMPLEMENTATION

Controlling the Hydraulic Worst Case from the Cloud
Local heat supply network operated by an energy supplier association (Energiegenossenschaft Emstal) in Lathen, northern Germany

The local heat supply network of the community of Lathen in northern Germany includes a cloud-based control of the hydraulic worst case using the web-based SAM DISTRICT ENERGY asset management tool and SAM MOBILE gateways for mobile phone networks. For this control function, the differential pressure measured at certain stations is sent to the web portal. The resulting signals to control the network pumps are generated by algorithms in the web portal and sent to the heating stations.
A fixed differential pressure is used upon failure of the control signals. Clear benefits of this solution include quick installation of the gateways, easiness of implementation and a high level of IT security. In addition, measuring points can be distributed all across the entire network as desired.
The web portal makes it possible to simply add further functions and applications to the existing control features.

Benefits for plant operators

– Minimized energy consumption by reducing the pump output

– Reduced flow-induced noise and less stress on the components installed

– Remote monitoring of differential pressure, temperature, heat meters and district heating controllers

– Trouble-free scaling of the system on extending the district heating network

– No wiring from the energy generation to the energy consumers required

Distributed solar thermal energy fed into heat networks
District heating network operated by Düsseldorf municipal services company

Whether in local heat supply and district energy networks or heat communities, solar thermal energy fed into heat networks has already contributed significantly to implementing low-emission heat supply in the short and medium term. Strict requirements are placed on the systems engineering in this case since solar heat as an energy source can only be controlled to a certain extent. We took on the challenge and worked together with the Düsseldorf municipal service company and the Steinbeis research institute to find an efficient and economic overall solution for a reliable heat supply. SAMSON supports the project with engineering expertise and components from our range of systems and valve engineering.

Active climate protection

– Decarbonization of district energy networks even in urban areas

– Use of unused rooftops

– Integration into existing network infrastructures

– Return temperature of the district energy network raised to the level of the supply temperature

Successful field study

– 232 m² collector area installed on an unused rooftop

– Annual solar yield: approx. 350 to 500 kWh/m²

SAMSON AT A GLANCE

STAFF

– Worldwide 4,500
– Europe 3,600
– Asia 600
– Americas 200
– Frankfurt am Main, Germany 1,900

INDUSTRIES AND APPLICATIONS

– Chemicals and petrochemicals
– Food and beverages
– Pharmaceuticals and biotechnology
– Oil and gas
– Liquefied Natural Gas (LNG)
– Marine equipment
– Power and energy
– Industrial gases
– Cryogenic applications
– District energy and building automation
– Metallurgy and mining
– Pulp and paper
– Water technology
– Other industries

PRODUCTS

– Valves
– Self-operated regulators
– Actuators
– Positioners and valve accessories
– Signal converters
– Controllers and automation systems
– Sensors and thermostats
– Digital solutions

SALES SITES

– More than 50 subsidiaries
  in over 40 countries
– More than 200 representatives

PRODUCTION SITES

– SAMSON Germany, Frankfurt, established in 1916
  Total plot and production area: 150,000 m²
– SAMSON France, Lyon, established in 1962
  Total plot and production area: 23,400 m²
– SAMSON Turkey, Istanbul, established in 1984
  Total plot and production area: 11,100 m²
– SAMSON USA, Baytown, TX, established in 1992
  Total plot and production area: 20,000 m²
– SAMSON China, Beijing, established in 1998
  Total plot and production area: 47,000 m²
– SAMSON India, Pune district, established in 1999
  Total plot and production area: 28,000 m²
– SAMSON AIR TORQUE, Bergamo, Italy
  Total plot and production area: 27,000 m²
– SAMSON CERA SYSTEM, Hermsdorf, Germany
  Total plot and production area: 14,700 m²
– SAMSON KT-ELEKTRONIK, Berlin, Germany
  Total plot and production area: 1,100 m²
– SAMSON LEUSCH, Neuss, Germany
  Total plot and production area: 18,400 m²
– SAMSON PFEIFFER, Kempen, Germany
  Total plot and production area: 20,300 m²
– SAMSON RINGO, Zaragoza, Spain
  Total plot and production area: 19,000 m²
– SAMSON SED, Bad Rappenau, Germany
  Total plot and production area: 10,400 m²
– SAMSON STARLINE, Bergamo, Italy
  Total plot and production area: 27,000 m²
– SAMSON VDH PRODUCTS, the Netherlands
  Total plot and production area: 12,000 m²
– SAMSON VETEC, Speyer, Germany
  Total plot and production area: 27,100 m²

SMART IN FLOW CONTROL