SPARCS

Energy and load management
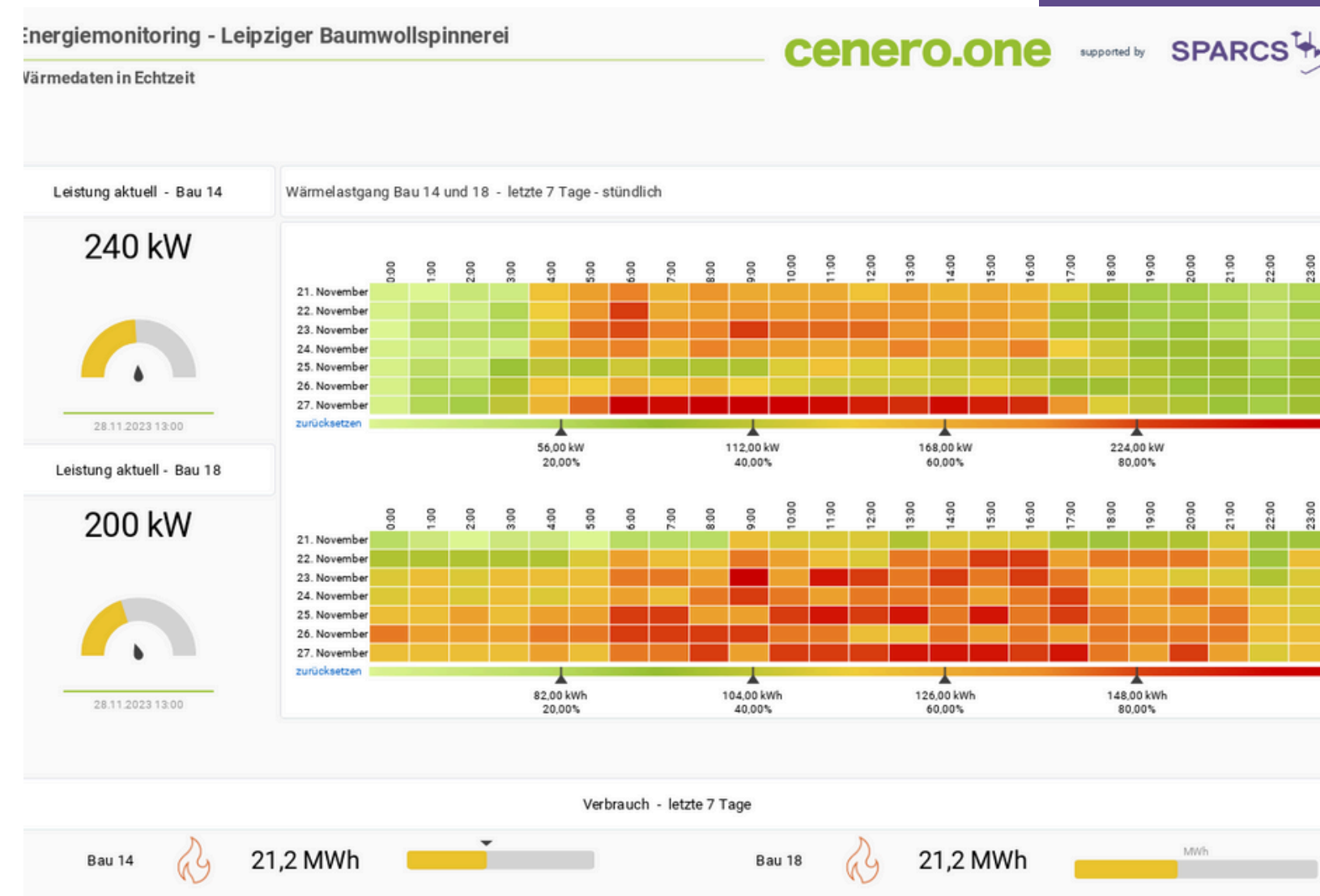
DEMO DISTRICT

The Baumwollspinnerei

PARTNERS INVOLVED

CENERO
cenero.one

COMPLETION DATE

December/2022

KEY NUMBERS

*670 meters
(600 of them being digital)
At least 1100 digital
heat cost allocators*

CO$_2$ REDUCTION POTENTIAL

*10-15% consumption
reduction potential
leading to CO2
reduction potential*

CONTACT PERSON AND LINKS

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Short description

Energy monitoring
- Continuous collection and analysis of data related to energy consumption and generation
- Obtained from various smart meters, sensors, and other monitoring devices
- Goal: Understanding energy - gain deep insights into how, when, and where energy is being used and generated, allowing to make informed decisions and the implementation of energy-saving strategies, raise consumer-awareness
- Facilitating sector coupling and energy mixes, detecting problems, losses and insufficient equipment, automating plausability checks and threshold monitoring

Load management
- Active control of electricity consumption
- Sensors and meters detect the situation in the grid and direct the flow of energy acordingly to achieve favorable outcome
- Directing the flow of energy from the generation facility or the public grid to specific users or storage according to a predefined hierachy
- Goals: flatten peak loads, use viable sustainably energy sources more efficiently, grid stability, establish a hierachy for consumers and generators

Key results during the project lifecycle

- Integration of various communication input protocols and enhancing compatability of the monitoring tool cenero.one
- Ongoing refinement and development of cenero.one based on experiences and findings from the Baumwollspinnerei
- Developing a foundation for the increase of RES on site
- In depth analysis of grid dynamics and deriving balancing scenarios
- Storage of RES for low-energy days - increased efficiency of resources
- Sector coupling

- Introduction of intelligent heat demand control concept through energy monitoring and management
- Peak load reduction
- Interplay between electricity tarrifs and generation peaks - new business typology
- Identification and localisation of weak spots, inefficiencies or losses in the energy grid
- Scalable software based energy services as business models

Insights and learnings

- Importance of established/well structured set up of meter structures within the monitoring tool as well as a structured nomenclature
- Detection of inefficient processes, consumers or grid components
- Profiling the network to design replication, expansion and up scaling efforts
- Interplay of complex consumers and generation plants

- Increasing need for energy monitoring and management for regulatory compliance, transparency and reporting
- Grid services as business typology
- Thermal precision profiling of buildings to improve efficiency of heating systems
- Benchmarking

Challenges

- Shortage of workforce for the installation and replacement of classic meters
- Some meter replacements require a temporary shutdown of the network which requires coordination with property management and tenants
- Entering tenanted areas to carry out work
- Historic network plans sometimes outdated or unreliable
- Regulatory requirements not yet sufficiently defined and consitantly changing
- Thinking ahead - developing the optimal grid structure to allow future upscaling efforts
- Regulatory issues regarding the metering concept for the microgrid components

Plans for replication

- Ongoing expansion of LoRa Network at the Baumwollspinnerei
- Energy monitoring implemented on most other Cenero sites and cenero.one independent customers
- Load management planned for the sites Auf AEG Nürnberg and Konsumzentrale Leipzig
- Incorporating load management grid services in S25 project

Questions and comments from partners

Comments to be added during poster session at Consortium meeting in Leipzig