

The Management of Technical Components of a Smart City Infrastructure

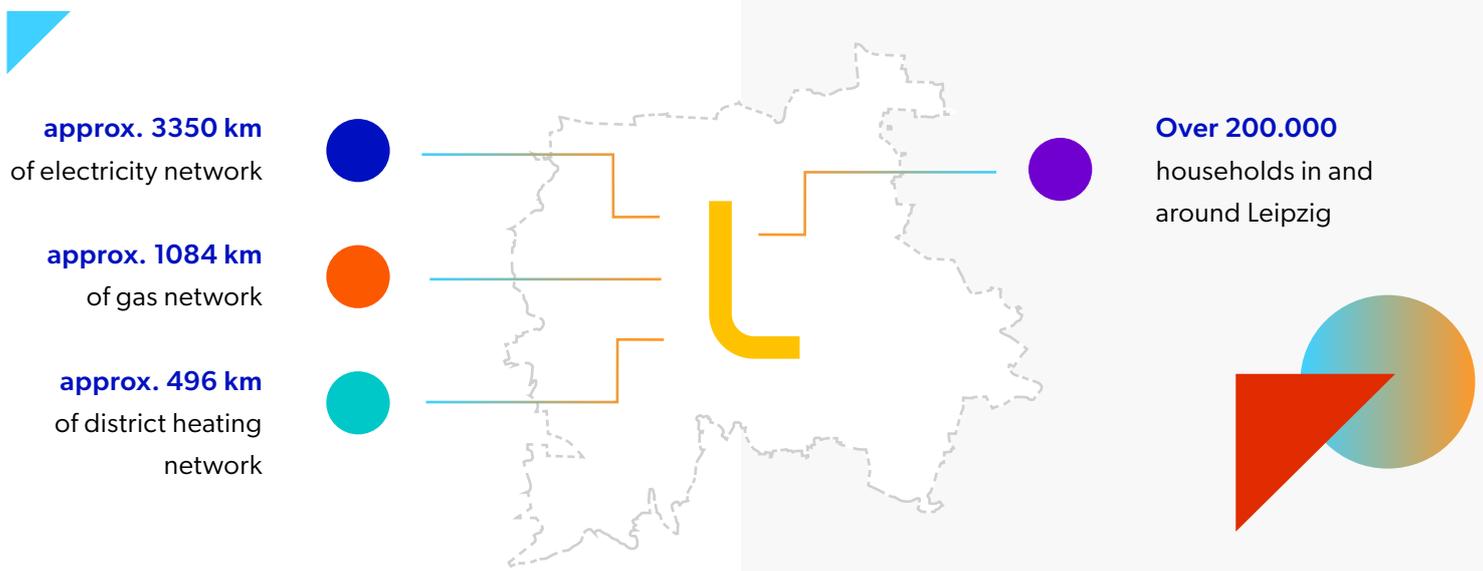
The Technical Digitization of Stadtwerke Leipzig

Stadtwerke Leipzig is a municipal energy company that supplies electricity, gas and heating. It is the market leader in electricity and heating in Leipzig and at the same time one of the ten largest companies of its kind in Germany.



Stadtwerke Leipzig distribution infrastructure:

Customer of Stadtwerke Leipzig:



Challenges of the industry



Stadtwerkes have to change its operating model due to the progressing energy transformation imposed by new regulations and customer preferences changes. The new conditions concern, among other things:

01. Departure from centralised electricity and heat generation.
02. Development of prosumer energy.
03. New opportunities to measure, control and influence energy use.
04. Electromobility.
05. Digital management of distributed resources such as virtual power plants.

Consequently, new devices such as solar panels, vehicle charging stations, electronic meters, and energy storage facilities appear in the urban grid. **Stadtwerkes needs a new, dynamic strategy and technology to collect, integrate, store, and process data from a rapidly growing infrastructure.** A flexible approach to monitoring, analysing and managing the vast number of devices and the possibility of connecting further devices is essential.

Stadtwerke faces a significant challenge in implementing Industrial IoT (IIoT) solutions to cope with these changes and build efficient business processes.



Stadtwerke Leipzig Needs

Stadtwerke needed a high-performance, scalable and secure platform that guaranteed device communication and real-time data availability, as well as enabled:

01. Control and data acquisition from various devices such as wind turbines, district heating plants (BHKW), heat exchangers, energy storage, smart home installations, etc..
02. Management of equipment in the field - installation, service, monitoring, software updates, etc.

Solution provided by ConnectPoint

ConnectPoint has developed and implemented the IoT platform with the Marvin application dedicated to business customers for monitoring and controlling devices.

The solution met all of Stadtwerke's needs which included providing:

01. Digital representation of all devices and processes (Digital Twins and Visual Control room) including visualisation on a map and control of (selected) network elements and devices.
02. A central database allowing the modelling of any device, relations between them and the collection and analysis of measurement data including reading history.
03. Verification of correctness of readings from devices.
04. Displaying and editing of CAD diagrams of devices, including charts with marked measuring points connected to telemetric readings.
05. Easy access to a catalogue of information about contracts, owners, services and operation of available equipment, technical data of the equipment: serial number, type of equipment, construction details.
06. Quick creation of dashboards by business users.

About ConnectPoint

ConnectPoint is an IT company that supports the process of digitalization in industry, energy sector and public utility segment. It specializes in IT/OT and IoT integration and combine industry knowledge with expertise in the field of OT, Big Data, GIS, Business Intelligence and Machine Learning. It builds systems that allow for effective cooperation between Operations, IT and Business.

03. Introduction of one consistent data model with a codification of devices and signals.
04. Provision of appropriate visualisations and tools for different business areas (maintenance, energy trading department, etc.).

At the same time, the solution had to meet rigorous security standards for critical infrastructure.

Benefits of implementation

01. Remote control of equipment and a modern tool for its life cycle management enabled the introduction of new services:
 - » monitoring and optimisation of electricity and heat consumption costs for businesses,
 - » management and monitoring of smoke detectors in flats,
 - » remote control of heat substations for housing communities,
 - » launching a virtual power plant.
02. Optimisation of infrastructure maintenance costs thanks to real-time access to information relevant to failures and maintenance works:
 - » possibility of precise analysis of incidents and failures, allowing to identify their causes,
 - » quicker response time to problems,
 - » saving time and resources of service technicians - all device data with details is available in one place,
 - » CAD - convenient view for engineers, possibility to detect unusual problems in the system.
03. Leverage advanced data analytics (machine learning, AI) in device management and energy trading by collecting a large amount of measurement data of appropriate quality and frequency.

