

case study

Niagara and BACnet at Technical University of Kaiserslautern (TUK)

The Technical University of Kaiserslautern (TUK) was founded in 1970 and is situated in the federal state Rhineland-Palatinate in Germany. The TUK campus includes more than 40 multi-story buildings, serving approximately 15,000 registered students. With a consortium of twelve high-profile science institutions close to the campus, the university is strongly linked to national and international industries. The region around the town of Kaiserslautern has grown into one of the largest IT clusters in the whole of Europe, and it is home to people from over 140 different nations, contributing to a diverse and vibrant city life.

CHALLENGE

The TUK is continuously expanding and refurbishing the buildings across its campus, many built over forty years ago. TUK's property manager is Landesbetrieb Liegenschafts und Baubetreuung (LBB), the real estate and construction service provider for state building construction in Rhineland-Palatinate. LBB is challenged to seamlessly integrate old technologies and installations into modern building management concepts. However, it has had the foresight to always insist on open systems that are designed for easy integration of various bus technologies. LBB recognizes this as essential to ensure overall control and to guarantee an expandable, future-proof system. LBB places high demands on building automation, as it is a member of AMEV, the working group for mechanical and electrical engineering for state and municipal administrations. AMEV has developed a recognized certification for BACnet-compatible Building Automation components that it expects all automation and control equipment and software providers to attain.

When LBB wrote the specification for a major energy management project at TUK, it wanted all new equipment installed to have AMEV certification. This recent project involved a controls upgrade to 31 buildings across the TUK campus as well as to the central heat and power plant. LBB wanted to achieve a homogeneous central-console solution with data from all connected systems integrated and normalized into a single source of information. Challenging aspects of this project included

- ▶ PLC-based management of the 30 MW heat and power plant consisting of boilers and combined heat and power stations (CHP)
- ▶ Need to upgrade control packages and programming on the main network pumps
- ▶ Control and monitoring of the district heating system serving the 31 buildings involved, making it easier to monitor and report usage to the consumers who lived and worked in those buildings.

open
automation
systems

"The combination of modular components from the OAS assembly kit and solution-oriented consulting by PGA Automation ensures that the university premises are now equipped for the open system future."

Ralf Rostock
Managing Director
OAS Open AutomationSystems
GmbH

FAST FACTS

Project Type: Centralized Energy Management and Control of Heat Power Plant

Project Scope:

- 31 buildings with district heating
- 30MW heat power plant control system with SCADA supervisor

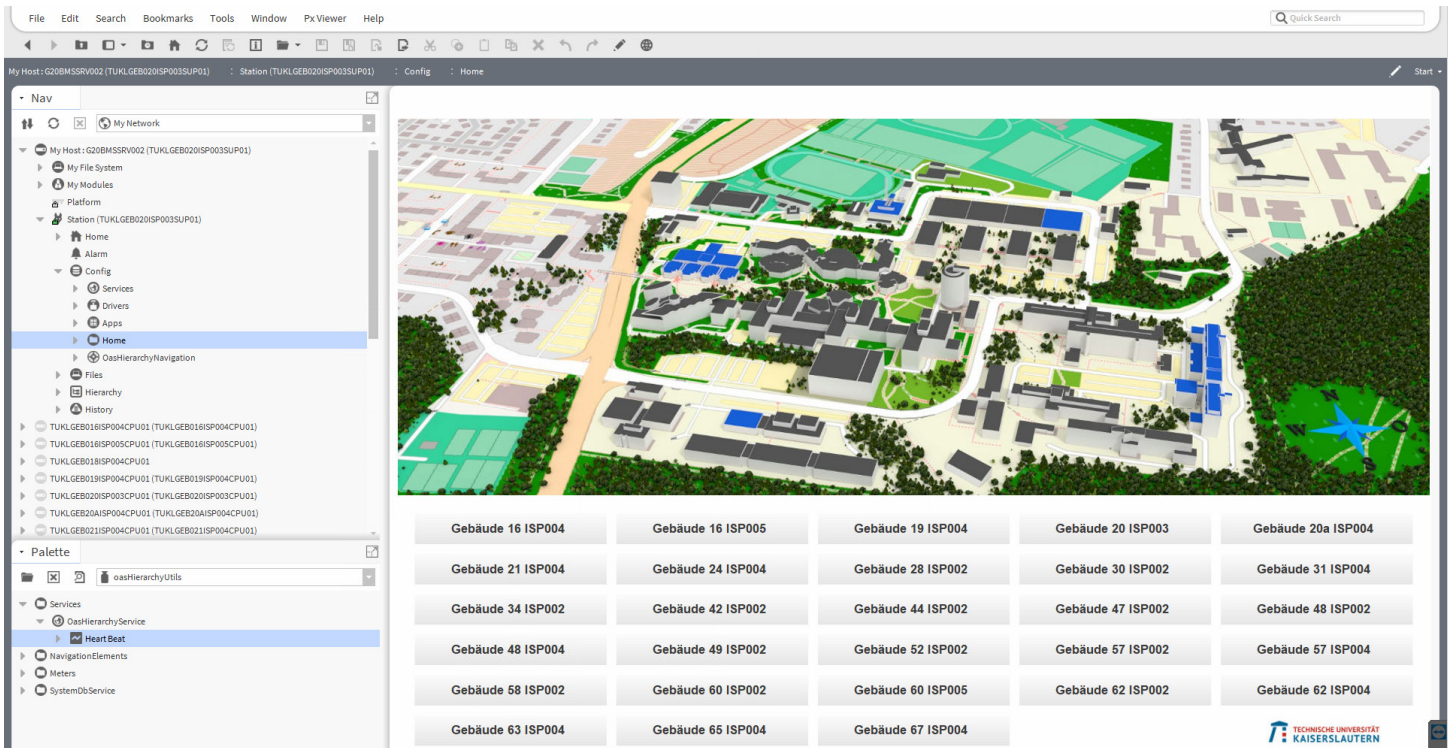
Client: Landesbetrieb Liegenschafts und Baubetreuung (LBB)

Key Technologies: Niagara Framework, BACnet, multiple distributed OAS I/O-fieldbus-modules, Siemens high availability PLC-Systems, Profinet, Profibus, OPC, Modbus, M-Bus, high availability SCADA system

Authorized Distributor:

[OAS Open AutomationSystems GmbH](#)

System Integrator: [PGA Automation](#)



SOLUTION

In the spring of 2019 Tridium announced BACnet Building Controller (B-BC) certification and AMEV profile AS-B (Automation Station, extended version) attestation for the JACE 8000 with embedded Niagara Framework® software. When PGA Automation prepared its proposal for this project, it knew that the Tridium JACE with Niagara would meet both the BTL certification and the AMEV requirement. When it won the contract, PGA turned to Tridium authorized distributor in Germany Open AutomationSystems GmbH (OAS) to source the Tridium BACnet controller. OAS is a top seller among Niagara partners in the region.

To unify energy management and the delivery of heat and other building services across the TUK campus, a Niagara network was designed to encompass

- ▶ A controls panel cabinet at each of the 31 buildings (28 new and 3 retrofit) to house a BACnet JACE 8000 and 10" operator touch panels
- ▶ 16 new control panel cabinets to serve the Energy Center for the heat and power plant, housing SCADA supervisory control and switches.

The front-end graphical user interface for the new Energy Center features 3D visualizations and provides overviews across properties, as well as of individual plant controls. The property, building management system, facilities, plants, and services can be visualized schematically or in detail and centrally presented on operator workstations.

Data points, actuators and sensors are easily recognized at a glance to control lighting states, heating, air conditioning and ventilation, and all other elements of building technology. From overviews to fine level detail, these visualizations provide the information needed for efficient building operations.

RESULTS

Through this seamless integration of data and easy-to-navigate visualizations, TUK building operators are better able to focus on vital tasks, resulting in more efficient and effective operation of the entire campus. The combination of modular components used from the OAS construction kit and the solution-oriented integration consulting provided by PGA Automation ensures that the university buildings are now prepared for an open system future.

ABOUT OAS

Open AutomationSystems GmbH is an expert in open energy management and building automation systems for the continuous digitalisation of technical building equipment. OAS modular Niagara-Framework® components and OEM product developments communicate with BACnet and other common protocols and offer limitless integration from the field level through automation level up to the cloud.

ABOUT TRIDIUM

Tridium open-protocol products allow diverse monitoring, control and automation systems to communicate and collaborate in buildings, data centers, manufacturing systems and smart cities, bringing intelligence and connectivity to the network edge and back.