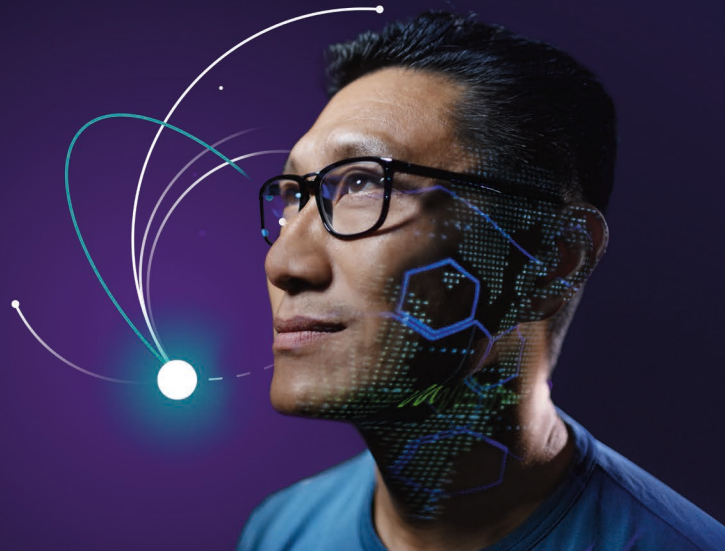


EKu.SIM, Germany

Optimized plant operation
through training and simulation



The Plant

For several decades, the Kraftwerks-Simulator-Gesellschaft (KSG) in Essen has been offering customized training concepts.

EKu.SIM, KSG's business unit for simulator engineering, develops and builds accurate simulators for waste incineration plants, industrial power plants, combined cycle plants, and district heating networks. With one-to-one simulators, EKu.SIM provides solutions to increase both the efficiency and availability of the power plant or district heating network and to solve engineering problems.

For example, EKu.SIM works closely with the GKS-Gemeinschaftskraftwerk Schweinfurt GmbH and plays a central role in their simulation and training concepts. The GKS plants – a coal-fired cogeneration plant with combined heat and power, and a waste-to-energy plant – are operated with the Omnivise T3000 control system. They supply district heating and electricity to various large commercial enterprises and to residential areas in the city of Schweinfurt.

“The T3000 Simulator trains the handling of the control system, and we complement this with process engineering. The result is a perfect training environment, in which the simulation behaves exactly like the plant.”

Peter Lasch, Division Manager for Technology and Operation,
EKu.SIM



The Task

EKu.SIM and GKS are working together to develop effective simulation models and provide training courses. The primary target is to equip employees with the necessary knowledge and skills to operate GKS plants in a safe and efficient way. In addition, optimizations of the plant processes can be tested with the help of simulation. For this purpose, thermal-hydraulic and process engineering models are developed to complement the Omnivise T3000 Simulator, which is fully integrated in the Omnivise T3000 control system.

These high-fidelity process models must accurately replicate plant processes and plant behavior. This enables an extremely realistic simulation, directly via the user interface of the control system.

The Solution

Thanks to close cooperation between Eku.SIM, Siemens Energy, and GKS-Gemeinschaftskraftwerk Schweinfurt GmbH, a completely realistic simulation of the GKS plants was achieved. The Omnivise T3000 Simulator runs in a virtual environment within a KSG data center and enables immediate and direct simulation in the T3000 Workbench – all based on the original control system data of the GKS. Coupled with external high-fidelity process models, which are based on KSG's process engineering expertise, the simulation precisely mirrors the plant's processes and complex areas like firing and flue gas cleaning. Various plant conditions, from start-up to full-load operation, as well as disturbed plant operation, are also simulated one-to-one. Eku.SIM provides the simulation solution to GKS as a service. By using the Omnivise T3000 Simulator, in conjunction with external process models, GKS staff can test different scenarios, optimize processes, and control the plants safely. Simulation allows staff to effectively prepare for what-if scenarios involving the plants.



Detailed 1:1 simulation of plant processes supports the reliable supply of electricity and district heating by GKS-Gemeinschaftskraftwerk Schweinfurt GmbH.

The Results

- Improved knowledge of user interface and plant behavior for correct reactions.
- Practical tests and optimization of the plant through 1:1 emulation of plant processes.
- Increased efficiency and safety of plant operation through intensive training.
- Avoidance of outages or damage to the plant.

“Our employees need to master the plant and their processes perfectly. This is the only way they can react correctly in case of difficulties.

The Omnivise T3000 Simulator and the high-fidelity process models from Eku.SIM provide us realistic simulation, which is indispensable for the training of our employees.”

Dr. Ragnar Warnecke, Director of GKS-Gemeinschaftskraftwerk Schweinfurt GmbH

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