



THE G10 STATE TRADE SCHOOL TRAINS THE QUALIFIED ENERGY SPECIALISTS OF TOMORROW

The transition to renewable energy holds new challenges for industry and politics, and the education sector also needs new ideas when it comes to teaching topics such as smart grid technology. The potential is great. The German Institute for Economic Research (DIW) is currently forecasting up to 20 billion euros of new investment, which could create some 600,000 new jobs. The G10 trade school in Hamburg recognized this early on and is already providing state-of-the-art training. We take a look at what is perhaps Germany's most modern energy training laboratory.

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The G10 trade school set itself the goal early on to support the expansion of renewable energy by developing an optimal training centre for the skilled workers that are urgently needed. To this end, it set up a task force consisting of several experts, which was given the job of planning a reorientation of the school and finding the necessary centrepiece for the new training environment: a smart grid training system.

Such a system allows all fields to be included, thereby preparing students for the real world of work and developing skills that are in demand in the Hamburg labour market. Under the curricular working title "Renewables in the Smart-Grid System", all the

areas that were supposed to be taught in future were covered in a practically relevant way. This resulted in the first productive planning framework.

The requirements specified were demanding. For example, the new renewables system was supposed to be state-of-the-art technology and offer individually operated subsystems which can also be installed in a small space. In addition, the system was supposed to foster the students' independence and motivate them to engage in self-directed learning through multimedia elements. The task force found what it was looking for in the smart grid system from Lucas-Nülle.

INTEGRATED TECHNOLOGY – INTEGRATED LEARNING

When the school inaugurated the system in the summer of 2012, it had moved considerably closer to its goal of becoming a unique centre of excellence for renewables. However, the hardware was only the most visible change. Along with its installation, the school also redesigned its curricula. The task force experts believe that integrated technology requires integrated learning. In the new curriculum, the content of each lesson is interlinked to that of other lessons, enabling students to gain a quicker understanding of how things are interconnected and to deduce solutions independently.

The spatial concept was adapted to suit the new lesson structure and designed such that it could be used for a large number of training situations. There is always a focus on working in groups and with a partner. Different levels of learning can be covered by simple modifications and enhancements.

This approach guarantees flexibility in modifying lessons, allowing stronger and weaker students to be taught and supported in the same class. The students can support one another and work through the material independently. This allows them to hone their technical skills while at the same time developing social skills which will be important in the labour market of the future. “The Lucas-Nülle system facilitates project-oriented and independent working, allowing the students to develop interdisciplinary technical as well as social skills which are important in working life,” says Andreas Stetza, member of the school’s task force.

A SMART GRID SYSTEM IN THE SMALLEST OF SPACES

Owing to renovation of the G10 trade school that has lasted several years and is still ongoing, it has not yet been possible to carry out any definitive spatial planning measures for a smart grid laboratory. At present, the training system is still set up in a conventional classroom approximately 70 m² in size.



Top: State technical school for energy technology G10 in Hamburg
Bottom: Smart grid technologies and renewable energies can be learned at the G10

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However, due to the variability of the individual components, which in turn consist of seven individual areas, it is possible to integrate the smart grid system into such a relatively small space. This meant that students and teachers were able to start working with the system before completion of the renovation work.

After gaining a year’s experience with the smart grid system in a new lesson structure, everyone is positive in their assessment. “In our evaluations, which we carry out regularly, our students tell us that they would like to spend even more time in the smart grid laboratory working with the systems,” reports Andreas Stetza.