

A Pupil's Insight into the Current and Future Energy Grid

Berna Balci, Amila Kaharevic, Antonello Monti

RWTH Aachen University/ Institute for Automation of Complex Power Systems

Abstract

The ongoing transition to renewable energy sources is reshaping the traditional energy grid, moving from a static and load-controlled system to a dynamic, distributed, and generation-controlled model, creating a gap in awareness among young students about these changes. By understanding the complexities of this transition, young students and pupils can better grasp the challenges and opportunities it presents for career paths satisfying the skill need in the digital energy sector. To address the recognized gaps and to create an awareness of the future energy grid, three educational pilot activities targeting pupils and young students at the EQF-Level 1-3 are designed and conducted. Through the utilization of two physical demonstrators, participants are provided with tangible scenarios highlighting the operation of the electrical grid. One demonstrator illustrates various entities within the grid and their interactions, while the other focuses on the energy balance between production and consumption with renewable energies. By engaging with these demonstrators, participants gain practical insights into the future energy grid structure with the integration of renewable energy sources and digitalization of the system. The outcomes of these pilot activities reveal a significant enhancement in students' understanding of the complexities associated with the energy transition and energy grid, and create an interest in the topic.

Keywords: Educational demonstrator, Energy transition, EQF 1-3, Future energy grid, Pupils awareness and understanding