Modular Automation Concepts for Clean Hydrogen

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Abstract:
Hydrogen will play a key role in the decarbonization of the industry, energy, and mobility sector. Green and blue hydrogen is produced in modular plants consisting of modular packages for water treatment, electrolysis, carbon capture, hydrogen conversion, pressurization, storage, transport etc. The individual package units have different automation requirements in terms of I/O count and CPU size on the one hand, and safety requirements on the other hand. Furthermore, the individual package units in a plant are typically being supplied from multiple manufacturers with different automation strategies. However, in the end, clean Hydrogen plants need to work safely and efficiently as a whole. Thus, an overall automation concept is required to seamlessly integrate all modules without compromising to safety and usability. The Modular Type Package (MTP) concept is exactly designed to address these challenges and, hence, ideal for clean Hydrogen plants.
Presentation layout:

- Introduction – the role of clean Hydrogen for the Chemical industry and sector coupling
- Structure of a typical Clean Hydrogen plant
- Automation requirements for package units (I/O count, safety, communication protocols)
- Automation requirements for overall plant (central/decentral, remote operation; orchestration of modules)
- Automation concept with Modular Type Package (MTP)
- Virtual Commissioning
- Beyond automation: From Integrated Engineering to Integrated Operation

Siemens is a global powerhouse focusing on the areas of electrification, automation and digitalization and being a partner of the Chemical Industry for decades. Siemens is engaged in NAMUR and ZVEI to make the MTP concept a reality. Our new web-based control system PCS neo is able to orchestrate modular type packages. With our track record in the automation of clean Hydrogen plants, we know about the requirements, the challenges, and the solutions.