AIT/IEEE PES Austria Chapter Lecture Series

Modular Software Architecture and System Testing in the Process Engineering Sectors for Producing Green Hydrogen

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Monday, 30. November 2020, 16:30 - 17:30 (online)
(Talk in German)

Registration

Participation is free but a registration required! Login information for joining the online event will be provided right before the event starts!

Abstract

Storing energy from renewable sources is one of the biggest challenges in the coming decades. One technology supporting this goal is to produce hydrogen with the help of electrolysis. In the future, both centralized and decentralized systems will play a role in hydrogen production. Fronius is specialized in decentralized systems.

To meet the highly dynamic environment, we put a strong focus on the modular structure of our completely open source based software system. Big software companies like Google, Microsoft or Amazon are placed in such a highly dynamic surrounding and deal with new requirements every day. We bring parts of their solutions for dynamic cloud systems, down to lower level hardware systems by using microservice technologies and Googles solution for performance scaling, Kubernetes, directly on our machines. Microservices abstract the embedded software, developed for the PLCs which fulfil the requirements of the process technologies. High software quality is guaranteed by unit-tests applied to the microservices and hardware in the loop testing for the whole system.

This lecture gives an overview on the software architecture and the quality assurance in hydrogen systems of Fronius:

- Techniques of container development and microservice technology used to setup a modular software system
- Inclusion of embedded systems (PLCs) to this modular system
- Hydrogen systems working either with or without cloud systems
- System testing using Hardware in the Loop technologies
- Outlook and possibilities using the software system for sector coupling

About the Speakers

Joachim Danmayr attended the Higher Technical School for Electronics focused on Technical Informatics in Steyr. He worked in the research and development at Fronius for more than 11 years and was responsible for the development of the embedded software and microelectronics hardware for the power electronics of the photovoltaic inverters. Since 2015 he is working as software architect and since 2019 he is responsible for software development in System Engineering & Development department at Fronius, mainly working on hydrogen systems. He has 8 granted patents and studies computer science on a part-time basis at the University of Hagen.

Fabian Neubacher holds a Master of Science in Human Centered Computing and a Bachelor of Science in Medical Engineering, both from the University of Applied Sciences Upper Austria, as well as a degree from the higher technical school Vöcklabruck of Mechanical and Plant Engineering. He works as a development engineer for hydrogen systems and is responsible for development in the field of system testing. As project manager and qualification engineer he gained working experience in site and plant engineering in the pharmaceutical industry.

Organizers

This event is jointly organized by the IEEE PES Chapter Austria and the AIT Austrian Institute of Technology - Center for Energy**.** It is also supported by the IEEE IAS/PELS/IES Joint Chapter Austria.

Location Webinar (online)

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