



# SUBSTATIONS AUTOMATION SYSTEMS

## ***Descriptions des Cours***

Perhaps more than other industries, engineering for energy has become an increasingly complex process with demands for digitalisation and interconnected services and products in increasing. Thus, a fundamental understanding of utilities applications and energy digitalisation is essential for all systems engineers working in this domain.

The course provides the basics of substations' and substation automation systems architecture and components, their role in power grid operation. It also shows the basics of data acquisition, communication and control for SAS systems, and gives an overview of the main telecommunication and modelling standards. Providing the main information about Digital Substations, it allows to understand the impacts, chances and risks digitalisation brings to the SAS.

## ***Objectifs***

- Know the role of substations in a power system.
- Understand the essential components of substations.
- Reflect on the architecture of the system communications.
- Outline the architecture of information exchange and data collection from

consumer installations.

- Gain an overview of emerging technologies and key challenges.
- Understand the basics of digital substations, interfaces and connectivity risks.
- Understand the role of cyber-security for substation automation.

### ***Pour Qui***

- Project Managers
- System Operators
- Software Engineers
- Software Architects
- Product Owners

Attendees must have basic training in Systems Engineering (e.g. SE Foundations).

### ***Tarifs des Cours***

Regular: 800 CHF

### ***Durée***

1 jour

### ***Enseignant***



Dmitri Tchoubraev

Dr. Dmitri Tchoubraev has had different leading roles over the last 20 years in Swiss industry. He was responsible for the introduction of Swiss Ancillary Market services, engineering and operation of numerous business-critical systems of Swiss Transmission Grid National Control Center, establishing of Enterprise Integration and Solution Architecture at Swiss TSO.

Today he lectures, consults and mentors on the Power Utilities System Architecture, Energy Digitalisation and System Integration. His experience includes multiple applications of Project Management and Architectures Development in the area of complex heterogeneous IT System Landscapes. He also teaches Utilities IT Systems and Substation Automation Systems at the Technical High School Fribourg, Switzerland and was an Assistant Professor on Power Utilities Systems and Processes for 10 years, at the University of Aerospace Instrumentation, St. Petersburg, Russia.

Dr. Tchoubraev has more than 20 years of experience as project and program manager and as operational manager in development, engineering, integration and operation of complex industrial systems for both government and private sector industries.

Dr. Thoubraev is author and co-author of 30 papers and author of the book "Information Technologies for Electromechanical and Power Systems".

In addition, he is specialised on the System Design based upon Mini- and Micro-Services and optimisation of Industrial Operational Environments using Design Thinking and Usability approaches.