MAGNUS SPEYCHAL

Magnus' specialist field is power system analysis, dynamic simulations and modelling and grid code compliance. He has 20 years' experience in electric power engineering and has extensive knowledge of simulation tools such as PowerFactory, PSS/E, PSCAD and Simpow, as well as supporting tools such as Matlab/Simulink, DPL/DSL (PowerFactory), and Python. Magnus has been involved in power system analysis software development as well as numerous applications including software integration and software training.

MAIN FIELDS OF COMPETENCE

- Power system analysis – Dynamic simulations and modelling
- Grid code compliance studies

WORK EXPERIENCE

2023 –	**Independent Insulation Group Sweden AB**, Ludvika, Sweden *Expert*
2020 – 2022	**Independent Insulation Group Sweden AB**, Ludvika, Sweden *Senior Specialist*
2018 – 2020	**SWECO Energuide AB**, Ludvika, Sweden *Power System Analyst*
2002 – 2018	**STRI AB**, Ludvika, Sweden *Senior Engineer*
2001 – 2002	**ABB Utilities**, Ludvika, Sweden *Engineer*

EDUCATIONAL DEGREES

2002	**Master of Science in Electric Engineering** Mälardalens University, Västerås/Ludvika, Sweden. Thesis: SSTI investigation for the HVDC Light™ B concept

LANGUAGES

Swedish (native), English (professional level)

LIST OF PROJECTS

2022 - ongoing	***Grid code compliance process – RfG*** Supporting wind farm project developers in the execution of the RfG grid code compliance process - numerous projects.
2022 - ongoing	***Grid code compliance process – RfG*** Supporting DSO:s in implementing the grid code compliance process of RfG.
2022 - ongoing	***Grid code compliance simulations – RfG and EIFS 2018:2 for wind farms*** Grid code compliance simulations as per RfG and EIFS 2018:2 for wind farms. The studies were performed in PowerFactory.
2022 - ongoing	***Grid code compliance testing – RfG and EIFS 2018:2 for wind farms*** Grid code compliance testing as per RfG and EIFS 2018:2 for wind farms including compliance evaluation.
2022 - ongoing	***Protection coordination studies for wind farms*** Protection coordination studies for connection of wind farms. The studies concern coordination between DSO protections and wind turbine generator protections.
2022 - ongoing	***Windfarm connection studies*** Studies regarding grid code (EU 2016/631 - RfG) compliance, reactive power capability and cable dimensioning based on loading and short-circuit currents.
2021 - ongoing	***Allocation, follow-through and verification of emission limits for wind and solar parks*** To ensure that new connections do not lead to an unacceptable deterioration in power quality, emission limits are set on current or voltage harmonics at the connection point. There are no clear guidelines for what is required for an installation in the planning stage to be considered to meet the connection requirements, and how this is to be followed up and verified after the installation is put into operation. The project intends to produce recommendations on how harmonic limits in Sweden should be assigned, followed up and verified.
2021	***Technical requirements for power quality*** Development of technical requirements related to power quality together with a transmission system operator.
2020 - 2021	***Grid code compliance simulations – RfG and EIFS 2018:2 for numerous wind farms*** Grid code compliance simulations as per RfG and EIFS 2018:2 for numerous wind farms. The studies were performed in PowerFactory.
2020 - 2021	***Windfarm connection studies*** Several studies regarding grid code (EU 2016/631 - RfG) compliance, reactive power capability and cable dimensioning based on loading and short-circuit currents.
2020 - 2021	***Gas turbine power upgrade project*** Grid code (EU 2016/631 - RfG) compliance project for a power upgrade of a gas turbine powerplant.
2020	***HVDC grid code (EU 2016/1447) comparison for offshore wind power hub*** Comparison of national implementations for EU 2016/1447 between European North Sea countries related to an offshore hub for wind power.

2020	***Load rejection/temporary overvoltage study for a nuclear power plant unit*** Study of overvoltages in auxiliary power systems at load rejections following faults in the external grid.
2019	***BESS (Battery Energy Storage System) island operation study*** Study of BESS voltage and frequency control performance during island operation in a power distribution system.
2018 - 2019	***Frequency protection coordination study for a grid containing a VSC HVDC link*** Dynamic PSCAD/EMTDC – PSS/E hybrid simulations for settings and coordination of frequency protections in a weak grid containing a VSC HVDC link.
2018	***VSV (Very Short Variations) study for distribution systems with PV*** Power quality study of very short voltage variations resulting from varying PV production in power distributions systems.
2018	***Load rejection/temporary overvoltage study for a nuclear power plant unit*** Study of overvoltages in auxiliary power systems at load rejections following faults in the external grid.
2016 – 2021	***Generator excitation-, turbine- and governor system modelling project*** Modelling of generator excitation-, turbine- and governor systems for dynamic simulations in PowerFactory.
2015 – 2016	***Analysis of disturbances - Nuclear power plant auxiliary power system study*** Analysis of unsymmetrical conditions in the auxiliary power system of nuclear power plants. Conversion of and benchmarking of dynamic data for system equivalent in PSS/E.
2015 – 2016	***Generator excitation system modelling project*** Modelling of generator excitation system for dynamic simulations in PowerFactory.
2015	***Transformer on-load tap changer modelling project*** Modelling of transformer on-load tap changers for dynamic simulations in PowerFactory.
2015	***Asynchronous machine modelling project*** Asynchronous machine modeling for dynamic simulations in PowerFactory.
2014	***Nuclear power plant auxiliary power system study*** Study of motor start sequencies in the auxiliary power system of a nuclear power plant.
2013	***Project manager*** Project manager for a project concerning voltage upgrading of Norwegian 320 kV power lines.
2012	***EU power quality project*** Voltage dip analysis as part of a EU project.
2012	***Technical area manager*** Technical area manager for Simpow software development.
2004 - 2012	***Software development for power system analysis*** Simpow and Simpow auxiliary programs; development and support**.** Including conversion of PSS/E data (static and dynamic) and benchmarking against PSS/E (static and dynamic simulations).
2001 - 2002	***VSC HVDC SSTI (Sub Synchronous Torsional Interaction) study*** Sub synchronous torsional interaction study in PSCAD/EMTDC v.2 for a VSC HVDC project.
2001 - 2002	***VSC HVDC dynamic performance study*** Dynamic performance study for a VSC HVDC project in PSCAD/EMTDC.

2001 - 2002	***Master thesis*** Master thesis, "SSTI investigation for the HVDC Light B Concept". This was an investigation regarding Sub Synchronous Torsional Interaction between generator-turbine shaft systems and voltage source converters of type HVDC Light B.

LIST OF PUBLICATIONS

S. Ackeby**, M. Speychal**
Fortsättningsprojekt spänningsvariationer och intermittent produktion
Energiforsk rapport 2018:472, Stockholm, Sweden, 2018