²G INDEPENDENT INSULATION GROUP

CURRICULUM VITAE

Barry Carolan

Barry is a specialist in the field of power system analysis and control system development. He has 17 years of experience in the field, having worked both on the utility- and manufacturing sides. This perspective has given him a deep understanding of the needs and requirements of both end users and system providers. Over the years, he has developed strong expertise in industry-standard simulation tools, including PSCAD, PSS[®]E, and PowerFactory as well as simulation automation, data analysis and software integration.



MAIN FIELDS OF COMPETENCE

- Power System Analysis
- Control Systems Design, Modelling, Commissioning and Validation
- Software Development

WORK EXPERIENCE 2024-Independent Insulation Group Sweden AB, Ludvika, Sweden Senior Consultant 2018-2024 Hitachi Energy / ABB Power Systems HVDC, Ludvika, Sweden Senior Design Engineer Technical Solution Owner: Software Tools and Simulation Technically Responsible: Dynamic Performance, Line Commutated Converter HVDC **Control Systems** 2018 H&MV Engineering, Limerick, Ireland Electrical Engineering Responsible 2017 Norconsult, Östersund, Sweden Electrical Engineering Consultant 2012-2016 ABB Power Systems HVDC, Ludvika, Sweden Project Engineer Technically Responsible: Dynamic Performance, Line Commutated Converter HVDC **Control Systems** 2007-2012 EirGrid, Dublin, Ireland Senior Power System Planning Engineer Power System Planning Engineer



EDUCATIONAL DEGREES

BE (Hons, First Class) Electrical Engineering University College Dublin, Ireland

LANGUAGES

2007

Swedish (professional level), English (native)

2024 – ongoing	Simulation Model Validation for RfG process
	Studies to validate the manufacturer supplied wind farm model against the site compliance
	test results.
	(PowerFactory)
2024 – ongoing	Wind farm connection studies
	Studies regarding grid code (EU 2016/631 - RfG) compliance, reactive power capability and cable dimensioning based on loading and short-circuit currents.
	(PowerFactory)
2024 – ongoing	Power quality studies, Harmonic filter design for renewable energy connection
	(PowerFactory)
2024 – ongoing	RfG Compliance testing for power park modules
	(PowerFactory)
2024 - 2018	(Hitachi Energy)
	Technical Solution Owner Software Tools and Simulation
	Development of a new software environment for performing, evaluating, and visualizing
	dynamic study results. (python)
	Dynamic Performance Dogger Bank Wind Farm
	Development of Dogger Bank A, B and C project control system including several novel functions
	Dynamic Studies for Grid Code Compliance
	Offshore AC network protection coordination study
	(PSCAD, PowerFactory)
	Raigar – Pugalur ±800kV 6000 MW HVDC
	Dynamic performance studies for multiterminal HVDC system
	Sub-synchronous torsional interaction studies and damping controller development
	Customer training
	Factory Acceptance Testing for control system
	(PSCAD, PSSE)

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2017	(H&MV Engineering) Electrical Engineering Responsible
	Reviewed substation design, supported design team Identification and evaluation of equipment manufacturers and sub-contractors Cost estimation, site visits and stakeholder discussions Company representative at Factory Acceptance Testing
2016	(Norconsult) Electrical Engineering Consultant
	Feasibility Study for 40 kV substation refurbishment (AutoCAD)
	Protection Coordination Wind Farm (PSSE, python)
	40 kV Network Expansion Study (PSSE, python)
	Hydro Turbine Generator Specification of Reactance and Moment of Inertia (PSSE, python)
	Feasibility Study for 40 kV substation refurbishment (AutoCAD)
	Power Quality Evaluation for data center (Elspec PQ Sapphire)
	Wind Farm reliability and availability study (Python)
	Wind Farm grid code compliance study (PSSE, python)
	Wind Farm grid code compliance study (PSSE, python)
	Wind Farm grid code compliance study (PSSE, python)
	Wind Farm PSSE Network equivalent (PSSE)
2012 - 2015	(ABB Power Systems)
	Kontek (Sweden – Germany 600 MW) AC Network Equivalents, Dynamic Performance Study, Sub-Synchronous Torsional Interaction Study, Load-Flow and Stability Study, Damping Regulator Design. (PSCAD, PSSE, PowerFactory, E-Tran, MATLAB, python)
	Madawaska (Canada 300 MW) AC Network Equivalents, Dynamic Performance Study, Sub-Synchronous Resonance Study, Low-Order Harmonics Study, Load-Flow and Stability Study, Frequency Control Design. Emergency Power Study and Runback Scheme Design. (PSCAD)
	1100 kV UHVDC 10 GW (Prefeasibility) Evaluation and development of control system functions for very long distance HVDC transmission. (<i>PSCAD, PSLF</i>)
	Three-Terminal HVDC Scheme 3500 MW (Prefeasibility) Evaluation and development of control system functions for extremely weak AC network. Evaluation of various combinations of Synchronous Compensator, STATCOM and SVC to facilitate stable HVDC transmission. <i>(PSCAD, PSSE)</i>
	3000 MW HVDC Project (Tender) AC Network Equivalents, Dynamic Performance Study (<i>PSCAD, PSSE</i>)
	3000 MW HVDC Project (Tender) AC Network Equivalents, Dynamic Performance Study (<i>PSCAD, PSSE</i>)



2000 MW HVDC Project (Tender)

AC Network Equivalents, Dynamic Performance Study (PSCAD, PSSE)

Celilo PDCI Upgrade (USA 3800 MW)

Dynamic Performance Study, Factory Acceptance Testing, Site Commissioning Support, PSCAD Model Development, PSCAD Model Validation, (*PSCAD, PSSE*)

Railroad DC Tie (USA – Mexico 300 MW)

Dynamic Performance Study, AC Network Equivalents, Sub-Synchronous Torsional Interaction Study, Factory Acceptance Testing, Site Commissioning, PSCAD Model Development, PSCAD Model Validation, (*PSCAD*, *PSSE*)

2007 - 2012

Ireland – Great Britain HVDC

(EirGrid)

Review of East – West Interconnector technical reports.

Prefeasibility Study Offshore Energy Clusters

Identification of optimal locations for connection of 7500 MW offshore renewable energy in 2030. Combined optimisation considering ocean depth, wind resource, transmission constraints and capital cost of connection. (*PSSE, python*)

Onshore Energy Clusters

Automated N-1 contingency analysis for maximisation levels of renewable generation connected to the transmission network by 2025. Analysis to assign earliest connection dates to 10 GW of renewable and conventional generation. (*PSSE, python*)

Ireland – France HVDC

Collaboration with RTE to investigate technical feasibility of an Ireland – France HVDC interconnection across the Celtic Sea "Celtic Interconnector". Identification of studies requirements and benchmarking of planning criteria and grid codes. Identification of favourable connection stations and potential interconnector size. (*PSSE*)

Prefeasibility Study

Automated N-1 contingency analysis for optimisation of connection of large clusters of renewable generation to the transmission network. (*PSSE, python*)

Western Region

Short-circuit studies. Review of running arrangements after life extension of thermal generation in western region. Evaluation of approaches for mitigation of high short-circuit levels. (*PSSE*)

LNG Terminal

Developed preferred method of connection for a large LNG terminal to the 110 kV transmission system. Load-flow, voltage stability and short circuit studies. (*PSSE*)

Dublin Bay Thermal Generation

Load flow and dynamic studies for a new 400 MW thermal generation facility in Dublin area. Voltage stability analysis: management of over- and over voltage on cable networks. Complex running arrangements in heavily constrained urban transmission system. (*PSSE*)

Southwest Region

Short circuit studies for 110- and 220 kV switchgear rating due to connection of 1500 MW cluster of renewable generation. (*PSSE*)