Curriculum vitae with track record

PERSONAL INFORMATION

*Family name, First name:	Høidalen, Hans Kristian		
*Date of birth:	15.05.1967	*Sex:	Male
*Nationality:	Norwegian		
URL for personal website:	https://www.ntnu.edu/employees/hans.hoidalen		

EDUCATION

	Name of faculty/department, name of university/institution, country
1998	Ph.D., Norwegian University of Science and Technology (NTNU)
1990	Master/SivIng, NTH

POSITIONS (academic, business, industry, public sector, national or international organisations)

Current Position

	Job title/name of employer/country
2007-	Professor/NTNU/Norway

Previous positions held (list)

	Job title/name of employer/country
1999-2007	Associate Professor/NTNU/Norway
1998-1999	Research Scientist/SINTEF Energy Research/Norway
1994-1997	PhD scholar/NTNU/Norway
1992-1994	Research Scientist/ Norwegian Electric Power Research Institute (EFI)/ Norway
1991-1992	Scientific Assistant/ Institute of electrical power engineering, NTH/Norway

MOBILITY (if applicable)

Research stays abroad lasting more than three months

	Name of faculty/department/centre, name of university/institution/country
2010-2011	Michigan Technological University/USA

PROJECT MANAGEMENT EXPERIENCE

Projects funded by Research Council of Norway, international research programmes, private or public organisations

	Project and role, funding from
2010-2014	Project leader of the research project "*Wind Energy Conversion using high frequency transformation and DC collection*" funded by the Norwegian Research Council
2015-2019	Project leader of the KPN project "*Power system protection on a smartgrid perspective*", funded by the Norwegian Research Council and 7 partners
2019-2023	Project leader of the KPN project "*Power system protection and control in digital substations*", funded by the Norwegian Research Council and 9 partners

SUPERVISION OF GRADUATE STUDENTS AND RESEARCH FELLOWS

	No. of	Graduate	Institutions
2010-2020	7 2 40	Ph.D. PostDoc MSc	Dept. Electrical Power Engineering/NTNU/Norway

TEACHING ACTIVITIES

	Teaching position – topic, name of university/institution/country
1999-2019	Lecturer, course responsible – TET4130 Overvoltages (20 times) Lecturer, course responsible – TET4125 Power system protection and control (2 times) Lecturer, course responsible – ELK31 Computer simulation of transients (15 times) Lecturer, course responsible – TET4200 Marine and Offshore Power Systems (2 times) Lecturer, course responsible – TET4195 High voltage equipment (2 times) Lecturer – TET4215 Power System analysis (7 times) Lecturer – TBA4225 Railway Engineering (4 times) Lecture, village responsible – Experts in Teams (6 times) Lecturer, course responsible - ET8101 Transient Overvoltages in Power Syst. (PhD 6 times) Lecturer, course responsible - ET8102 Testing of high voltage insulation (PhD 2 times) All courses at NTNU/Norway

ORGANISATION OF MEETINGS

	Role and name of event/number of participants/country
2004	Organizer of the European EMTP users group meeting/40/Norway
2013	Technical co-chair of Int. Conf. on Power System Transients/200/Canada
2016 & 2017	Initiator and organizer of the Nordic Workshop of Power System Protection and Control, 40, Norway

INSTITUTIONAL RESPONSIBILITIES

Member of a committee/graduate student advisor etc.

	Name of university/institution/country
Dec. 20th 2005	Opponent at PhD dissertation at KTH, Gavita Mugala: High frequency characteristics of medium voltage XLPE power cables, ISBN 91-7178-215-X.
2006-	Board member of the European EMTP Users group. Deputy chairman since 2014.
Dec. 12th 2007	Opponent to PhD at Chalmers, Nilanga Abeywickrama: Effect of dielectric and magnetic characteristics on frequency response of power transformers, ISBN 978-91-7385-027-8.
June 26th 2010	Opponent to PhD at DTU, Thomas Kjærsgaard Sørensen: Composite Based EHV AC Overhead Transmission Lines.
2012-2020	Member of Cigré SC C4 – System Technical Performance
2013	Technical co-chair of IPST'13 in Vancouver. Co-editor of Elsevier, Electric Power Systems Research journal.
2013-2014	Member of Cigre/Cired JWG B5/C6.26.
June 25th 2014	Opponent to PhD at DTU, Andrzej Holdyk: Interaction between main components in wind farms.
Nov. 19th 2014	Opponent to PhD ETH-Zürich, Matthias Bucher: Transient Fault Currents in HVDC VSC Networks During Pole- to-Ground Faults
Oct. 20 2015	Opponent LIC-degree at KTH; Sajeesh Babu. Reliability evaluation of distribution architectures considering failure modes and correlated events.
Aug. 2016	Pre-examinor PhD Lauri Kumpulainen, Vaasa University.

July. 5, 2018	Opponent PhD C. I. Ciontea at Aalborg U. "Utilization of the ratios of symmetrical components in electrical protection"
2014-	Member and TF leader of Cigre WG A2/C4.52 – High-frequency transformer and reactor models

MEMBERSHIPS OF ACADEMIES / SCIENTIFIC SOCIETIES / NETWORKS

	Name of academies, scientific societies, networks
2008-	CIGRE. National C4 representative since 2012. Various working groups since 2008.
2005-	IEEE. Member since 2005, senior member since 2014.
2006-	European EMTP User group - EEUG. Board member since 2006, deputy chairman since 2014, honorary member since 2004.

MAJOR COLLABORATIONS

Name of university/ institution/ faculty/ department/ centre, company/ governmental or non-governmental organisation	Topic
Michigan Technological University	Transient simulation, transformer modelling, relay protection
SINTEF Energy Research	Transformers, insulation coordination

Track record

Number of journal papers: 66
Number of conference papers: 45
Number book chapters: 1
Number of monographs: 1

Ten most cited journal papers:

Author(s)	Title	Journal	Pages	Year	Cited
Holtsmark, N.; Bahirat, H. J; Molinas, M.; Mork, B. A; Hoidalen, H.K.;	An all-DC offshore wind farm with series-connected turbines: an alternative to the classical parallel AC model?	IEEE Transactions on industrial Electronics	2420-2428	2012	130
Hoidalen, H.K.;	Analytical formulation of lightning-induced voltages on multiconductor overhead lines above lossy ground	IEEE Tr. on Electromagnetic Compatibility	92-100	2003	129
Hoidalen, H.K; Runde, M.;	Continuous monitoring of circuit breakers using vibration analysis	IEEE Transactions on Power Delivery	2458-2465	2005	107
Chiesa, N.; Mork, B. A; Høidalen, H. K.;	Transformer model for inrush current calculations: Simulations, measurements and sensitivity analysis	IEEE Transactions on Power Delivery	2599-2608	2010	111
Bjerkan, E; Høidalen, H. K;	High frequency FEM-based power transformer modeling: Investigation of internal stresses due to network-initiated overvoltages	Electric Power Systems Research	1483-1489	2007	87

Høidalen, H. K; Mork, Bruce A; Gonzalez, F.; Ishchenko, D; Chiesa, N.;	Implementation and verification of the hybrid transformer model in ATPDraw	Electric Power Systems Research	454-459	2009	66
Liu, Z.; Su, C.; Hoidalen, H. K.; Chen, Z.;	A multiagent system-based protection and control scheme for distribution system with distributed-generation integration	IEEE Tr. On power delivery	536-545	2016	49
Chiesa, N.;Høidalen, H. K.;	Novel approach for reducing transformer inrush currents: Laboratory measurements, analytical interpretation and simulation studies	IEEE Tr. On power delivery	2609-2616	2010	46
Dung, NV; Høidalen, H.K; Linhjell, D; Lundgaard, LE; Unge, M;	Effects of reduced pressure and additives on streamers in white oil in long point-plane gap	Journal of Physics D: Applied Physics	255501	2013	42
Zirka, SE; Moroz, YI; Arturi, CM; Chiesa, N; Hoidalen, H.K;	Topology-correct reversible transformer model	IEEE Transactions on Power Delivery	2037-2045	2012	41

PhD students supervised:

Eilert Bjerkan	High Frequency Modeling of Power Transformers – Stresses and diagnostics, ISBN 82-471-6925-8, NTNU, May 2005.
Nicola Chiesa	Transformer model for inrush current calculations. ISBN 978-82-471-2086-6, NTNU, July 2010.
Jorun Marvik	Fault Localization in Medium Voltage Distribution Networks with Distributed Generation, ISBN- 978-82-471-2913-5, NTNU, June 2011.
Dung Van Nguyen	Experimental Studies of Streamer Phenomena in Long Oil Gaps, ISBN 978-82-471-4311-7, NTNU, May 2013.
Amir H. Soloot	Resonant overvoltages in offshore wind farms, ISBN 978-82-326-2173-6, NTNU, March 2017.
Edris Agheb	Medium frequency high power transformers for all-DC wind parks – Design, modelling and optimization, ISBN 978-82-326-2280-1, NTNU, May 2017.
Abbas Lotfi	Off-core Magnetic Flux Paths in Power Transformers- Modeling and Application, ISBN 978-82-326-4628-9, NTNU, May 2020.
Konstantin Pandakov	Improvements in protection of medium voltage resonance grounded networks with distribution sources, ISB 978-82-326-3560-3, NTNU, Dec. 2018.
Maciej Grębla	Relay protection in micro-grids, started May 2017.
Mohammad K. Katoulaei	Interoperability of Sensor Technologies in Digital Substation, started in Jan. 2020
Thomas Treider	Protection and Fault Location in Digital Substation, started in Mar. 2020.

ACADEMIC PUBLICATIONS 2013- 2020:

- *Peer-reviewed journals 2013-20*
  1. M. Grebla,. J. R. A. K. Yellajosula, H. K. Høidalen: "Adaptive Frequency Estimation Method for ROCOF Islanding Detection Relay", IEEE TRPWD, Vol. 35, Issue 4, pp. 1867-1875, 2020.
  2. K. Pandakov, C M. Adrah, H. K. Hoidalen, Ø. Kure: "Experimental validation of a new impedance based protection for networks with distributed generation using co-simulation test platform", IEEE TRPWD, Vol. 35, Issue 3, pp. 1136-1145, 2020.
  3. K. Pandakov, H. K. Hoidalen, S. Traetteberg, "An additional criterion for faulty feeder selection during ground faults in compensated distribution networks", IEEE TRPWD, Vol. 33, no. 6, pp. 2930-2937, 2018.

4. Z. Liu, H. K. Høidalen, M. M. Saha, M. Popov, "A coordinated Protection and Control Scheme with Wind Power Integration for Distribution Network", The Journal of Engineering, No. 15, pp. 1204-1208, 2018.
5. K. Pandakov. C M. Adrah, Z. Liu, H. K. Hoidalen, Ø. Kure, "Hardware-in-the-loop testing of impedance protection with compensation of fault impedance and DG infeed current", The Journal of Engineering, No. 15, pp. 1018-1022, 2018.
6. K. Pandakov, H. K. Høidalen, J. I. Marvik, "Misoperation analysis of steady-state and transient methods on earth fault locating in compensated distribution networks", SEGAN, Dec. 15, 2017.
7. J. R. Ramamurthy, N. Chiesa, H. K. Høidalen, B. A. Mork, N. M. Stenvig, A. C. Manty, "Influence of voltage harmonics on transformer no-load loss measurements and calculation of magnetization curves", Electric Power Systems Research, vol. 146, pp. 43-50, 2017.
8. M. Khanali, A. Hayati-Soloot, H. K. Høidalen, S. Jayaram, "Study on locating transformer internal faults using sweep frequency response analysis", Electric Power Systems Research, vol. 145, pp. 55-62, 2017.
9. S. Zirka, Y. Moroz, H. K. Hoidalen, A. Lotfi, N. Chiesa, C. Arturi, "Practical Experience in using a Topological Model of a Core-Type Three-Phase Transformer – No-Load and Inrush Conditions", IEEE TPWRD, Vol. 32, no. 4, pp. 2081-2090, 2017.
10. Z. Liu; C. Su; H. K. Høidalen; Z. Chen, "A Multiagent System-Based Protection and Control Scheme for Distribution System With Distributed-Generation Integration", IEEE TPWRD, Vol. 32, Issue 1, pp. 536 – 54, 2017.
11. Z. Liu, H. K. Hoidalen; M. M. Saha, "An intelligent coordinated protection and control strategy for distribution network with wind generation integration", CSEE Journal of Power and Energy Systems, Vol. 2, Issue 4, pp. 23-30, 2016.
12. H.K. Høidalen, A. Lotfi, S. Zirka, Y. Moroz, N. Chiesa, B.A. Mork, "Benchmarking of hysteretic elements in topological transformer model", Electric Power Systems Research, vol. 138, pp. 33-40, 2016.
13. Lotfi, H. K. Høidalen, N. Chiesa, "Effect of DC biasing in 3-legged 3-phase transformers taking detailed model of off-core path into account, Electric Power Systems Research, vol. 138, pp.18-24, 2016.
14. A. Lotfi, H. K. Høidalen, E. Agheb and A. Nysveen, "Characterization of Magnetic Losses in the Transformer Tank Steel," in IEEE Transactions on Magnetics, vol. 52, no. 5, pp. 1-4, May 2016.
15. Bahirat, H.J.; Hoidalen, H.; Mork, B.A., "Thèvenin Equivalent of Voltage Source Converters for DC Fault Studies", IEEE TPWRD, Vol. 31, Issue 2, pp. 503-512, April 2016.
16. N. Holtsmark, E. Agheb, M. Molinas, H. K. Høidalen, "High frequency wind energy conversion system for offshore DC collection grid — Part II: Efficiency improvements", Sustainable Energy, Grids and Networks, Volume 5, March 2016, pp 177-185.
17. E. Agheb, N. Holtsmark, H. K. Høidalen, M. Molinas, "High frequency wind energy conversion system for offshore DC collection grid—Part I: Comparative loss evaluation", Sustainable Energy, Grids and Networks, Volume 5, March 2016, pp 167-176.
18. M. Popov, L. Grcev, H. K. Hoidalen, B. Gustavsen, V. Terzija,"Investigation of the Overvoltage and Fast Transient Phenomena on Transformer Terminals by Taking into Account the Grounding Effects", IEEE TR on Industry Applications, vol. 51, no. 6, pp. 5218-5227, Nov.-Dec. 2015.
19. S. E. Zirka, Y. I. Moroz, N. Chiesa, R. G. Harrison, H. K. Hoidalen, "Implementation of Inverse Hysteresis Model Into EMTP—Part II Dynamic Model", IEEE TPWRD, Vol. 30, No. 5, pp. 2233-2241, 2015.
20. S. E. Zirka, Y. I. Moroz, N. Chiesa, R. G. Harrison, H. K. Hoidalen, "Implementation of Inverse Hysteresis Model Into EMTP—Part I Static Model", IEEE TPWRD, Vol. 30, No. 5, pp. 2224-2232, 2015.
21. A. H. Soloot, H. K. Høidalen, B. Gustavsen, "Influence of the winding design of wind turbine transformers for resonant overvoltage vulnerability", IEEE TRDEI, Vol. 22, Issue 2 pp. 1250- 1257, 2015.
22. A. H. Soloot, H. K. Høidalen, B. Gustavsen, "Resonant overvoltage assessment in offshore wind farms via a parametric black-box wind turbine transformer model", Wind Energy, Vol. 18, pp. 1061-1074, 2015.
23. Gustavsen, H. K. Høidalen, T. M. Ohnstad, "Field measurement and simulation of electromagnetic transients on 132 kV oil-filled submarine cables", Electric Power Systems Research 115 (2014), p. 43–49.
24. H. Soloot, H. K. Høidalen, B. Gustavsen, "Modeling of wind turbine transformers for the analysis of resonant overvoltages", Electric Power Systems Research 115 (2014), p. 26–34.
25. H. K. Høidalen, "Analysis of Pipe-type Cable Impedance Formulations at Low Frequencies", IEEE TPWRD, Vol. 28, Issue: 4, p. 2419-2427, 2013.
26. N. V. Dung, H. K. Hoidalen, D. Linhjell, L. E. Lundgaard, M. Unge, "Effects of reduced pressure and additives on streamers in white oil in long point-plane gap", J. Phys. D: Appl. Phys. 46, p. (16), 2013.
27. N. V. Dung, H. K. Hoidalen, D. Linhjell, L. E. Lundgaard, M. Unge, "Influence of impurities and additives on negative streamers in paraffinic model oil", IEEE TRDEI, Vol. 20, issue 3, pp., 2013.
28. E. Agheb, H. K. Hoidalen, "Modification of empirical core loss calculation methods including flux distribution", Electric Power Applications, IET, Vol. 7, Issue 5, p. (10), 2013.

29. N. Holtsmark, H. J. Bahirat, M. Molinas, B. A. Mork, H. K. Hoidalen, "An All-DC Offshore Wind Farm With Series-Connected Turbines: An Alternative to the Classical Parallel AC Model?", IEEE Trans. On Industrial Electronics, Vol. 60, Issue: 6, pp. 2420 – 2428, 2013.

- *Text-book chapter*

1. A. Ametani (Ed.), *Numerical Analysis of Power System Transients and Dynamic*, IET, 2015, M. Kizilcay, H. K. Hoidalen, Chapter 2 *EMTP-ATP*.

- *Selected international conference proceedings 2013-20*

1. R. E. Torres-Olguin, M. M. Saha, H. K. Høidalen, "Analysis and evaluation of Intersystem Fault in a Hybrid AC/DC Power System and its impact on the Protection System", Proc. IPST, Perpignan, France, June 16-20, 2019.
2. M. Grebla, J. Yellajosula, H. K. Høidalen," Real Time Hardware-In-The-Loop Comparison of Frequency Estimation Techniques in Application to ROCOF Based Islanding Detection", IEEE PES 2018.
3. K. Pandakov, H. K. Høidalen, J. I. Marvik, "Fast protection against islanding and unwanted tripping of distributed generation caused by ground faults". 24th International Conference and Exhibition on Electricity Distribution: CIRED 2017 - Proceedings.
4. K. Pandakov, H. K. Høidalen, "Distance protection with fault impedance compensation for distribution network with DG" IEEE PES Innovative Smart Grid Technologies Conference Europe, 2017.
5. C. M. Adrah, Ø. Kure, Z. Liu, H. K. Høidalen, "Communication network modeling for real-time HIL power system protection test bench" IEEE PES PowerAfrica, 2017, pp. 295 - 300
6. J. R. Yellajosula, S. Paudyal, B. A. Mork, S. Paravastu, H. Kr. Høidalen, "Hardware-in-the-loop (HIL) Testing of Synchrophasor Based Out-of-Step Protection", Proc. IPST, Seoul, SK, June 26-29, 2017.
7. H. K. Høidalen, V. Berg, "Analysis of distance relay tripping an industry plant due to sympathetic inrush currents", Proc. IPST, Seoul, SK, paper 95, June 26-29, 2017.
8. K. Pandakov, E. Tedeschi, H. Kr. Høidalen, "Analysis of D-STATCOM Impact on Protection of Distribution Network", Proc. IPST, Seoul, SK, paper 06, June 26-29, 2017.
9. Z. Liu, H. K. Høidalen, "A simple multi agent system based adaptive relay setting strategy for distribution system with wind generation integration", DPSP 2016, DOI: 10.1049/cp.2016.0025.
10. K. Pandakov, H. Kr. Høidalen, J. I. Marvik, "Implementation of distance relaying in distribution network with distributed generation", DPSP 2016, DOI: 10.1049/cp.2016.0021.
11. R. E. Torres-Olguin, H. K. Høidalen, "Travelling waves-based fault detection method in multi-terminal HVDC grids connecting offshore wind farms, DPST 2016, DOI: 10.1049/cp.2016.0044.
12. Z. Liu, H. K. Hoidalen, "An adaptive inverse time overcurrent relay model implementation for real time simulation and hardware-in-the-loop testing", 13th International Conference on Development in Power System Protection 2016 (DPSP), Year: 2016, DOI: 10.1049/cp.2016.0038.
13. R. E. Torres-Olguin, H. K. Hoidalen, "Inverse time overcurrent protection scheme for fault location in multi-terminal HVDC", PowerTech, 2015 IEEE Eindhoven, Eindhoven, 2015, pp. 1-6.
14. A. H. Soloot, M. Khanali, H. K. Hoidalen, S. Jayaram, "A method to detect the position of internal short circuit in power transformers", Proc. IPST'15, Cavtat, CR, paper 98, June 15-18, 2015.
15. A. Lotfi, H. K. Hoidalen, N. Chiesa, "Effect of DC biasing in 3-legged 3-phase transformers taking detailed model of off-core path into account", Proc. IPST'15, Cavtat, CR, paper 98, June 15-18, 2015.
16. H. K. Hoidalen, A. Lotfi, S. E. Zirka, Y. I. Moroz, N. Chiesa, B. A. Mork, "Benchmarking of hysteretic elements in topological transformer model", Proc. IPST'15, Cavtat, CR, paper 98, June 15-18, 2015.
17. Lotfi, Abbas; Høidalen, Hans Kristian; Chiesa, Nicola; Rahimpour, Ebrahim, "Calculation of Off-Core Inductance in Dual-Circuit Model of Transformer", 18th Power system Computations Conference – PSCC 2014. Curran Associates, Inc. 2014 ISBN 9781634394017. S. –
18. B. Gustavsen, H. K. Høidalen, T. Ohnstad: "Field Measurement and Simulation of 132 kV Oil-Filled Submarine Cables", Proc. IPST, Vancouver-Canada, July 18-20, 2013.
19. N. Chiesa, A. Lotfi, H. K. Høidalen, B. A. Mork, Ø. Rui, T. Ohnstad: "Five-leg transformer model for GIC studies", Proc. IPST, Vancouver-Canada, July 18-20, 2013.
20. A. H. Soloot, H. Bahirat, H. K. Hoidalen, B. Gustavsen, B.A. Mork: "Investigation of Resonant Overvoltages in Offshore Wind Farms- Modeling and Protection", Proc. IPST, Vancouver-Canada, 2013.
21. A. H. Soloot, H. K. Hoidalen, B. Gustavsen: "Modeling of Wind Turbine Transformers for the Analysis of Resonant Overvoltages", Proc. IPST, Vancouver-Canada, July 18-20, 2013.