JOHAN LUNDENGÅRD

Johan's specialist field is testing of various types of insulation. He has over 20 years' experience in high voltage technology for both high-voltage and high-current applications. He has worked with standard pollution tests and development of new pollution test procedures. He has performed dielectric tests on various types of high voltage equipment from circuit-breakers to HVDC valves. He has also led research projects related to glass, porcelain and composite insulators including development of innovative test methods and diagnostic methods. Furthermore, he has experience from customer-designed ice and snow tests. He is a member of Swedish IEC TC 36 "Insulators" and IEC international project team PT 63432 "Room temperature vulcanized (RTV) silicone rubber for outdoor insulators".

MAIN FIELDS OF COMPETENCE

- Pollution, type and development testing of different kinds of high voltage equipment.
- Research and dimensioning of outdoor electrical insulation for AC and DC.
- Evaluation of status of composite insulators and failure investigation.
- OHL performance studies, regarding flashover performance, electric and magnetic field and audible noise.
- HVDC valve testing.
- Temperature rise test on high voltage equipment.
- SATS inspector.

EMPLOYMENT

2019-	**Independent Insulation Group Sweden AB**, Ludvika, Sweden. Expert
2006-2018	**STRI AB**, Ludvika, Sweden. Specialist High Voltage Technology
2004-2006	**ABB High Power Laboratory**, Ludvika, Sweden. High current and short-circuit testing
2000-2004	**ABB Power Systems**, Ludvika, Sweden. HVDC valve electrical design and testing
1996-2000	**STRI AB**, Ludvika, Sweden. High Voltage Testing

EDUCATIONAL DEGREES

2002	**Bachelor of Science** Electrical engineering, Mälardalen University, Västerås, Sweden

LANGUAGES

Swedish (native), English (professional level)

LIST OF RECENT PROJECTS

2023- Maintenance of Composite Insulators.

2023- Measurements of touch voltages without de-energization, development of method and equipment.

2023 Condition assessment of composite insulators after bird damages.

2023 Condition assessment of 400 kV cables through PD-measurements.

2022/23 After-service evaluation of insulators, several projects including both composite and porcelain cap & pin type.

2022/23 Testing methods for harvesting small amounts of power from shield wires on overhead transmission lines.

2022 Measurements of touch voltages without de-energization, feasibility study.

2021 Laboratory tests of 330 and 500 kV composite insulators.

2020/23 Benchmarking of composite insulators.

2020 Comparison of composite insulator sealing technologies.

2020/23 Calculations for assessment of risks due to high operating voltage at series compensated lines.

2020 Testing and comparison of composite insulator sealing technologies.

2020 PD-measurements on MV cables in service.

2019 Third-party assessment of failure cause investigation and proposed corrective measures in cable project.

2019/22 R&D project “Icebox” on methods for prevention and removal of ice on overhead lines.

2019 Failure cause investigation of surge arrester.

2019 High voltage pollution test on insulators with biological growth.

2019 Development of rod to housing adhesion test for composite insulators.

2018 Short duration tracking and erosion test of composite insulators.

2018 Test of combined protection devices based on spark-gap and surge arrester.

2017 Inspection of new composite insulators for 130 kV transmission line.

2016 Inspection of failed composite insulators from 130 kV transmission line.

2015 Further work for improving test methods to ensure quality of cap and pin glass insulators.

2015 Flashover pollution test for coated glass cap and pin insulators.

2015 Pollution and tracking & erosion test of bushings for distribution transformers to study performance of extenders.

2015 Three phase pollution test of diamond-shape insulator arrangement for T-pylon tower.

2014 Full scale pollution and ice test of 350 kV DC insulator strings.

2014 Test for pollution curve for coated cap and pin insulators.

2013 Writing of technical requirements and CIGRE paper regarding glass insulator quality.

2013/14 Pollution tests for selection of insulation for substation.

2012/13 Evaluation of test methods to ensure quality of cap and pin glass insulators, verification of laboratory testing.

2012 Pollution performance curves acquired by pollution test of cap and pin insulators.

2012 Further investigation of method for diagnostics of porcelain insulators.

2012 Pollution performance curves acquired by pollution test of insulators in order to update LPE database.

2012 DC pollution test of composite insulators.

2011/12 Investigation of method for diagnostics of porcelain insulators.

2011/12 Evaluation of test methods to ensure quality of cap and pin glass insulators.

2012 Measurement of the transmission factor of high frequency overvoltages for voltage transformer.

2011 Analysis of surface properties of composite insulators after 1050 kV DC test.

2011 After-service test of insulators from Koeberg.

LIST OF PUBLICATIONS

A. Eklund, J. Eriksson, R. Hartings, R. Gilbert, A. Gillespie, B. Jacobson, “Pollution flashovers on wall bushings at a coastal site”, CIGRE Paper 15-102, 1998

I. Gutman, J. Lundengård, L. Wallin, A. Mjelve, T. Ohnstad, “Evaluation of old substations porcelain insulators in service: input for risk assessment and replacement options”, CIGRE Paper B3-207, 2010

I. Gutman, J. Lundengård, N. Gustavsson, A. Bosma, “Comparative Performance of Hollow Silicone Rubber and Porcelain Apparatus Insulators under Specific Ice and Salt Fog Conditions of Iceland”, IWAIS-2011, Chongqing, China, 8-13 May, paper P1_01_ID8, 2011

K. Halsan, I. Gutman, J. Lundengård, L. Carlshem, J. Velek, K. Välimaa, J. Lachman “Impact of quality of glass cap-and-pin insulators on life cycle costs and proposals for screening tests” CIGRE Paper B2-209, 2014

J-M. George, S. Prat, C. Lumb, F. Virlogeux, I. Gutman, J. Lundengård, M. Marzinotto, ”Field experience and laboratory investigation of glass insulators having a factory-applied silicone coating”, IEEE Transactions on Dielectrics and Electrical Insulation, Vol. 21, Issue 6, pp. 2594-2601, December 2014

Gutman, J. Lundengård, W. Vosloo: “Development of Time- and Cost-Effective Pollution Test Methods Applicable for Different Station Insulation Options”, IEEE Transactions on Dielectrics and Electrical Insulation, Vol. 21, No. 6, December 2014, p.p. 2525-2530

A. Dernfalk, J. Lundengård, E. Petersson, I. Gutman, K. Tucker, S. Banerjee: “Advanced test methods for full-scale ice tests of DC insulators strings intended for ±350 kV”, IWAIS-2015

I. Gutman, J. Lundengård, S. Bucan, P. Sidenvall, J.-F. Goffinet: “Trends in pollution/corona testing for compact insulation systems in the form of insulated cross-arms”, CIGRE SC D1 Colloquium, Rio de Janeiro, Brazil, 13-18th September 2015, paper 12

K. Halsan, I. Gutman, J. Lundengård: “New Test Criteria for Evaluating the Quality of Glass Insulators”, INMR World Congress, Munich, Germany, October 2015

I. Gutman, J. Lundengård: “Time-Effective Rapid Test Procedures for Pollution Testing of Different Types of Insulators”, INMR World Congress, Munich, Germany, October 2015

K. Halsan, I. Gutman, J. Lundengård, L. Carlshem, J. Velek, T. Condon, P. Shiel, J. Lachman, R. W. S. Garcia: “Proposals for additions to IEC requirements intended to verify quality of glass cap and pin insulators”, CIGRE Session 2016, B2-311

I. Gutman, J. Lundengård, M. Fairhurst: “Three-phase pollution test of diamond-shaped “suspension” insulator arrangement for T-pylon tower”, 13th INSUKON-2017, Birmingham, UK, p.p. 233-237

I. Gutman, J. Lundengård, C. Ahlrot: “Need of standardized adhesion test for composite insulators: lessons learned from service experience”, 20th ISH-2017, Buenos Aires, Argentina, 2017, paper 145

I. Gutman, J. Lundengård, V. Naidoo, B. Adum: “Technologies to reduce and remove ice from conductors and shield wires: applicability for Norwegian conditions”, IWAIS-2019, Reykjavik, Iceland, June 23-28, 2019, paper 9

I. Gutman, A. Dernfalk, P. Sidenvall, J. Lundengård: “New Test to Reveal Level of Rod/Housing Adhesion for Composite Insulators”, 21st ISH-2019, Budapest, Hungary, August 26-30, 2019, paper 749

I. Gutman, A. Dernfalk, P. Sidenvall, J. Lundengård, C. Ahlrot, P. Aparicio, A. Berlin, T. Condon, J.-F. Goffinet, K. Halsan, R. Radosavljevic, K. Varli, K. Välimaa: "Rod to Housing Adhesion in Composite Insulators: Practical Evaluation in Collaboration with Utilities", 2019 World Congress, Tucson, USA, 20-23 October 2019

B. E. Nygaard, F. K. Nyhammer, Ø. Welgaard, B. Adum, J. Lundengård, I. Gutman: “Development of sensors for real-time monitoring of ice loads on overhead lines”, CIGRE-2020, B2-103

I. Gutman, C. Ahlrot, P. Aparicio, A. Berlin, T. Condon, A. Dernfalk, J.-F. Goffinet, K. Halsan, K. Kleinekorte, J. Lundengård, M. Radosavljevic, P. Sidenvall, S. Steevens, K. Varli, K. Välimaa: “Development of Innovative Test Procedure for Evaluation of Adhesion of Core-Housing of Composite Insulators: from Root Cause of Failures in Service to Reproducible Test Procedure”, CIGRE Science & Engineering, No. 20, February 2021, p.p. 171-182

K. Varli, S. Steevens, J. Unterfinger, A. Dernfalk, I. Gutman, J. Lundengård, P. Sidenvall: “Benchmarking of sealing systems of composite insulators: ideas for innovative test methods”, CIGRE Science & Engineering, N. 25, June 2022, p.p. 108-131

I. Gutman, A. Dernfalk, J. Lundengård, P. Sidenvall, A. Deckwerth, L. Diaz, K. Halsan, M. Leonhardsberger, M. Radosavljevic, P. Trenz, K. Varli, K. Välimaa: “Test methods and criteria for validation of functional properties of composite insulators related to materials and interfaces”, CIGRE-2022, D1-10828

A. Dernfalk, C. Ahlholm, J. Lundengård, I. Gutman, M. Radojcic, B. Adum: “Countermeasures for high and extreme ice loads typical for Norwegian environment based on the concept of heating of shield wires and phase conductors”, CIGRE-2022, B2-10515

I. Gutman, J. Lundengård, P. Sidenvall, A. Deckwerth, L. Diaz, J.-F. Goffinet, K. Halsan, M. Leonhardsberger, M. Radosavljevic, P. Trenz, K. Varli, K. Välimaa, M. Heath, R. Davey, W. Vosloo: “Condition assessment of line composite insulators: after-service test programs and their practical application”, CIGRE Science & Engineering, N. 28, 2023, p.p. 1-37

I. Gutman, J. Lundengård, M. Heath, C. Kurniawan: "Evaluation of reliability of OHL through inspection-based maintenance of composite insulators", CIGRE Colloquium, 3-7 October 2023, Sendai, Japan, paper 5287958