
CURRICULUM VITAE

Sander Meijer

Principal consultant / inspector



1. Personal statistics

Citizenship: Dutch

Date of birth: May 18, 1971

2. Language capabilities

Language	Speaking	Reading	Writing
Dutch	Excellent	Excellent	Excellent
German	Fair	Fair	Basic
English	Excellent	Excellent	Excellent

3. Academic and professional attainment

Field of expertise	University/School	Year
PhD High Voltage Technology	Delft University of Technology	Oct 1995 - Nov 2001
MSc Electrical Engineering	Delft University of Technology	Sep 1992 - Sep 1995
BSc Electrical Engineering	College of Technology	Sep 1988 - Jul 1992

4. Summary of professional experience

During his time at Delft University of Technology, Dr. Meijer was active in the introduction, the development and execution of UHF and VHF partial discharge measurements on GIS, power cable systems and power transformers in the Netherlands.

When working at TenneT, he was responsible for the life-cycle management of power cable systems. He developed policy documents with respect to functional specifications, maintenance strategies, reconstruction philosophy, health index and condition assessment, spare parts and maintenance and repair contracts and remaining life assessments.

As Principal Consultant at DNV GL, he was involved in projects dealing with the complete life cycle of power cable systems (land and submarine), from feasibility studies and conceptual designs, quality surveillance services (QA/QC) to remaining life estimation, health indexing and power failure investigations.

He has worked on power cable projects with multiple manufacturers and utilities worldwide, covering HVDC and HVAC cable technology, interconnectors, submarine cables to wind farms and oil and gas platforms and quality acceptance and control.

He has verified the design and production of several (submarine) power cable systems, conducted audits on cable manufacturer's type test equipment and programs, witnessed factory and site acceptance tests of (subsea) power cables (including fibre optics and cable lay-up facilities) and (subsea) and was involved in technology qualification projects.

He is one of the DNV GL lecturers for several training courses: "Ampacity and Engineering Aspects of Power Cables", "Asset Management, Maintenance and Remaining Life of High and Extra High-Voltage Cables", "HVDC Power Cable", "HVDC Submarine Power Cable" and "Submarine Power Cable".

At present, he is the Dutch representative in CIGRE study committee B1 "Insulated Cables".

5. Professional training

Year	Institute	Description
Feb 2015 - Feb 2015	DNV GL	Project Management - The Energy Way
Oct 2014 - Feb 2015	DNV GL	Consultancy Development Program
Oct 2013 - Nov 2013	Huthwaite International B.V.	SPIN Selling
Oct 2012 - Oct 2012	PBNA	VOL-VCA
Oct 2010 - Nov 2010	Bureau Zuidema	Influence in Communication
Sep 2010 - Dec 2011	Hays	Development Professionals
Sep 2008 - May 2009	IPOM Opleidingen	Maintenance Management
Jan 2006 - Jun 2007	Delft University at Technology	Basic Qualification for Teaching at Universities
Aug 2004 - Mar 2005	Delft University of Technology	Skills for activating students

6. Employment record

Ep-ics **March 2018 – present**

Position: Owner, Consultant and Inspector

- Design review (submarine) cable systems
- Develop and review of (PQ, type, factory acceptance) test programs and ITPs for (submarine) cable systems
- Review of Test Reports and Range of Type Approval assessments
- (Daily) Manufacturing Quality surveillance services (QA/QC) on (subsea) cable systems
- Factory audits and manufacturing verification audits for (subsea) cable systems
- Owner's representative during (PQ, type, factory acceptance) tests
- Risk management support during designing, manufacturing, testing, cable handling and installation of (subsea) cable systems
- HVDC and HVAC (submarine) cable systems
- Training on HVDC and HVAC (submarine) cable systems

DNV GL **Feb 2012 – present**

Position: Principal Consultant / Inspector (March 2018 – present)
Senior Consultant / Inspector (Feb 2012 – March 2018)

- Design review (submarine) cable systems
- Develop and review of (PQ, type, factory acceptance) test programs and ITPs for (submarine) cable systems
- Manufacturing Quality surveillance services (QA/QC) on (subsea) cable systems
- Factory audits and manufacturing verification audits for (subsea) cable systems
- Risk management support during designing, manufacturing, testing, cable handling and installation of (subsea) cable systems
- Technology qualification to certify innovative solutions
- Feasibility studies of (submarine) cable systems
- HVDC and HVAC (submarine) cable systems

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- Training on HVDC and HVAC (submarine) cable systems

TenneT TSO BV

2008 - 2012

Position: Strategist Asset Management

- Responsible for the life-cycle analysis of power cables
- Responsible for the life-cycle analysis of surge arrestors
- Functional specifications of power cables
- Policy and decision making with respect to power cables
- Project leader of health index of all high-voltage assets
- Project leader scientific research on issues related to apply long 380 kV cable systems in meshed grids
- Organizer of symposia

Delft University of Technology

1999 - 2007

Position: Assistant professor

- Organisational activities in education BSc and MSc
- Research in condition-based maintenance of high-voltage equipment
- Conventional and un-conventional partial discharge measurements on GIS, power cables and power transformers
- Development of VHF partial discharge measuring system for power cables
- Consultancy of utilities during Factory Acceptance Tests of GIS, power cables and power transformers
- Supervising PhD and MSc-students during their thesis-projects

7. Detailed professional experience

Different cable trainings, 2012-2018

Client: Several

Country: Several

Position: Trainer

Description: Trainings on cable related aspects

Activities performed: Cable engineering and ampacity (yearly from 2012 – 2017), HVDC power cable systems (2015, 2016), Asset Management, Maintenance and remaining life of (E)HV power cables (2017) HVDC submarine power cable systems (2018).

Projects

500 kV MI HVDC Prequalification Test plan, 2018

Client: DNV GL / KEPCO

Country: The Netherlands / South Korea

Position: Consultant

Description: Technical support during preparation of a prequalification plan for 500 kV mass-impregnated HVDC (submarine) cables

Activities performed: Document review, technical discussions

Partial discharge measurements on 380 kV gas-insulated switchgear, 2018

Client: DNV GL / CLPP
Country: The Netherlands / Hong Kong
Position: Inspector / consultant
Description: Conducting of UHF partial discharge measurements and risk assessment of 380 kV GIS

Activities performed: UHF time-of-flight measurements, analysis of data, risk assessment

220 kV submarine export cable verification, 2018

Client: Tideway B.V.
Country: The Netherlands
Position: Inspector / consultant
Description: Technical support during production of 40 km 220 kV submarine cable
Activities performed: Document review, NCR discussions, factory quality audits

150 kV submarine export cable verification, 2018

Client: Rampion offshore windfarm
Country: United Kingdom
Position: Project manager / inspector / consultant
Description: Verification of the design, production and type testing of a 16 km long AC submarine export cable to connect an offshore windfarm to shore

Activities performed: Document review, risk management, production verification

Basic design and cable specification of 150 kV cable connection, 2016 – 2018

Client: TenneT TSO B.V.
Country: The Netherlands
Position: Project manager / consultant
Description: Basic design and cable specification of several (around 15) 150 kV and 380 kV cable connection

Activities performed: Basic design (current rating calculations, induced voltage calculations, magnetic field calculations, etc), support during development of tender documents, cable specification, support during cable tendering process

Audit to 400 kV Type test laboratory, 2017

Client: Singapore Power
Country: Singapore
Position: Inspector
Description: Verification of the type test capabilities of two cable suppliers

Activities performed: Review of historical type test reports conducted at the same facilities, preparing checklist, type test facility audit, following up on found non-conformities

Benchmarking study Fire Management System in Common Utility Tunnel, 2017

Client: TNB
Country: Malaysia
Position: Project manager / consultant
Description: Recommendation for fire management system in common utility tunnel

Activities performed: Literature review, benchmarking study under advanced power utilities, fire prevention methods for underground cable in tunnel, detection systems, recommendations for fire management system

33 kV submarine array cable production verification, 2016 -2017

Client: Tideway B.V.
Country: The Netherlands
Position: Project manager / inspector / consultant
Description: Verification of the production process of 33 kV submarine array cables
Activities performed: Document review, production verification, factory audit

150 kV submarine export cable verification, 2016 - 2017

Client: Rampion offshore windfarm
Country: United Kingdom
Position: Project manager / inspector / consultant
Description: Verification of the design and production of a 16 km long AC submarine export cable to connect an offshore windfarm to shore
Activities performed: Document review, verification visits at start-up of each production phase and factory joint, risk management

Failure investigation optic cable inside submarine cable, 2016 - 2017

Client: Confidential
Country: Confidential
Position: Inspector / consultant
Description: Failure investigation to explore root causes for fibre optic cable deformations and breakages
Activities performed: Cable dissection in the field, detailed dissection of samples in laboratory

Review submarine cable design documents, 2016 - 2017

Client: VBMS
Country: The Netherlands
Position: Project manager
Description: Design document review
Activities performed: Review of different design documents for 33 kV array cables

33 kV submarine array cable verification, 2016

Client: VBMS
Country: The Netherlands
Position: Project manager / consultant
Description: Verification of the design and type testing of 33 kV array cables
Activities performed: Document review, discussion with supplier on behalf of client

Conceptual design of a 380 kV generator cable connection, 2016

Client: Confidential
Country: The Netherlands
Position: Project manager / consultant
Description: Development of 380 kV XLPE cable conceptual design including background studies.
Activities performed: Development of 380 kV XLPE cable conceptual design including background studies on basic insulation level, magnetic fields, earthing and bonding, trench design, QA/QC process and system design.

Starting-up submarine cable factory, 2016

Client: Twentsche Kabelfabriek
Country: The Netherlands
Position: Inspector / consultant
Description: Support during the start-up of a new submarine cable factory
Activities performed: Acting as first client, review of design documents

Due diligence offshore wind farm, 2015 - 2016

Client: Confidential
Country: Confidential
Position: Cable expert
Description: Providing cable expertise in the due diligence process for the selling party
Activities performed: Review of export cable project documentation to assess fit-for-purpose

Second opinion on feasibility study unbundling cable circuits, Jan 2015 - Mar 2015

Client: TenneT TSO B.V.
Country: The Netherlands
Position: Project Manager
Description: A second opinion was formed for a feasibility study on the intention of TenneT to unbundle one cable circuit consisting of 2 cables per phase in a hexagonal configuration into two separately operating cable circuits.
Activities performed: Review of feasibility report, check of current rating calculations using Cymcap, review of operating configurations, check of induced voltages and currents using EMTP and review and update of risk analysis.

Review TenneT Wind op Zee, 2015

Client: TenneT TSO B.V.
Country: The Netherlands
Position: Consultant
Description: Review of cost estimate grid at sea development.
Activities performed: Review of cost estimate for power cables

500 kV HVDC MI Cable design review, 2014 - 2017

Client: KEPCO
Country: South Korea
Position: Project manager / consultant
Description: Verification of design and installation documents of 500 kV MI Cable project
Activities performed: Design document review, review of test programs, review of test- and inspection plans

400 kV Cable project, 2014 - 2018

Client: Singapore Power

Country: Singapore

Position: Project Manager

Description: Development of 400 kV XLPE cable specification including background studies, document review and support during production.

Activities performed: Development of 400 kV XLPE cable specification including background studies on basic insulation level, magnetic fields, special test conditions, monitoring system, oil-filled to XLPE transition joints, earthing and bonding, cooling, installation, trench design, link box design, risk for fire and fire prevention, QA/QC process, O&M procedures and end-of-life assessment. Support during design document review for four different suppliers, audits to the production facilities.

115 kV AC submarine cable stranding issues, 2014

Client: TenneT Offshore GmbH

Country: Germany

Position: Inspector / consultant

Description: During lay-up of the cable cores and fibre optic cables, some cabling occurred during the transportation to the armouring machine.

Activities performed: Investigation of the problem, check against the relevant IEC standards and CIGRE recommendations, defining special test program to ensure proper quality, supporting client during negotiations with respect to special test program.

Feasibility onshore power supply, 2014

Client: Confidential

Country: Confidential

Position: Consultant

Description: Feasibility study towards connecting an off-shore oil-platform to the grid by a submarine power cable and overhead line

Activities performed: Off-shore and on-shore cable and overhead line routing for different alternatives, cable dimensioning for off-shore and on-shore cables, thermal bottleneck analysis, basic design of overhead line to cable transition points and submarine to land cable transition joint pit, cost estimate of different alternatives.

Electrical and installation Basis of Design for submarine export cable OWF Taiwan, 2013 - 2014

Client: Taiwan Generations Corporation

Country: Taiwan, Province of China

Position: Project manager

Description: Drafting the requirements for submarine cable installation, cable route selection and cable dimensioning.

Activities performed: Review of seabed surveys, routing of the submarine export cable, basis of design for cable installation and cable specification

Submarine cable and installation Basis of Design OWF USA, 2013 - 2014

Client: LEEDCo
Country: United States of America
Position: Project manager
Description: Specifying the export cable route, installation methods, submarine cable including a cost-benefit analysis to select the most feasible solution.

Activities performed: Routing of a 36 kV submarine export cable from offshore windfarm to shore, including alternatives for crossing the harbor and shore, Evaluation of shore/harbor crossing alternatives, Installation alternatives and evaluation, Drafting the submarine cable specification, Making a cost-benefit analysis for different alternatives.

Quality control 132 kV 100 km submarine power cable, 2013 - 2017

Client: Confidential
Country: Confidential
Position: Inspector / consultant
Description: Verifying specifications, type test programs and inspection and test programs for a three-core 132 100 km long submarine cable

Activities performed: Verification of power cable and optical cable specifications, Verification of power cable and optical cable inspection and test programs, Verification of production processes, Owner's representative during testing.

RTTR for distribution transformers, Nov 2013 - Mar 2015

Client: Scottish Power
Country: United Kingdom
Position: Project manager
Description: Aim is to provide a 20% increase in network capacity through enhanced monitoring and analysis to precisely determine existing performance, and the deployment of novel technology for improved network operation – including flexible control and dynamic rating.

Activities performed: Condition assessment of eight 33/11 primary distribution transformers to check "fit for dynamic rating", development of thermal model based on IEC 60067-7 (Loading guide), assessment of thermal behavior of selected transformers based on actual load profiles and ambient temperature profiles, finding loading limits by scaling current loading profile and superimposing additional load profiles from charging electrical cars, electrical heating and generation from photovoltaic

Backfilling materials study - Low thermal resistivity for MV cable installations, Mar 2013 - Feb 2015

Client: DEWA
Country: United Arab Emirates
Position: Project manager
Description: Improving the cable rating of the medium voltage grid of DEWA by improving the soil conditions of the cables, using local available materials.

Activities performed: Theoretical description of thermal properties of soils, laboratory investigations on different soil samples to define the optimal soil mixture, specifying the soil mixture, writing the quality assurance and quality control measures to ensure the delivered soil mixtures complies to the specification, writing installation guide for backfilling materials, supervision during pilot project where the original soil in an existing cable trench was replaced by the specified backfilling material, installation of a temperature monitoring system and data analysis.

Feasibility study floating submarine cable, Feb 2013 - Jun 2013

Client: DNV KEMA
Country: Norway
Position: Consultant
Description: Internal innovation project – functional design of a floating submarine cable

Activities performed: Brainstorm and evaluation of technical solutions, drafting functional specification for the electrical part of floating cable, thermal rating calculations

Technical assessment HVDC submarine cable, 2013

Client: Confidential
Country: Confidential
Position: Consultant
Description: Technical assessment HV DC submarine cable

Activities performed: Review of studies, surveys, cable system design and cable specifications.

EMF considerations HVDC submarine cable, Aug 2012 - Sep 2015

Client: Mutual Energy
Country: Ireland
Position: Project manager
Description: Electric and magnetic field considerations with respect to a reconfiguration of two HVDC submarine cables

Activities performed: Calculation of magnetic fields, assessment of compass deviation, review of regulations, return cable routing feasibility study.

Quality assurance / quality control high-voltage cable joints, 2012 - 2013

Client: Confidential
Country: Confidential
Position: Inspector / consultant
Description: Quality assessment of high-voltage cable joints manufacturing process after several failures in the field
Activities performed: Factory audit to analyse the QA/QC measures, Identification and reporting of flaws in the QA/QC implementation.

HVAC submarine cable specification, 2012 - 2013

Client: Elia
Country: Belgium
Position: Project manager
Description: Drafting of a technical and laying specification for HV submarine cables
Activities performed: Drafting technical specification HVAC submarine cable, Review laying specification HVAC and HVDC submarine cable.

Quality assurance submarine cables Luchterduinen wind farm, 2012

Client: Eneco Wind
Country: The Netherlands
Position: Consultant
Description: Review of cable tender documents.

Second opinion cable current rating, Jun 2012 - Sep 2012

Client: Lanxess N.V.
Country: Belgium
Position: Project manager
Description: Second opinion on a cable current rating in an industrial area
Activities performed: Soil investigation, current rating calculations, reporting

Magnetic field evaluation around submarine HVDC interconnector cable, Jun 2012 - Aug 2012

Client: EirGrid
Country: Ireland
Position: Consultant
Description: Evaluation of the magnetic fields around an HVDC submarine interconnector cable due to DC and DC ripple currents
Activities performed: Setting up calculation, gathering information from client and manufacturer, evaluation against ICNIRP guidelines.

Engineering NW380, Apr 2012 - Sep 2015

Client: TenneT TSO B.V.
Country: The Netherlands
Position: Packet manager cable
Description: Basic engineering of the 110 kV and 220 kV cable parts
Activities performed: Magnetic field evaluation, cable dimensioning, draft planning, budget planning.

380 kV Cable Monitoring, Feb 2012 - Oct 2012

Client: TenneT TSO B.V.
Country: The Netherlands Position: Project leader
Description: Specifying and reviewing of technical specifications and tendering documents of a monitoring system
Activities performed: Drafting functional specifications, review of technical specifications, review of tender documents for the delivery of a condition monitoring system for a 380 kV cable system.

Health index high voltage assets, 2009 - 2012

Client: TenneT TSO B.V.
Country: The Netherlands
Position: Strategist Asset Management
Description: The introduction of the health index in the maintenance process of TenneT's assets.
Activities performed: Project manager on TenneT side to guide the development of the health index tool build by KEMA, Yearly execution of the health index on the TenneT assets, Definition of the functional requirements for the development of an IT-tool to automate the health index within TenneT, Project leader in the development of the Health index IT-tool.

Life-cycle policy of power cables, Jan 2008 - Jan 2012

Client: TenneT TSO B.V.
Country: The Netherlands
Position: Strategist Asset Management
Description: Development of the life-cycle policy of power cables within TenneT.
Activities performed: Describing and establishing:

- the general functional requirements of power cable systems
- the maintenance activities for power cable systems
- the requirements for restoration of failed power cables
- the health index determination of power cables
- the reconstructions procedure for power cables.

VHF PD measurements on Power Cables, 2004 - 2007

Client: Pirelli (Prysmian)
Country: The Netherlands
Position: Consultant
Description: Development of a very-high frequency partial discharge measurement system to be applied on power cables
Activities performed: Development of a measurement system, Performing measurements in the high-voltage laboratory of Pirelli, Performing field measurements at several utilities in the Netherlands, Spain, Italy and the UK.

8. Publications and papers

1. S. Meijer, Partial Discharge Diagnosis of High-Voltage Gas-Insulated Systems, PhD Thesis, ISBN 90-77017-23-2, 2001.
2. S. Meijer, R. de Graaff, F.H. de Wild, S. Hemphill, M. McGuckin, Impact of HVDC Cable Configuration on Compass Deviation, Jicable, Jun 22, 2015
3. S. Meijer, F.H. de Wild, A. Al Aghbari, M. Al Neami, M. Ashaar, M. Jaber, Enhanced medium voltage cable ratings by improving cable trench design and thermal conditions, Jicable, Jun 22, 2015
4. S. Meijer, P. van der Wielen, M. Vermeer, J. Wetzer, E. de Haan, Underground Power Cable Health Indexing and Risk Management, Jicable, Jun 22, 2015
5. S. Meijer, F.H. de Wild, W. Boone, W. Peat, M. Wright, K. Smith, Dynamic rating to support safe loading of distribution transformers, CIGRE, Jun 15, 2015
6. S. Meijer, F.H. de Wild, G.R. Kuik, J. ter Haar, R. Ross, V. Waschke, Impact of QA/QC on the Successful Commissioning of Long 380 kV XLPE Cable Systems, CIGRE, Aug 25, 2014
7. U. Schichler, W. Koltunowicz, F. Endo, K. Feser, A. Girodet, H. Hama, L. Lundgaard, S. Meijer, C. Neumann, S. Okabe, J. Pearson, R. Pietsch, U. Riechert, S. Tenbohlen, B. Hampton, J. Lopez-Roldan, Risk Assessment on Defects in GIS Based on PD Diagnostics, IEEE Transactions on Dielectrics and Electrical Insulation, Dec 02, 2013
8. R. Kuik, S.M. Gargari, R. Ross, J.P.W. de Jong, S. Meijer, Condition monitoring of long 380 kV XLPE cables in a meshed grid, CIGRE Romanian National Committee, Sep 02, 2013
9. S. Meijer; J. de Jong; J. Smit; B. Tuinema; H. Lugschitz; G. Svejda; M. Klein; W. Fischer; C. Henningsen; A. Gualano, Availability and risk assessment of 380 kV cable systems in transmission grids, CIGRE, Jan 01, 2012
10. S. Meijer; J. Smit; X. Chen; E. Gulski, Monitoring facilities for failure rate reduction of 380 kV power cables, Jicable, Jan 01, 2011
11. S. Meijer; J. Smit; X. Chen; W. Fischer; L. Colla, Return of experience of 380 kV XLPE landcable failures, Jicable, Jan 01, 2011
12. S. Meijer, P. Agoris, E. Gulski, P.P Seitz, T.J.W.H. Hermans, L. Lamballais, Condition assessment of power cable accessories using advanced VHF/UHF PD detection, IEEE ISEI, Jan 01, 2006