

Steel and Fiber Ropes Seminar

Topics: Rope properties, performance, service life, regulations, inspection, maintenance and disposal.

SPECIALIST
SEMINAR

September 21-23, 2016
Kristiansand, Norway



Registration:
deltager.no/ropes2016

ORGANIZER:



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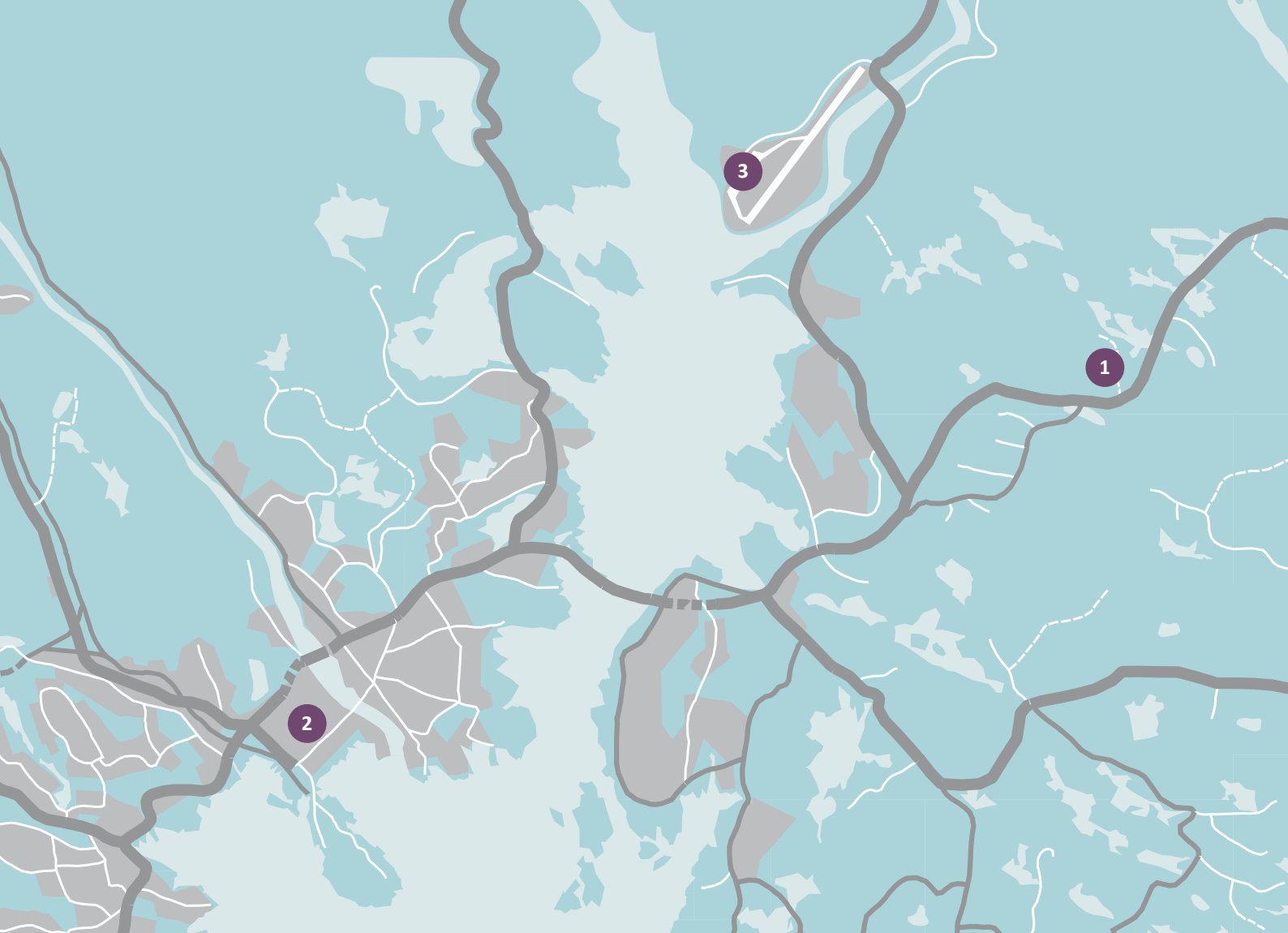




World-class competence on ropes

Teknova is proud to present some of the world's most regarded ropes experts in a specialist seminar in Kristiansand, Norway. For three days, we aim to bring forward the technical, safety and regulation aspects of steel and fiber ropes.

The seminar will be punctuated by technical talks and case studies. The targeted audience includes managers, chief scientists and rope users. The communication level at the workshop will be adapted to non-specialists.



Map of Kristiansand

- 1: Abra Havn (Kristiansand Zoo)
- 2: Downtown Kristiansand
- 3: Kjevik Airport

Aye, aye Captain!

Seminar Venue: Abra Havn (Kristiansand Zoo)

The pirate village Abra Havn is an extraordinary setting for our specialist seminar. Not only will we meet in the village, we will also stay and sleep here.

Come experience a very special atmosphere. Buildings and streets have that centuries-old look and feel, but Abra Havn still provides the comfort and modern facilities you are accustomed to.

Abra Havn is part of Kristiansand Zoo and Amusement Park, which is Norway's most frequently visited attraction covering an area of 150 acres of wild Nordic terrain.

Kristiansand Zoo is totally different from other European zoos. In Kristiansand, animals have wide open spaces in which to roam. However, visitors are still able to get up close to observe some of the most beautiful animals.



Program

September 21 | **Day 1** | Focus on Steel Ropes | Location: Abra Havn

08:30-09:00 Workshop registration and coffee

09:00-09:10 Opening address by Dr. Thomas J.J. Meyer, Business Development Manager at Teknova.

Session 1

09:10-10:00 **Steel Wire Ropes by Roland Verreet**

Topics in relation to this session: How does a steel wire rope work, Failure cases, Wire rope history, Strands and ropes, Wire rope design, Wire contact within the rope, Wire rope manufacture, Wire rope testing (strength and fatigue testing), A new and innovative bending fatigue machine. Audience shall decide on the topic(s) they would like to cover during the time allocated to the session.

10:00-10:10 *Coffee*

Session 2

10:10-12:00 **Steel Wire Rope Service Life by Roland Verreet**

Topics in relation to this session: Wire rope fatigue, The most stressed rope zone, How to calculate wire rope fatigue life, The Donandt force, The largest cranes on earth, Design of the reeving system according to DIN and ISO, Convergent evolution, The scale effect. Audience shall decide on the topic(s) they would like to cover during the time allocated to the session.

12:00-13:00 *Lunch (included in the seminar)*

Session 3

13:00-15:00 **Components of a Reeving System by Roland Verreet**

Topics in relation to this session: Sheaves, Rollers, Single layer drum, Multilayer drums, Contact conditions on sheaves and drums, Wire rope end connections. Audience shall decide on the topic(s) they would like to cover during the time allocated to the session.

15:00-15:10: *Coffee*

Session 4

15:10-17:00

Steel Wire Ropes Inspection by Roland Verreet

Topics in relation to this session: Rope inspection (who, when, where, why, and which way, ISO 4309), Visual inspection: What can you see? The fatigue distribution in 1 to 8-part reeving systems, NDT (Magnetic testing and automated visual inspection).

Audience shall decide on the topic(s) they would like to cover during the time allocated to the session.

19:00

Dinner (included for those under the full board option, possibility to attend for the all seminar participants, please register).

- Please note that session content may be adjusted during the day based on feedback from the audience.

September 22 Day 2 | Location: Abra Havn

Session 5

09:00-10:00

Steel Ropes Working at Great Depths (offshore and mining) by Roland Verreet

Topics in relation to this session: Reeving systems in deep shaft mines, The double drum capstan, Ropes with variable lay lengths, The future of steel wire ropes and hybrid ropes, Traction sheaves versus multilayer drums.

Audience shall decide on the topic(s) they would like to cover during the time allocated to the session.

10:00-10:10

Coffee

Session 6

10:10-12:00

Block Rotation by Roland Verreet

Topics in relation to this session: Rotation resistant ropes, The use of a swivel, Twisting of the hook block, The mystery of the hook block, Wire rope installation on an offshore crane, Grab ropes, Wire rope efficiency, How to calculate the minimum hook block weight, Catenaries, The motorized swivel.

Audience shall decide on the topic(s) they would like to cover during the time allocated to the session.

12:00-13:00

Lunch (included in the seminar)

Session 7

13:00-15:00

Other Subjects by Roland Verreet

Topics in relation to this session: Safety aspects, Design optimization of reeving system.

The energy stored in a steel wire rope, Heave compensation.

Audience shall decide on the topic(s) they would like to cover during the time allocated to the session.

15:00-15:10

Coffee

Session 8

15:10-17:00

Fiber Ropes: Material Properties by Nick O'Hear and Steve Banfield

Topics covered in this session: Steel, High Modulus Fibres, Traditional Fibres, Tensile strength, Specific Gravity, Creep, Thermal and Chemical Resistance, Abrasion Resistance, Coefficient of Friction.

17:00-18:00

Break

18:00-19:30

Evening visit at Zoo. Locals and guests are invited to bring kids (included in the seminar).

19:30

Special dinner at the Zoo (included for those under the full board option, possibility to attend for the all seminar participants, please register).

- Please note that session content may be adjusted during the day based on feedback from the audience.

September 23 Day 3 | Focus on Fiber Ropes | Location: Abra Havn

Session 9

08:00-09:00

Overview of Fiber Rope Design Theory by Nick O'Hear and Steve Banfield

Topics covered in this session: Strength Translation, Modulus Mathematics, Torque & Rotation, Creep.

Session 10

09:00-10:00

Fiber Rope Design by Nick O'Hear and Steve Banfield

Topics covered in this session: Parallel Yarn, Parallel Strand, Wire Rope Construction, Braided & Plaited, Load Sharing.

10:00-10:10

Coffee

Session 11

10:10-11:00 **Fiber Rope Properties by Nick O’Hear and Steve Banfield**

Topics covered in this session: Basic rope properties.

Session 12

11:00-12:00 **Internal Wear Bi-Variate Regression by Nick O’Hear and Steve Banfield**

Topics covered in this session: Internal wear mechanism in polyester and nylon, Bi-variate regression equations to predict strength loss with cycles and load range.

12:00-13:00 *Lunch (included in the seminar)*

Session 13

13:00-14:00 **Overview of Rope Manufacturing by Nick O’Hear and Steve Banfield**

Topics covered in this session: Manufacturing Machines, Length Control, Strength.

Session 14

14:00-15:00 **Fiber Rope Performance by Nick O’Hear and Steve Banfield**

Topics covered in this session: Tension-Tension Fatigue, Cycling over Sheaves, Winchability, D:d Ratio, Fleet Angle & Twist.

15:00-15:10 *Coffee*

Session 15

15:10-16:00 **Fiber Rope Specification, Testing and Inspection by Nick O’Hear and Steve Banfield**

Topics covered in this session: Purchasing Specification, Factory Testing, Rope Inspection.

Session 16

16:00-17:30 **Fiber Ropes Applications by Nick O’Hear and Steve Banfield**

Topics covered in this session: Riser Protection Nets, Vessel Mooring, Platform & Rig Mooring, Taut Leg, Catenary, Lifting, Marine Growth.

19:00 *Dinner (included for those under the full board option).*

- Please note that session content may be adjusted during the day based on feedback from the audience.



Steve Banfield

Steve Banfield is a chemist and mechanical engineer who trained in ropemaking and design with fifteen years service for one of Europe's leading manufacturers of synthetic fiber rope. He has been with Tension Tech International since 1987 and served at various positions like Project Manager, and Technical Director. He has designed novel mooring systems for oil and gas markets, renewables and breakwaters using synthetic fibre ropes, wire and chain. He has promoted and managed several world leading joint industry projects in research and development for mechanical properties of fibre ropes. He has also been expert witness on failure of fibre ropes in leisure, civil, marine, shipping and oilfield cases.



Nick O'Hear

Nick O'Hear is an electrical engineer with wide experience in the fiber, rope and cable industry. He was a pioneer in the application of Kevlar aramid fiber and Dyneema HMPE fibre in marine ropes and cables. His studies greatly improved the service life of steel- and fiber-reinforced electromechanical cables. He has many years experience in designing high performance ropes and cables using Kevlar and other modern fibers. He is currently assisting the Marine Accident Investigation Branch (UK) on HMPE mooring line failures.



Roland Verreet

Roland has more than 40 years of experience in the design, production and application of steel wire ropes. Roland has studied Mechanical Engineering at the RWTH Aachen University in Germany and subsequently worked for 10 years as Technical Director of the largest German special wire rope producer. In 1984 Roland founded Wire Rope Technology Aachen (www.ropetechnology.com), where he works as a self-employed engineer, doing consultancy work for rope manufacturers, crane manufacturers and steel wire rope users. Roland is a past president of OIPEEC, the international organization for the fatigue study of rope, and he lectures on “Ropes and Reeving Systems” at the University of Clausthal, the place where steel wire rope was invented in 1834.

Teknova is an independent non-profit institute for applied R&D. Its core competences include the fields of *Smart Instrumentation, Modelling & Simulation, and Energy & Environmental Technologies*. A team of talented and dedicated researchers working at the forefront of scientific innovation, bring forward solutions that create value to the customers - mainly within the process, oil & gas, and cleantech industries.

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