

An aerial photograph of a rocky coastline. The water is clear and shallow, revealing the dark, jagged rocks beneath. The water's surface is textured with ripples and reflections of light. The overall color palette is dominated by various shades of green and blue.

12th Nordic

Wastewater Conference

14-16 November 2011, Helsinki

Contents and aims of the conference

The Nordic Wastewater Conference is now being arranged for the twelfth time. The conference has developed over time and its contents have become broader and more diverse. In previous conferences the main emphasis was on wastewater treatment processes and nutrient removal. Nowadays the conference program includes themes related to sewerage networks, stormwater management and utility management. Conference topics within wastewater treatment include current challenges such as harmful substances, the use of waste grinders in households, and energy saving and recovery. We hope to maintain the conference as a venue for exchanging practical knowledge and information, where participants have the opportunity to learn from each other's experiences and practices.

Welcome!

On behalf of the Program committee
Sajjariina Toivikko

Venue and transport

Marina Congress Center is located in Katajanokka in the center of Helsinki, about 2 km from the Helsinki Central Railway Station.

Marina Congress Center address: Katajanokanlaituri 6 • www.marinacongresscenter.com

Registrations and fees

Fees (VAT included)	Early fee31 August 2011, at the latest	Late fee1 September 2011, and after
Delegate fee	700 €	750 €
Speaker fee (2/3,lecture day free)	470 €	520 €
Student fee	525 €	525 €

Please register online:

www.vvy.fi/NWC2011

The conference fee includes a book containing a copy of the papers, lunches, coffee, a reception at the Town Hall, conference dinner and an excursion.

Questions about registration and cancellations

TAVI Congress Bureau

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More information: www.vvy.fi/NWC2011



Program

Conference languages

The parallel sessions (marked with letter b in this program) on 15 November will be in English without interpretation. Other presentations will be held in Swedish, Danish, Norwegian or Finnish. Simultaneous interpretation is available at the conference. Swedish, Danish and Norwegian presentations will be interpreted into Finnish and Finnish presentations will be interpreted into Swedish. The slides in the lectures are in English.

14 November

10.00 - 12.45 Registration and poster set-up

11.30 - 12.45 Lunch

12.45 - 13.00 Opening of the conference

- *Seppälä Osmo, Managing Director, FIWA*

13.00 - 14.00 Opening session

13.00 - 13.30 A Nordic view on the challenges for the European water sector

- *Larsen Carl-Emil, President of EUREAU, DANVA*

13.30 - 14.00 HELCOM - International co-operation for the Protection of the Baltic Sea

- *Forsius Kaj, Project Manager, HELCOM -*

Baltic Marine Environment Protection Commission

Coffee break

14.30 - 16.00 Session 1 Hazardous substances

14.30 - 14.50 Fate and transport of pharmaceuticals through the waste water system and treatment plants; results from the Pharmatreat project

- *Hilliges Rita, Norwegian Institute for Water Research (NIVA)*

14.50 - 15.10 Heavy metal separation during sewer system flushing

- *Frenzel Marcus, Stockholm Water*

15.10 - 15.30 Identification of sources and estimation of inputs to the Baltic Sea - Finnish results

- *Mehtonen Jukka, Finnish Environment Institute*

15.30 - 15.50 Innovative approaches to controls of hazardous effects (COHIBA project WP3)

- *Nakari Tarja, Finnish Environment Institute*



- 15.50 - 16.00 Detection of design drugs in waste water:
a pilot study in Helsinki
• *Kankaanpää Aino, National Institute for Health and Welfare*

Break

16.30 - 17.40 Session 2 Integrating waste and waste water

- 16.30 - 16.50 The incompatibility of food waste disposers with an aging sewer -
fact or fiction?
• *Mattsson Jonathan, Urban Water Research group,
Luleå University of Technology*
- 16.50 - 17.10 Integrating waste treatment with wastewater treatment
• *Jacobsson David, Fredriksson Ola, Norlander Britt-Inger,
Water and waste administration, Göteborg Vatten,
Gryaab, CIT Urban Water Management*
- 17.10 - 17.30 Sustainability assessment of installing food waste disposers
in Danish homes
• *Strandbaek Helle, Aalborg Forsyning, Kloak A/S*
- 17.30 - 17.40 Effects of full scale anaerobic co-digestion
of organic waste and municipal sewage sludge at
Himmerfjärdes WWTP
• *Örnmark Jannice, SYVAB*

19.30

Welcome reception in the Town Hall

15 November

8.30 - 10.00 Session 3a Stormwater management

- 8.30 - 8.50 Advanced stormwater treatment, why, when and how
• *Vollertsen Jes, University of Aalborg*
- 8.50 - 9.10 Long-term performance of a porous asphalt pavement in Luleå
• *Blecken Godecke, Luleå University of Technology*
- 9.10 - 9.30 Action plan for urban drainage system and wastewater treatment
in a small city - examples from Råneå, Norrbotten
• *Bäckström Magnus, Water and Environment Consultants*
- 9.30 - 9.50 Stormwater biofiltration in a cold climate -
a lysimeter study in Finland
• *Valtanen Marjo, University of Helsinki*
- 9.50 - 10.00 New method of treatment of CSOs
• *Bonnerup Arne, Bonnerup Consult ApS*



- 8.30 - 10.00** **Session 3b Control and optimization (in English)**
- 8.30 - 8.50 Use of modern modelling methods to enhance nitrogen removal:
Case Lahti
• *Sablstedt Kristian, Hasanen Antti, Pöyry Finland Oy*
- 8.50 - 9.10 Online optimization of co-settling at the Rya WWTP
• *Ernst Gustaf, Chalmers University of Technology, Chemical Engineering, Gryaab AB*
- 9.10 - 9.30 Constant is optimal – a simple approach for aeration control in an activated sludge process
• *Nordenborg Åsa, Käppala Association, Department of Information Technology, Uppsala University*
- 9.30 - 9.50 Three years of operation with ozone technology for sludge bulking control
• *Stark Fujii Kristina, SYVAB*
- 9.50 - 10.00 Large and small wastewater treatment plants sharing the same effective on-line control
• *Önnerth Tine, SK Forsyning A/S, Krüger A/S*

Coffee break

- 10.30 - 12.00** **Session 4a Renovation of sewers**
- 10.30 - 10.50 Strategic rehabilitation of water distribution and wastewater networks
• *Malm Annika, Gothenburg Water*
- 10.50 - 11.10 Improving operation through standardization and digitalization
• *Laden Bo, Aalborg*
- 11.10 - 11.30 New Approach to Sewer Renovation Programmes
• *Laitinen Jyrki, FCG Finnish Consulting Group Oy*
- 11.30 - 11.50 RioGIS: a tool for pipe inspection and action selection for sewers
• *Steinar Nilo, Gløersen Erik, City of Oslo, Water and Sewerage Works*
- 11.50 - 12.00 Modelling as a tool for decision-making against hydrogen sulphide
• *Blicher Thomas, NIRAS A/S*
- 10.30 - 12.00** **Session 4b Management (in English)**
- 10.30 - 10.50 Outsourcing and PPP in water supply network maintenance – opportunities and risks
• *Välisalo Tero, Technical Research Centre of Finland*
- 10.50 - 11.10 Towards sustainable urban water systems and services:
How to measure progress
• *Milina Jadranka, Kristiansen City of Oslo, Water and Sewerage Works*



- 11.10 - 11.30 Recent trends and experiences from the organization of water utilities in Sweden
 • *Thomasson Anna, Lund University*
- 11.30 - 11.50 A structural analysis of the Danish water and wastewater industry based on benchmarking
 • *Bogetoft Peter, Copenhagen Business School CBS*
- 11.50 - 12.00 Role and mode of cooperatives in wastewater collection and disposal in Finland – an invitation for Nordic and international cooperation, extended services
 • *Pietilä Pekka, Tampere University of Technology*

12.00 - 13.30 Lunch

13.30 - 15.00 Session 5a Reject water treatment

- 13.30 - 13.50 Swedish experience of the deammonification process in a full-scale biofilm system
 • *Örnmark Jannice, SYVAB*
- 13.50 - 14.10 Operating experiences of SHARON in Linköping
 • *Kruuse Henrik, Tekniska Verken i Linköping AB*
- 14.10 - 14.30 Treatment of reject water from sludge dewatering in existing ARP tank
 • *Larsen Sille Benix, EnviDan east A/S Consulting company*
- 14.30 - 14.50 Reduction and recovery of phosphorus from digester centrate. Pilot scale experiences from Aaby WWTP in Aarhus
 • *Balslev Peter, Norconsult*
- 14.50 - 15.00 Prevention of Struvite deposits in Relation to Anaerobic Digestion
 • *Eskilsson Krister, Kemira*

13.30 - 15.00 Session 5b Climate change adaptation (in English)

- 13.30 - 13.50 Water in urban areas: Building sustainable cities in the light of climate change
 • *Ambjerj-Nielsen Karsten, Technical University of Denmark*
- 13.50 - 14.10 Monitoring system for climate adaptation and contingency plans
 • *Paludan Birgit, Greve Sewer LTD*
- 14.10 - 14.30 Modelling consequences of climate changes on the Copenhagen urban drainage system – flood vulnerability mapping and future adaptive measures
 • *Thorén Henrik, Ramboll*
- 14.30 - 14.50 Interactive mobile warning system of the risk of heavy rainfall
 • *Koistinen Jarmo, Finnish Meteorological Institute*



- 14.50 - 15.00 Experience from one of Sweden's largest wastewater treatment plants for combined sewer overflow
• *Haarbo Anders, VA Ingenjörerna AB*

Coffee break - Poster writers available

16.00 - 17.30 Session 6a Digestion and sludge

- 16.00 - 16.20 Developing organic fertiliser products at IVAR'S Regional Wastewater Treatment Plant in Stavanger, Norway
• *Tornes Oddvar, IVAR IKS*
- 16.20 - 16.40 An evolution in sludge thermal lysis technology - full-scale experience from the application of the Exelys™ continuous thermal lysis system
• *Gurieff Nicholas, Krüger AS - Veolia Water Solutions & Technologies*
- 16.40 - 17.00 Two-step digestion and increased digester volume for improving biogas production - results from full-scale operation
• *Carlsson Andreas, Jonsson Lena, Stockholm Water Co.*
- 17.00 - 17.20 Energy Efficient Management of Wastewater Sludge
• *Merta Elna, VTT Technical Research Centre of Finland*
- 17.20 - 17.30 Reduce greenhouse gas emissions from Swedish sewage sludge management
• *Willén Agnes, Swedish Institute of Agricultural and Environmental Engineering, Swedish University of Agricultural Sciences*

16.00 - 17.30 Session 6b Integrated control of sewer system and wastewater treatment (in English)

- 16.00 - 16.20 Global control of Copenhagen sewers
• *Thornberg Dines, Copenhagen Development Cooperation*
- 16.20 - 16.40 Integrated RTC of sewer systems and WWTP combined with an early warning system for water quality
• *Bassø Lene, Århus Vand A/S.*
- 16.40 - 17.00 Integrated control of sewage network and WWTP
• *Petersen Gert, EnviDan A/S*
- 17.00 - 17.20 Project Midgard Serpent facilitates the development of the Oslo Waterfront city
• *Grande Sigurd, City of Oslo, Water and Sewerage Works*
- 17.20 - 17.30 Modelling for integrated sewer - WWTP operation with ATS in Copenhagen
• *Benedetti Lorenzo, Waterways srl*

19.00 Conference Dinner in Marina Congress Center



Poster exhibition

There will be a poster exhibition in the middle of the conference area. Poster lectures will be given at the end of sessions. On Tuesday 15, during the coffee break from 15.00 - 16.00 writers will be available to answer questions concerning the posters in the poster area. A list of posters can be found in the conference book. You can also see the list before the conference at www.vvy.fi/NWC11

16 November

9.00 - 10.30 Session 7 Energy and GHG

- 9.00 - 9.20 Kakola WWTP, heat pump plant and sludge treatment
• *Anttila Timo, Wastewater Treatment Plant of Turku Region*
- 9.20 - 9.40 An inventory of the carbon footprint of a municipal wastewater treatment plant
• *Gustavsson David, VA SYD*
- 9.40 - 10.00 Energy efficient design - experience from Bergen Municipality
• *Akervold Kristine, Agency for Water and Sewerage Works, Bergen Municipality*
- 10.00 - 10.20 Reduced greenhouse gas emissions from municipal wastewater treatment
• *Baresel Christian, IVL Swedish Environmental Research Institute, KTH Royal Institute of Technology*
- 10.20 - 10.30 Learning from your mistakes: Repetitive aeration control in continuous wastewater treatment plants
• *Åmand Linda, IVL Swedish Environmental Research Institute*

Coffee break

11.00 - 12.00 Session 8 Future challenges and technologies

- 11.00 - 11.20 Design of microbial communities in membrane bio reactors: next generation of environmental biotechnologies
• *Nielsen Per Halkjær, Aalborg University*
- 11.20 - 11.40 The strategy to meet new restrictions on effluent quality at Himmerfjärden WWTP
• *Stridb Sara, SYVAB*
- 11.40 - 12.00 Risk of Legionella bacteria at waste water treatment plants
• *Kusnetsov Jaana, National Institute for Health and Welfare*
- 12.00 - 12.20 How to Expand Your Plant Without Increasing Your Footprint - A Case Study at the Käppala WWTP
• *Thunberg Andreas, The Käppala Association*

12.20-12.30 Closing of the conference

12.30 - 13.30 Lunch

13.30 - 15.30 Excursion



Excursions

The conference program includes two alternative excursions on the last conference day. If you want to go on one of the excursions, please indicate this when registering. Buses leave from the Marina Congress Center at 13.30. Excursions last until 15.30 at the latest. After this the buses go straight to the airport, arriving there at approximately 16.00. Public transport is available at the excursion site to return to Helsinki city center.

Excursion 1

Viikinmäki wastewater treatment plant

Helsinki Region Environmental Services Authority (HSY) treats the wastewater produced by the over a million residents in the Metropolitan Area at its Viikinmäki treatment plant in Helsinki and Suomenoja treatment plant in Espoo.

The waste water is led to the Viikinmäki wastewater treatment plant through the rock tunnels. In total, roughly 270,000 m³ of wastewater per day flows through the treatment plant, and the plant treats an average of 100 million m³ of wastewater each year. Annual wastewater flow of Suomenoja plant is approximately 35 million m³.

HSY wastewater treatment processes consist mechanical, chemical and biological treatment steps. At present, the phosphorus removal efficiency is over 95% (0,3 mg/l Viikinmäki, 0,4 mg/l Suomenoja) by the efficient chemical precipitation process. In case of Viikinmäki approximately 90% of the nitrogen is removed and at Suomenoja approximately 70 %. At Viikinmäki the traditional DN process is improved by the tertiary denitrifying bio filtration units.

All sludge is digested at both plants and produced biogas, i.e., methane, is used to produce carbon-neutral electricity and heat for the own use of the plants. The organic material and nutrients of the sludge is further utilised as a soil product in agriculture and green building purposes after composting.

After the treatment process the purified water flows to the open sea using the long outlet tunnels.



Excursion 2

Eco-Viikki

Viikki is a leading area of ecological building in Finland. Many of the ecological building projects in the area have also been recognized internationally.

Situated in the southern part of Latokartano, Eco-Viikki is the first ecologically designed neighbourhood in Finland.

The idea behind the neighbourhood's design was to create a sustainable, healthy and amendable living environment, where practical solutions save energy and reduce the amount of waste generated. Construction of the 23-hectare residential area of Eco-Viikki lasted from 1999 to 2004.

For the express purpose of building Eco-Viikki, ecological building criteria were created. All projects had to in-



clude ecological experimental building. Several environmentally friendly energy and environment solutions have been put into practice in the area. The active and passive utilization of solar energy has been one of the main themes of ecological experimental building in Viikki. Ecologically sound stormwater management solutions are applied in Eco-Viikki and rain water is used for gardening.

Info in Brief

Conference venue: Marina Congress Center, Katajanokanlaituri 6

Conference schedule

Monday 14 November from 10.00 to 17.40
Reception at the City Hall at 19:30

Tuesday 15 November, from 8.30 to 17.30
Conference Dinner at the Marina Congress Center at 19.00

Wednesday 16 November 9.00-12.30
Excursions 13.30

for more info visit www.vvy.fi/nwc2011

Accommodation

Participants who wish to book accommodation should contact the conference hotels directly.

Hotel Scandic Grand Marina, Katajanokanlaituri 7

Prices

120 € / night / single room

140 € / night / double room

45 € extra for a Superior-room

BOOKING REF: BTAV141111

www.scandichotels.fi/

grandmarina

tel. +358 9 16 661

Hotel Arthur, Vuorikatu 19

Prices

95 € / night / single room

115 € / night / double room

BOOKING REF: 418 273

www.hotelarthur.fi

tel. +358 9 173 441

Eurohostel, Linnankatu 9

Prices

56,30 € / night / single room

75 € / night / double room

BOOKING REF: 253433

tel. +358 9 6220 470

fax +358 9 6220 4747

e-mail: eurohostel@eurohostel.fi



Traveling connections to the conference venue:

By bus • From Helsinki Vantaa Airport take buses 415, 451 or 615 to downtown Helsinki. Alight at Helsinki railway station and take tram no. 4 from outside the Stockmann department store. Alight at the 4th stop outside the Scandic Grand Marina hotel.

By car • From Helsinki Vantaa Airport take highway 45 towards Helsinki city center. Follow the signs marked Centrum. From Pohjoisranta street, follow the signs to Katajanokka. You will cross a small bridge and see the hotel on your right-hand side.

From Olympia Terminal

By tram • Take tram no. 3 from Olympia Terminal and alight at the Market Place. Walk along the waterfront to the hotel.

From Helsinki railway station

By tram • From Helsinki railway station walk across to the Stockmann department store and take tram no. 4. Alight at the 4th stop and the Scandic Grand Marina hotel is one block down on the right-hand side.

By taxi • From Helsinki railway station follow signs to Katajanokka. Head along Kaivokatu to Kesuskatu, turn left at the Stockmann department store, then left along Etelä Esplanadi towards the Market Place and Katajanokka. After passing the Market Place (on your right) and the Presidential Palace (on your left), turn left onto Katajanokka and you will see the Scandic Grand Marina hotel.

Organizers

- Finnish Water Utilities Association (FIWA)
- Swedish Water & Wastewater Association (SWWA)
- Danish Water and Wastewater Association (DANVA)
- Norwegian Water BA
- Samorka, Iceland
- NORDIWA

Program committee

- Helle Katrine Andersen, DANVA
- Dines Thornberg, Copenhagen Development Cooperation
- Susanne Brandt, STF
- Daniel Hellström, SWWA
- Anders Lind, SWWA
- Ivar Kalland, Municipality of Bergen
- Ole Lien, Norwegian Water
- Gústaf Skúlason, Samorka
- Saijariina Toivikko, FIWA
- Mika Rontu, FIWA
- Tommi Fred, Helsinki Region Environmental Services Authority (HSY)



NORDIWA

14-16 November 2011, Helsinki

