

CURRICULUM VITAE



Name: Hallvard Ødegaard
Born: 11.12.1945 in Voss, Norway
Position: Professor emeritus - Norwegian University of Science and Technology (NTNU), Trondheim, Norway
CEO – Scandinavian Environmental Technology AS (SET AS), Hellem, Oksvoll, Norway

Education:

1969 Master of Science (Siv.ing.) in Civil Engineering, The Norwegian Institute of Technology, The University of Trondheim.
1975 Doctor of Engineering (Dr.ing.) in Civil and Environmental Engineering, The Norwegian Institute of Technology, The University of Trondheim.

Distinctions:

2011 The Royal Norwegian St. Olavs order - Officer, knight of 1. class
2014 Distinguished Fellow of International Water Association (IWA)
2016 Honorary Member of International Water Association (IWA)

Employments:

1970 Research Scholar, Norwegian Institute for Water Research, Oslo.
1971 Researcher, Technical Division, Norwegian Institute for Water Research, Oslo.
1973 Assistant professor, Dept. of Hydraulic & Sanitary Engineering, NTH, The University of Trondheim.
1975 Head of Regional office of The Ministry of Environment, South-Trøndelag County, Trondheim.
1977 Associate professor, Dept. of Hydraulic & Sanitary Eng., NTH, The University of Trondheim.
1980 Group Leader, Water Treatment Research Group, Dept. of Applied Chemistry, SINTEF (part time)
1985 Professor, Dept. of Hydraulic & Sanitary Engineering, NTH, The University of Trondheim
1985 Division Manager and Assistant Director, Norwegian Hydrotechnical Laboratory (NHL), SINTEF
1986 Head of the department, Dept. of Hydraulic and Sanitary Eng., Norwegian Institute of Technology (NTH)
1988 Dean of Faculty of Civil Engineering, The Norwegian Institute of Technology (NTH) (1988 - 1991).
1989 CEO, Scandinavian Environmental Technology AS, Trondheim, Norway (1988 and still)
1991 Visiting professor at EAWAG/ETH, Zürich, Switzerland (One year)
1999 Visiting professor, Dept. of Environmental Engin., University of Hokkaido, Sapporo, Japan (4 months)
2000 Visiting professor, CSIRO, Molecular Science, Melbourne, Australia (4 months)
2002 Head of the department, Department of Hydraulic and Environmental Engineering, Faculty of Engineering Science and Technology, Norwegian University of Science and Technology (NTNU)
2011 Professor emeritus, Norwegian University of Science and Technology (NTNU)

Appointed and Elected Assignments :

- Dean of Civil Engineering, The Norwegian Institute of Technology (NTH) (1988-1991)
- Member of the Board, The Norwegian Institute of Technology (NTH) (1993/94 and 1994/95)
- Member of the Board, Norwegian University of Science and Technology (NTNU) (1995-1998)
- Member of the Board, Faculty of Civil and Environmental Engineering, NTNU (1999-2001)
- Head of Department of Hydraulic and Environmental Engineering, NTNU (2002-2006)
- President of Norwegian Water Association (1979 - 1983)
- Member of Council of European Water Pollution Control Association (EWPCA)(1984 – 91)
- Vice President and Chairman of the Technical and Scientific Committee, EWPCA (1990-91)
- Member of Governing Board/Assembly of The International Water Association (IWA) (1986-2014)

- Group leader Technology Group, Class of Natural Sciences, The Royal Norwegian Society of Sciences and Letters (DKNVS) (2003 - 2006)
- Member of the Board The Norwegian Academy of Technical Sciences (NTVA)(2005-2009)
- Member of the Council of Distinguished Water Professionals of IWA (2005-2014) and co-chair 2010-2014
- Co-chair of the International Water Association (IWA) Fellows program (2014 – 2016)

Membership of Scientific Academies

- Elected member of The Royal Norwegian Society of Sciences and Letters (DKNVS)
- Elected member of The Norwegian Academy of Technical Sciences (NTVA)
- Elected member of The Royal Swedish Academy of Engineering Sciences (IVA)

Prizes and awards:

- Honorary member of International Water Association (IWA) - 2016
- Distinguished Fellow of International Water Association (IWA) - 2014
- The Royal Norwegian Order of St. Olav - Knight of 1st Class - 2011
- The Technoport Prize for Innovative Environmental Technology (Norway) - 2006
- The Internationalization Prize of NTNU (Norway) - 2006
- The Water Prize of the Swedish Association for Water (Sweden) -1995
- The Water Prize of the Norwegian Water Association (Norway) -1990
- The Boliden Prize (Sweden) - 1987

Patents (as inventor)

- Process for purification of waste water - Pub. WO/2005/035448, PCT/FI2004/000566
- Fish cultivation tank - Pub. WO/1988/009615, PCT/NO1988/000050
- Method and reactor for purification of water - Pub. WO/1991/011396, PCT/NO1991/000007
- Anordning og fremgangsmåte ved fremstilling av en karbonkilde fra våtorganisk avfall - Norwegian patent no.: NO305313
- Fremgangsmåte og reaktor for rensing av vann - Norwegian patent no.: NO 172687

Professional experience from previous employments:

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| 1970 - 1971 | Postgraduate studies in Sanitary Engineering, Water Chemistry and Microbiology, NIVA. |
| 1971 - 1972 | Optimization of operation of wastewater treatment plants of the Army. |
| 1972 - 1973 | Research on nutrient removal in wastewater treatment. Full scale experimentation. NIVA |
| 1973 - 2010 | University teaching - Water and Wastewater Engineering and Water Chemistry. NTH |
| 1975 - 1977 | Chief engineer in Sør-Trøndelag County - responsible for regional water poll. control adm. |
| 1975 - 1980 | Developing design criteria for wastewater treatment plants for Ministry of Environment. |
| 1985 - 1986 | Division manager/deputy director at research institute (SINTEF-NHL) (130 employees). |
| 1988 - 1991 | Dean of Civil Engineering Department, NTH (180 employees and 1000 students). |
| 1991 - 1992 | Visiting professor at the Swiss Federal Institute for Environmental Science and Technology (EAWAG) connected to Eidgenössische Technische Hochschule (ETH), Zürich, Switzerland |
| 1999 | Visiting professor, Dept.of Environmental Eng., University of Hokkaido, Sapporo, Japan (4 months) |
| 2000 | Visiting professor, CSIRO, Molecular Science, Melbourne, Australia (4 months) |
| 1988 - still | CEO of Scandinavian Environmental Technology A/S (consulting company) |

Main research and development projects:

- Phosphorous removal in wastewater treatment – PRA-project (1970 - 1973)
- Flocculation in wastewater treatment. Dr.ing.- project (1973-75)
- Treatment of industrial wastewater – INDRENS program (1981-1985)
- Wastewater treatment with biofilm processes (1980-1987)
- Removal of humic substances from drinking water (1980-1987)
- Design and operation of small wastewater treatment plants (1985-87)
- EUREKA project: Removal of nutrients from wastewater (HYPRO) (1988-92)
- Nordic research programme in environmental biotechnology (MILBIOTEK) (1989-92)
- National research programme on nutrient removal (FAN) (1989-92)
- Effective particle separation processes in wastewater treatment (1996-1999)
- Sludge treatment by hydrolysis processes (1991-1999)

- Anaerobic/aerobic biofilm treatment of pulp and paper wastewater (1994-1999)
- Chemical/biological treatment processes based on resources reuse (1992-2000)
- Development of the moving bed biofilm reactor (MBBR) process (1987-2000)
- Ozonation/biofiltration for treatment of humic drinking water (1995- 2005)
- Polymer coagulation of wastewater (1998 – 2006)
- Membrane separation of biomass from biofilm reactors (1999-2009)
- PRIMÆRRENS - Norwegian EPA (SFT) – primary treatment of wastewater (2004-2008)
- Guideline for microbial barrier analysis – Norwegian Water/Swedish Water (2004-2009) and (2013-2014)
- Development of the floc blanket lamella separator (2009-2011)
- Development of a new water works concept for treatment of humic water (2009 – 2011)
- Development of semicentralized water and wastewater systems based on water reuse (2009 – 2011)
- Editor of text-book: Water and wastewater Engineering (700 pages) (in Norwegian) (2010-2013)
- Guidelines for the design of drinking water treatment plants (2013-2015)

Involved in following doctor theses:

Own thesis

Ødegaard, H. (1975) *Flocculation of phosphate precipitates in wastewater treatment*.

Dept. of Hydraulic and Environmental Engineering, NTH, The University of Trondheim

Supervisor for the following approved doctoral dissertations (all at Dept. of Hydraulic and Environmental Engineering, Norwegian University of Science and Technology, NTNU)

Koottatep, S. (1979) *Removal of humic substances by reverse osmosis*

Schou, L (1982) *Organic micropollutants in water* (in Norwegian)

Eikebrokk, B. (1982) *Coagulation/direct filtration for the removal of humic substances in drinking water* (in Norwegian)

Rusten, B (1982) *Nitrogen removal from wastewater - Nitrification and denitrification in a rotating biological contactor without external carbon source*.

Halle, O. (1983) *Removal of humic substances in drinking water by ion exchange* (in Norwegian)

Brattebø, H. (1983) *Phosphorous removal from wastewater by fixed-bed adsorption on granular activated alumina*

Ndege, M. (1989) *The extraction of settleable particles by vortex separation*

Hem, L. (1991) *Nitrification in a moving bed biofilm reactor*

Ratnaweera, H. (1992) *Influence of the degree of coagulant prepolymerization on wastewater coagulation mechanisms*

Æsøy, A. (1993) *Denitrification in biofilms with hydrolysed sludge as carbon source*

Øren, K. (1995) *Environmental protection strategies - A metaphorical approach using the Norwegian fish-farming industry as a case study*

Barlindhaug, J. (1995) *Thermal hydrolysis of sludge and the use of hydrolysate as carbon source for denitrification*

Østerhus, S. (1997) *Corrosion of iron and copper in potable water distribution systems - The effect of water quality assessed by electrochemical methods*

Jahren, S. (1999) *Thermophilic treatment of concentrated wastewater using biofilm carriers*

Leiknes, T. (2001) *Gas transfer and degassing using hollow fiber membranes*

Saltnes, T. (2001) *Contact filtration of humic waters in expanded clay aggregate filters*

Liao, Z. (2002) *Coarse media filtration for enhanced primary treatment of municipal wastewater*

Kvinneland, T. (2002) *Coagulation and flocculation of dissolved organic substances with organic polymers*

Pilipenko, P.(2007): *Cationic polyelectrolytes as primary coagulants for municipal wastewater treatment*

Machenbach, I. (2007): *Drinking water production by coagulation combined with membrane filtration*

Helness, H. (2007): *Biological phosphate removal in moving bed biofilm reactors*

Member of evaluation committee/appointed scientific opponent for the defence of the following doctoral dissertations:

Hernebring (1981) *On flocculation efficiency in water treatment*, Chalmers University of Technology, Sweden

Odira (1985) *Upflow filters in flocculation and direct filtration of waters of high turbidity*, Tampere University of Technology, Finland

Larsen, T. (1992) *Degradation of colloidal organic matter in biofilm reactors*, The Technical University of Denmark (DTU)

Nyberg, U. (1994) *Systems for nutrient removal at Klagshamn's wastewater treatment plant* (Techn. lic.) Lund University (LTH), Sweden

Johansson, P. (1994) *SIPHOR - a kinetic model for simulation of biological phosphate removal*, Lund University (LTH), Sweden (member of evaluation committee)

- Aspegren, H. (1995) *Evaluation of a high loaded activated sludge process for biological phosphorous removal*, Lund University (LTH), Sweden
- Mattson, A. (1997) *Denitrification in a non-nitrifying activated sludge system employing recirculation from a tertiary nitrification uni.*, Chalmers University of Technology (CTH), Sweden
- Kimura, Katsuki (2000) *A Novel Biofilm-Membrane reactor for Advanced Drinking Water Treatment*, Hokkaido University, Japan
- Li, Huihua (2001) *Biological Nutrient Removal Using Fixed-Bed Filters*. Nanyang Technological University, Singapore
- Mels, Adriaan (2001) *Physical/chemical pretreatment and biological posttreatment of wastewater*. Wageningen University, The Netherlands
- van Nieuwenhuisen, Arjen (2001) *Physical-chemical Pre-treatment of Wastewater - the role of particle removal in wastewater systems*. Delft University, The Netherlands
- Ghebremichael, Kebeab A. (2004) *Moringa Seed and Pumice as Alternative Natural Materials for Drinking Water Treatment*. Kungliga Tekniska Högskolan, Stockholm, Sweden
- Heinicke, Gerald (2005) *Biological Pre-filtration and Surface Water Treatment*. Chalmers University of Technology, Sweden
- Ljunggren, Michael (2006) *Dissolved air flotation and microscreening for particle separation in wastewater Treatment*. Lund University, Sweden
- Ravazzini, Aldo (2008) *Crossflow ultrafiltration of raw municipal wastewater. Investigations using PVDF tubular membranes*. Delft University of Technology, The Netherlands
- Rygaard, Martin (2010) *Desalinated water in urban water supplies – a system approach to identify optimal drinking water composition*. Technical University of Denmark, Denmark
- Scherrenberg, Sigrid M. (2011) *Reaching ultra low phosphorous concentrations by filtration techniques*. Delft University of Technology, The Netherlands
- Linderholm, Kersti (2012) *Phosphorus - Flows to Swedish Food Chain, Fertilizer Value, Effect on Mycorrhiza and Environmental Impact of Reuse*, Swedish University of Agricultural Sciences (SLU), Alnarp, Sweden
- Piculell, Maria (2016) *New Dimensions of Moving Bed Biofilm Carriers*. Lund University, Lund, Sweden
- Arnell, Magnus (2016) *Performance Assessment of Wastewater Treatment Plants - Multi-objective analysis using plant-wide models*. Lund University, Lund, Sweden
- Malovanyy, Andriy (2017) *Anammox-based systems for nitrogen removal from mainstream municipal wastewater*. KTH Royal Institute of Technology, Stockholm, Sweden

Appoinment as scientific reviewer for evaluation of applicants to following professorships :

- Full Professor in Water and Wastewater Engineering - Chalmers University of Technology, Sweden 1991
- Full Professor in Water and Wastewater Engineering - Luleå University of Technology, Sweden, 1992
- Full Professor in Water and Wastewater Engineering - Norwegian Institute of Technology, Norway, 1994
- Full Professor in Environmental Technology – University of Stavanger, Norway, 1997
- Full Professor in Water and Wastewater Engineering – Lund University, Sweden, 1997
- Full Professor in Environmental Engineering - Tampere University of Technology, Finland, 1998
- Full Professor in Urban Wastewater Engineering – Technical University of Denmark, Denmark 2000
- Associate Professor in Environmental Engineering - University of Minnesota, USA, 2002
- Associate Professor in Environmental Engineering – Hong Kong University of Science and Technology, 2002
- Adjunct Professor in Applied Drinking Water Engineering – Chalmers University of Technology, 2006
- Associate professor in Civil and Environmental Engineering – Chalmers University of Technology, 2007
- Docentship in Water and Environmental Engineering – University of Oulu, Finland, 2007
- Full Professor in Water and Wastewater Engineering - Norwegian Institute of Technology, Norway, 2008
- Full professor in Water and Wastewater Engineering – Royal University of Technology, Stockholm, Sweden, 2009
- Full professor in Environmental Science and Technology – University of Jyväskylä, Finland, 2013
- Associate professor Water Treatment - Technical University of Denmark, Denmark 2013 and 2014
- Adjunct professor in Water and Wastewater Engineering, Aalto University, Helsinki 2015
- Associate professor (docent) in Water and Wastewater Engineering, Luleå Technical University, Sweden, 2015

Scientific appoinments :

Member of the following international evaluation committees :

- International award committee for the Stockholm Industry Water Award (Sweden)(2000-2006)
- International evaluation committee of research programme: STAMP, 1995 (NUTEK, Sweden)
- International evaluation committee of research programme: Urban Water Systems 21, 1995 (MISTRA, Sweden)

- International evaluation of research program : Water Treatment Technologies, CRC for Water Quality and Treatment, Australia (2000)
- International evaluation of the Japanese water treatment technology programme CREST, Japan 2001
- International evaluation of research programme: Water services 2001 (TEKES, Finland), 2001
- International evaluation of WEKNOW – a European network project on drinking water (The Netherlands, 2004)
- International evaluation committee of research programme: Sustainable Urban Water Mangement 1998, 2001 and 2006 (MISTRA, Sweden)
- Evaluation of Swedish research within water and wastewater engineering, Swedish Water (2007-2008)
- International experts group for evaluating the feasibility study for the Relocated Sha Tin WWTP in Hong Kong (2012 – 2013)
- International evaluation committee of research programme: Future wastewater treatment plants and water supply systems. (VTU-fonden, Miljøstyrelsen, Denmark), 2013
- Evaluation of Swedish Water research program on water and wastewater engineering (2014)

Participation on editorial board or as reviewer in the following refereed journals:

- Journal of Water Supply: Research and Technology – AQUA (Editorial Board)
- Journal of Water Sustainability (JWS)(Editorial Board)
- Water Research (Reviewer)
- Water Science and Technology (Reviewer)
- Ozone Science and Engineering (Reviewer)
- Separation Science and Technology (Reviewer)
- Ecological Engineering – The Journal of Ecotechnology (Reviewer)
- Environmental Engineering Science (Reviewer)
- Environmental Technology (Reviewer)

Involvement in international conferences :

Member of the scientific committee or programme committee in more than 100 international conferences, especially dealing with water and wastewater treatment, in most cases appointed by the international associations such as IWA (former IAWQ) and EWA (former EWPCA).

In charge of the organisation of four international conferences all organized at the Norwegian University of Science and Technology (NTNU) in Trondheim, Norway (around 250 participants from around 40 countries in each conference):

- Design and operation of small wastewater treatment plants - I (1989)
- Design and operation of small wastewater treatment plants - II (1993)
- Removal of humic substances from water (1999)
- BIOSOLIDS 2003 – Wastewater Sludge as a Resource (2003)

Chairman of organising committee in the biennial International Gothenburg Symposia on Chemical Treatment of Water and Wastewater that was organized every second year from 1984 to 2007 in various cities around Europe and USA.

Presented papers at more than 150 international conferences (see publication list) both as key note speaker and invited speaker. Invited lecturer at more than 50 universities in all the Scandinavian countries, most of the European countries as well as in Australia, Brazil, China, Hong Kong, India, Japan, Korea, Malaysia, Mexico, New Zealand, Russia, Singapore, South Africa, Turkey, Tunisia, Ethiopia, UAE and USA

Consulting projects :

Consulting in connection with a large number of treatment plant projects both in Norway and abroad. Among the larger projects, the following large WWTP may be mentioned : VEAS (Oslo), Bekkelaget (Oslo), NRA (Oslo), Høvringen RA (Trondheim), Lynetten (Copenhagen), GRYAAB (Gothenburg), Sjølunda and Klagshamn (Malmø), Rosenthal (Leipzig), Deer Island (Boston), Sharjah (UAE), Sha Tin and Shek Wu Hui (Hong Kong) and several smaller ones.

Publications: More than 580 publications, out of which more than 320 scientific papers published internationally (papers presented in international journals or at international conferences with referee system), see separate publications list.