

CV - Professor Olav Bolland

Name: Olav Bolland
Date of birth: January 17th, 1962
Nationality: Norwegian
Present position: Dean for Faculty of Engineering, Norwegian
University of Science and Technology (NTNU).
Professor of Thermal Power Engineering



Academic degrees:

- 1986 Siv.Ing. (M.Sc.): Norwegian University of Science and Technology, Mech. Eng.
1990 Dr.ing., Energy and Process Engineering, Norwegian University of Science and Technology (NTNU)

Work experience:

- 1987 Visiting researcher at Siemens AG/UB KWU in Erlangen, Germany
1987-90 Graduate student (doctorate degree) at The Norwegian Institute of Technology (NTH)
1990-2002 Associate professor, Norwegian University of Science and Technology (NTNU)
1996-97 Visiting professor at Swiss Federal Institute of Technology – ETH, Switzerland
2002- Full professor, Department of Energy and Process Engineering, NTNU
2006-07 Visiting professor at the University of Calgary, Canada
2009-17 Head of the Department of Energy and Process Engineering, NTNU
2017- Dean for Faculty of Engineering, NTNU

Other positions and activities:

- 1987-96, 1998-2015 Scientific advisor for SINTEF Energy Research (www.sintef.no)
1994-96, 1998-2000 Member of NTNU Mechanical Engineering Faculty Board
2000-03 Deputy Head of Department of Thermal Engineering and Hydropower, NTNU
2003-06 Head of NTNU Master program *Energy and the Environment*
2003-2007 Member of the executive team of the Gas Technology Centre NTNU-SINTEF
2004-05 Deputy Head of the Department of Energy and Process Engineering, NTNU
2006- Elected member of The Norwegian Academy of Technical Sciences (NTVA)
2008-09 Director of the Gas Technology Centre NTNU-Sintef (www.ntnu.no/gass)
2008-09 Member of a national expert group on Sustainable Development, appointed by the Norwegian government, report 'Norges Offentlige utredninger 2009:16 - *Globale miljøutfordringer–norsk politikk*' (Global challenges – Norwegian politics)
2011-13 Sintef Council – Proxy member from NTNU
2014-21 Sintef Council – member from NTNU
2014-2016, 2018- Board member Sintef Energy AS
2017-21 SINTEF Community – council member from NTNU

Professional activities:

- 2003-05 Lead author for IPCC's Special Report on CO₂ Capture and Storage
2000- Organizing international conferences;
Natural Gas Technology Workshop 2000 at NTNU
Member of Organising Committee of TCCS1-TCCS5 (Trondheim conference on Carbon dioxide Capture and Storage).
Member of Organising Committee of ECOS 2005.
Head of Program Committee of the GHGT-8, 2006, with 960 delegates and 450 papers.
Member of the Programme Committee of GHGT-9 (Nov 2008)

- Member of the Programme Committee of GHGT-10 (Sept 2010) – responsible for Capture related papers (370).
- Member of the Programme Committee of GHGT-11 (Nov 2012) – responsible for Capture related papers (400).
- Member of the Programme Committee of GHGT-12 (Oct 2014) – responsible for Capture related papers (380).
- Member of Scientific Committees in several other conferences
- 1997- Member of PhD thesis evaluation committees in Norway, Sweden, Singapore, and the Netherlands
- 2000- Member of professor evaluation committees in Sweden (3 times), Norway (3), Denmark (1) and Bahrain (1)
- 2000-03 Member of evaluation committees in the Norwegian Research Council – Klimatek Program
- 2005-15 Member of the Advisory Board for the international research projects CCP2 and CCP3 (Carbon Capture Project)
- 2006-13 Associate Editor – International Journal of Greenhouse Gas Control
- 2008-14 Member of the International Steering Committee for the IEAGHG International Interdisciplinary CCS Summer School Series

Awards:

- 2007** Nobel Peace Prize - As one of the IPCC scientists researching climate change
- 2011** Statoil Award for Outstanding Research
- 2013** Work Environment Award at NTNU (Norwegian University of Science and Technology)
- 2013** Certificate of Excellence in Reviewing, Int Journal of Greenhouse Gas Control

Publications: More than 250 refereed journal papers, conference publications and book-chapters. A large number of restricted technical reports and international guest lectures. Holder of patent WO 95/21683, PCT/NO95/00033, 1995, Norway #940527, US-patent 5,832,712 - 1998

Research projects: Supervised (as main supervisor) 14 completed Dr.Ing./PhD degrees and 6 postdoctoral candidates, and supervised >100 MSc thesis candidates at Department of Energy and Process Engineering, NTNU.

- Participant in and member of steering committee for *BIGCO2* (NTNU and SINTEF's national program on CO₂ capture and storage), 2005-2009, total 54 mill NOK
- Participant in and member of the board: *Process Systems Engineering: From Natural Gas to Energy Products*, 2002-2006, University program funded by the Norwegian Research Council, 22 mill NOK
- Task leader for NTNU in *ENCAP*, EU Integrated project FP6, 2004-2008, total 22.4 mill €, NTNU part 600 k€
- Task leader for NTNU in *DYNAMIS - Towards hydrogen with CO₂ management*, EU Integrated project FP6, 2006-2008, total 13 mill €.
- Task leader for NTNU in *DECARBit – Decarbonise it!*, EU Integrated project FP7, 2008-2011, total 15.5 mill €.
- Task leader for NTNU in *iCap – Innovative CO₂ Capture*, EU Integrated project FP7, 2010-2013, total 6.3 mill €.
- Steering board member, general assembly member for NTNU, and task leader in [ECCSEL](#) – *European Carbon dioxide Capture and Storage Laboratory Infrastructure*, EU FP7 – Phase I & II, 2011-2014, total 4 mill €.
- Project leader for NTNU in *ECCSEL Norway CCS RI - Phase 2 - The Norwegian node of ECCSEL*, Project number 245822, Norwegian Research Council, 2016-2020, total 17 mill €.

- Administrative responsible for ECCSEL-INFRADEV-3 - European Carbon Dioxide Capture and Storage Laboratory Infrastructure, EU H2020, 2016-2017, total 3.3 mill €.

Publications statistics: (per October 2020): h-index; Scopus: 36, Google Scholar: 45
Scopus: Number of publications 128, number of citations 4336

Selected publications:

- Nord, L., Bolland, O. (2020). Carbon Dioxide Emission Management in Power Generation, ISBN: 978-3-527-82665-0, 344 pages, Wiley-VCH Verlagsgesellschaft
- Nazir, S.M., Cloete, S., Bolland, O., Amini, S., (2018). Techno-economic assessment of the novel gas switching reforming (GSR) concept for gas-fired power production with integrated CO₂ capture, *International Journal of Hydrogen Energy*, 43(18), pp. 8754-8769
- Riboldi, L., Bolland, O., (2017). Overview on Pressure Swing Adsorption (PSA) as CO₂ Capture Technology: State-of-the-Art, Limits and Potentials, *Energy Procedia* 114, pp. 2390-2400
- Dutta, R., Nord, L.O., Bolland, O., (2017). Selection and design of post-combustion CO₂ capture process for 600 MW natural gas fueled thermal power plant based on operability, *Energy*, 121, pp. 643-656
- Riboldi, L., Bolland, O., (2016). Pressure swing adsorption for coproduction of power and ultrapure H₂ in an IGCC plant with CO₂ capture, *International Journal of Hydrogen Energy*, 41 (25), pp. 10646-10660.
- Najmi, B., Bolland, O., Colombo, K.E. (2016). A systematic approach to the modeling and simulation of a Sorption Enhanced Water Gas Shift (SEWGS) process for CO₂ capture. *Separation and Purification Technology*, 157, pp. 80-92
- Riboldi, L., Bolland, O. (2015). Document Evaluating Pressure Swing Adsorption as a CO₂ separation technique in coal-fired power plants. *International Journal of Greenhouse Gas Control*, 39, pp. 1-16
- Najmi, B., Bolland, O., Colombo, K.E. (2015). Document Load-following performance of IGCC with integrated CO₂ capture using SEWGS pre-combustion technology. *International Journal of Greenhouse Gas Control*, 35, pp. 30-46
- Razi, N., Svendsen, H. F., & Bolland, O. (2014). Assessment of mass transfer correlations in rate-based modeling of a large-scale CO₂ capture with MEA. *International Journal of Greenhouse Gas Control*, 26, 93-108.
- Razi, N., Svendsen, H. F., & Bolland, O. (2013). Cost and energy sensitivity analysis of absorber design in CO₂ capture with MEA. *International Journal of Greenhouse Gas Control*, 19, 331-339.
- Razi, N., Svendsen, H. F., & Bolland, O. (2013). Validation of mass transfer correlations for CO₂ absorption with MEA using pilot data. *International Journal of Greenhouse Gas Control*, 19, 478-491.
- Nord, L. O., & Bolland, O. (2013). Design and off-design simulations of combined cycles for offshore oil and gas installations. *Applied Thermal Engineering*, 54(1), 85-91.
- Bischi, A., Langørgen, T., & Bolland, O. (2013). Double loop circulating fluidized bed reactor system for two reaction processes, based on pneumatically controlled divided loop-seals and bottom extraction/lift. *Powder Technology*, 246, 51-62.
- Lakew, A. A., & Bolland, O. (2010). Working fluids for low-temperature heat source. *Applied Thermal Engineering*, 30(10), 1262-1268.
- Nord, L. O., Anantharaman, R., & Bolland, O. (2009). Design and off-design analyses of a pre-combustion CO₂ capture process in a natural gas combined cycle power plant. *International Journal of Greenhouse Gas Control*, 3(4), 385-392.
- Pipitone, G., & Bolland, O. (2009). Power generation with CO₂ capture: Technology for CO₂ purification. *International Journal of Greenhouse Gas Control*, 3(5), 528-534.
- Kandepu, R., Imsland, L., Foss, B. A., Stiller, C., Thorud, B., & Bolland, O. (2007). Modeling and control of a SOFC-GT-based autonomous power system. *Energy*, 32(4), 406-417.

- Kvamsdal, H. M., Jordal, K., & Bolland, O. (2007). A quantitative comparison of gas turbine cycles with CO₂ capture. *Energy*, 32(1), 10-24.
- Naqvi, R., & Bolland, O. (2007). Multi-stage chemical looping combustion (CLC) for combined cycles with CO₂ capture. *International Journal of Greenhouse Gas Control*, 1(1), 19-30.
- Naqvi, R., Wolf, J., & Bolland, O. (2007). Part-load analysis of a chemical looping combustion (CLC) combined cycle with CO₂ capture. *Energy*, 32(4), 360-370.
- Nasrifar, K., & Bolland, O. (2006). Prediction of thermodynamic properties of natural gas mixtures using 10 equations of state including a new cubic two-constant equation of state. *Journal of Petroleum Science and Engineering*, 51(3-4), 253-266.
- Stiller, C., Thorud, B., Bolland, O., Kandepu, R., & Imsland, L. (2006). Control strategy for a solid oxide fuel cell and gas turbine hybrid system. *Journal of Power Sources*, 158(1), 303-315.
- Nakajo, A., Stiller, C., Härkegård, G., & Bolland, O. (2006). Modeling of thermal stresses and probability of survival of tubular SOFC. *Journal of Power Sources*, 158(1), 287-294.
- Stiller, C., Thorud, B., Seljebø, S., Mathisen, O., Karoliussen, H., & Bolland, O. (2005). Finite-volume modeling and hybrid-cycle performance of planar and tubular solid oxide fuel cells. *Journal of Power Sources*, 141(2), 227-240.
- Ertesvåg, I. S., Kvamsdal, H. M., & Bolland, O. (2005). Exergy analysis of a gas-turbine combined-cycle power plant with precombustion CO₂ capture. *Energy*, 30(1), 5-39.
- Brandvoll, Ø., & Bolland, O. (2004). Inherent CO₂ capture using chemical looping combustion in a natural gas fired power cycle. *Journal of Engineering for Gas Turbines and Power*, 126(2), 316-321.
- Bredesen, R., Jordal, K., & Bolland, O. (2004). High-temperature membranes in power generation with CO₂ capture. *Chemical Engineering and Processing: Process Intensification*, 43(9), 1129-1158.
- Jordal, K., Bredesen, R., Kvamsdal, H. M., & Bolland, O. (2004). Integration of H₂-separating membrane technology in gas turbine processes for CO₂ capture. *Energy*, 29(9-10), 1269-1278.
- Bolland, O., & Undrum, H. (2003). A novel methodology for comparing CO₂ capture options for natural gas-fired combined cycle plants. *Advances in Environmental Research*, 7(4), 901-911.
- Bolland, O., & Mathieu, P. (1998). Comparison of two CO₂ removal options in combined cycle power plants. *Energy Conversion and Management*, 39(16-18), 1653-1663.
- Bolland, O., & Stadaas, J. F. (1995). Comparative evaluation of combined cycles and gas turbine systems with water injection, steam injection, and recuperation. *Journal of Engineering for Gas Turbines and Power*, 117(1), 138-145.
- Bolland, O., & Sæther, S. (1992). New concepts for natural gas fired power plants which simplify the recovery of carbon dioxide. *Energy Conversion and Management*, 33(5-8), 467-475.
- Bolland, O. (1991). Comparative evaluation of advanced combined cycle alternatives. *Journal of Engineering for Gas Turbines and Power*, 113(2), 190-197.