PERSONAL INFORMATION

Name	**Solbraa, Even**
Home address	**Brattvollveien 17, 7056, Ranheim, Norway**
Work address	**Arkitekt Ebbels Vei 10, 7053 Ranheim, Norway**
Telephone	**+47 90 96 77 20**
E-mail	**esol@equinor.com / even.solbraa@ntnu.no**
Nationality	**Norwegian**
Date of birth	**27.06.1974**

WORK EXPERIENCE

Dates (from – to)	**2011-**
Name and address of employer	Institute for Energy and Process Technology, Norwegian University of Science and Technology, NTNU, Norway
Type of business or sector	University
Occupation or position held	**ADJUNCT PROFESSOR – GAS TECHNOLOGY**
Main activities and responsibilities	Teach university courses in gas technology for 4th year students. Follow up master and PD students. Coordinate cooperation between NTNU and Equinor.

Dates (from – to)	**2022-**
Name and address of employer	Equinor, Norway
Type of business or sector	Technology and New Energy, TDI Expert Centre
Occupation or position held	**SENIOR ADVISOR – GAS PROCESSING**
Main activities and responsibilities	Company responsible for quality of work in process simulation and thermodynamics related to gas processing. Technology expert for facility development. Support Equinor projects with advises for process solutions. Follow up work related to digitalization of oil and gas processes. Follow up PVT work related to hydrogen and CO2.

Dates (from – to)	**2009-2022**
Name and address of employer	Equinor/Statoil, Norway
Type of business or sector	Technology and New Energy, R&D Gas Processing
Occupation or position held	**ADVISOR – SUBSEA PROCESSING, GAS PROCESSING AND LNG**
Main activities and responsibilities	Development of subsea processing solutions. Responsible for planning technology development projects and quality assurance of work related to gas processing and gas transport. R&D related to gas processing and LNG (gas quality, acid gas removal, LNG). Technical support to gas processing plants in operation and new development projects. Development of computational tools for thermodynamics and process simulation. Initiation of research projects (Statoil internal-, JIP-, NFR-, GERG projects) related to gas processing. Contact to national and international universities and research institutions (teaching and cooperation). Supervisor for master- and ph.d students.

Dates (from – to)	**2004-2006, 2007-2009**
Name and address of employer	Statoil, Norway
Type of business or sector	Technology and New Energy, Transport Technology
Occupation or position held	**LEADING ADVISOR NATURAL GAS QUALITY**
Main activities and responsibilities	Leader of professional network for people in Statoil working with natural gas quality. Responsible for quality assurance of work related to natural gas quality in Statoil. Technical involvement in work related to gas quality specifications for gas transported by pipeline and as LNG.

Dates (from – to)	**2006-2007**
Name and address of employer	Statoil, Hammerfest, Norway
Type of business or sector	Gas processing, LNG production
Occupation or position held	**START-UP PROCESS ENGINEER SNØHVIT LNG**
Main activities and responsibilities	Start-up process engineer for the Snøhvit LNG process plant in Hammerfest, Norway. Technical system responsible the glycol (MEG) processing plant at Hammerfest LNG. Training of control room and field operators at Hammerfest LNG.

Dates (from – to)	**2001-2004**
Name and address of employer	Statoil Research Centre, Trondheim, Norway
Type of business or sector	R&D Gas Processing
Occupation or position held	**SENIOR/STAFF ENGINEER**
Main activities and responsibilities	General involvement in R&D on gas processing, gas quality and acid gas removal. Activity leader and responsible for R&D activities related to gas quality and acid gas removal. Actively involved in trouble shouting the Sleipner and Åsgard CO_2 removal plants.

EDUCATION AND TRAINING

Dates (from – to)	1993-1997
Name and type of organisation providing education and training	Norwegian University of Science and Technology, Trondheim
Principal subjects/occupational skills covered	Mechanical engineering, natural gas production, LNG, non-equilibrium thermodynamics, mass transfer.
Title of thesis	Non-equilibrium thermodynamics of hydrocarbon systems
Title of qualification awarded	**Master of Science and Technology**

Dates (from – to)	1998-2003
Name and type of organisation providing education and training	Norwegian University of Science and Technology, Trondheim
Principal subjects/occupational skills covered	Acid gas removal, natural gas processing, multiphase transport, thermodynamics, mathematical modelling, computer programming, unit operations
Title of thesis	Equilibrium and Non-equilibrium of natural gas processing. Measurement and Modelling of Absorption of Carbon Dioxide into Methyldiethanolamine Solutions at High Pressures
Title of qualification awarded	**PhD, Doctor engineer**

PERSONAL SKILLS AND COMPETENCES

Leader of professional network on gas quality in Statoil	Leader of professional network in gas quality in Statoil from 2004-2009. Close contact with Statoils business units and active involvement in operational and technical discussions related to gas quality. Actively involved in various projects and quality control of projects. Author and maintainer of Statoil guideline document on gas quality (GL205). Developer and responsible for Statoils Gas Quality Intranet Tool used for computational thermodynamics related to natural gas quality.
Statoil representative in European gas research group (GERG)	Statoil represent in European Gas Research Group (GERG), program committee 1 and 3. Contributor in various GERG projects. Active contact with European gas producing- and transportation companies.
Representative in ISO standardization work related to gas quality	Statoil coordinator of standardization work related to natural gas quality (2004-)
National delegate in European Working Party on Thermodynamics and Transport Properties"	Norwegian national delegate in European Federation of Chemical Engineering (EFCE), "Working Party on Thermodynamics and Transport Properties", 2007-2015. This group coordinates cooperation on research and education on thermodynamics and physical properties in Europe.
Conference committee member	Member of program committee for European Gas Technology Conference 2011 in Copenhagen Member of organizing committee for conference Thermodynamics 2015 in Cophenagen.

RELEVANT SCIENTIFIC WORK

Member of defence committee for ph.d defences	Member of several PhD defence committees at NTNU (Norwegian university of Science and Technology) and DTU (Danish technical university) (2005—2010) in topics related to gas processing and thermodynamics.
Teaching activities, guest lectures, conference plenary lectures	Responsible for teaching natural gas processing topics as part of TEP4185 "Natural Gas Technology" and TEP08 "Natural Gas Processing" at NTNU. Invited plenary lecture at the Distillation & Absorption 2010 conference (Netherlands): "Carbon capture and storage, experiences from the Sleipner field". Invited plenary lecture at 22nd European Symposium on Applied Thermodynamics 2006 (Denmark): "Measurement and calculation of water, ice and hydrate precipitation temperatures from high pressure natural gas".
Supervisor for students	Supervisor of 7 PhD students and more than 50 master students from HIST, NTNU and DTU (2003-2023). Supervisor for two laboratory apprentices in Statoil. Topics for student works have been acid gas removal, LNG processing, thermodynamic modelling, natural gas process modelling, laboratory measurement, computer programming, and development of analytical techniques. See separate list.
Close contact with various international universities and research institutes	Active contact and cooperation with international universities and research institutes with work related to gas processing (cooperation with universities in Norway, Denmark, Netherlands, Greece, USA, Brazil, China, France, Germany, Malaysia, Venezuela).

PUBLICATIONS

Publications at international conferences	More than 35 publications and presentations at international conferences in subjects related to gas quality, thermodynamics, and natural gas processing (separate list).
Publications in scientific journals	About 40 publications in international scientific journals in subjects related to gas transport, gas quality, thermodynamics and natural gas processing and LNG (separate list).

PATENTS

P5945WO, "Depression of freezing point in Gas or Oil Processing Using Mixed Solvents"
P6201, "Pre-processing solution for LNG and natural gas"

AWARDS

Statoil R&D Reodor Felgen price 2003	Winner of Statoils Reodor Felgen price 2003 for R&D work on removing carbon dioxide from the Sleipner West well stream.
Best paper award	Best paper award in 2008 at GPA conference related to gas quality and gas processing.
Equinor Mentor Award	Mentor award in Gas Process Technology in Equinor 2023
Member of NTVA	Awarded membership in Norges Tekniske Vitenskapsakademi for scientific work in Thermodynamics and Gas Processing, 2024

SPECIAL COMPETENCES

Programming	Experienced in program development using various programming languages (Python/Matlab/Fortran/C++/C#/Java). Developer of computer applications related to acid gas removal, gas quality and thermodynamics. Developer of the NeqSim process simulator used in Statoil.
Thermodynamic modelling	Developer of the thermodynamics routines implemented in NeqSim.
Process modelling	Experienced user of various process simulation tools (HYSYS, PROII, NeqSim)
Laboratory work	Actively involved and high focus on laboratory work related to natural gas processing.

Thesis/Books

Solbraa, E., Natural Gas Processing, TEP 4185 Compendium, NTNU, Department of Energy an Process Engineering, 2012, updated 2023

Solbraa, E., Equilibrium and Non-equilibrium thermodynamics of natural gas processing. Measurement and Modelling of Absorption of Carbon Dioxide into Methyldiethanolamine Solutions at High Pressures, ISBN 82-471-5541-9, Ph.d thesis, Norwegian University of Science and Technology, 2002

Solbraa, E., Non-equilibrium thermodynamics of hydrocarbon systems, Master thesis Norwegian University of Science and Technology, Institute for Refrigeration and Air-Conditioning, 1997