

Interactive Course on Hydrogen

Focus: In this online interactive seminar of 2 modules in two subsequent days you will get a concise overview of the hydrogen value chain and learn about the latest developments, international cooperation, and funding opportunities.

Course organizers: Energy Delta Institute, the Netherlands, Israeli Dutch Innovation Center (IDIC), Netherlands Innovation Network, Netherlands Embassy in Israel

Course fee: the course will be given free of charge

Course target audience: Israeli participants from private sector, academia and government

Registration: email your name, affiliation, role, contact details, your motivation to join the course and topics you wish to learn about to Jochem Durenkamp Durenkamp@energydelta.nl

Certificate: graduates will receive an official certificate from the Energy Delta Institute

Course website: <https://www.energydelta.org/events/interactive-course-on-hydrogen>

Sponsorship: the course is sponsored by the Netherlands Innovation Network Israel, the Netherlands Embassy in Israel, the Israeli ministry of Foreign Affairs and the Israeli Ministry of Energy

Day 1: Tuesday 1st of September 2020 9.00 – 13.00 Israeli time

Login for this day: <https://us02web.zoom.us/j/85102652714> | Meeting ID: 851 0265 2714

Time	Content	Lecturer
Hydrogen Value Chain Introduction		
09:00 – 09:05	Welcome & technical instructions	<i>Marcella Oldenhuizing, EDI</i>
09:05 – 09:10	Welcome note Netherlands Ambassador to Israel	<i>Hans Docter, Netherlands Ambassador to Israel</i>
09:10 – 09:15	Sharing knowledge and developing R&D and business cooperation – the ideas behind the first hydrogen course in Israel	<i>Dr. Racheli Kreisberg, Innovation Attaché at the Dutch Embassy in Israel</i>
09:15 – 09:20	Introduction to the topic: Overview of the Hydrogen Value Chain	<i>Theo Fens</i>
09:20 – 10:00	Why hydrogen?* <ul style="list-style-type: none"> - The energy transition as context for hydrogen, origin and history. - Role of hydrogen in energy transition, system integration. - Hydrogen characteristics and comparison to natural gas. 	<i>Theo Fens (TU Delft/Deloitte)</i>
10:00 – 10:45	Production, transport, storage of hydrogen, the economics <ul style="list-style-type: none"> - Production methods, the colours of hydrogen. - Transport and storage options, carriers: hydrogen versus electricity. - Hydrogen in natural gas grids, pure or blending? 	<i>Theo Fens</i>
10:45 – 11:00	<i>Break + Q&A</i>	
11:00 – 11:45	End use of hydrogen, mobility, industry, built environment <ul style="list-style-type: none"> - The versatility of hydrogen(H₂) in end use, sector coupling. - The economics in various sectors, TCO comparison. - Geography, the Blue Banana in the EU as kick-starter H₂ Green Deal. <p><u>Including:</u> H2 Fuelling stations: economics, safety, technicalities and supply</p>	<i>Theo Fens</i>

11.45 – 12.15	Long-term potential of hydrogen, expected developments* <ul style="list-style-type: none"> - The economics for green hydrogen production and use, scale-up. - The Power-to-X concept, sector coupling, multi/energy grids. - The H₂ strategies, OPEX/CAPEX, global hydrogen market. 	Theo Fens
12:30 – 13.00	Q&A	Theo Fens
13:00	End of Part I	

 Day 2: Wednesday 2nd of September 2020 9.00 – 13.00 Israeli time

 Login for this day: <https://us02web.zoom.us/j/88401694671> | Meeting ID: 884 0169 4671

Time	Content	Lecturer
Innovation, Developments and Opportunities in the Hydrogen sector		
09:00 – 09:15	Welcome & reflection on day 1 Introduction: Innovations and developments in the Hydrogen sector	Jochem Durenkamp, EDI
09:15 – 10:00	Hydrogen in the Netherlands <ul style="list-style-type: none"> - Netherlands National Hydrogen agenda; - Ambitions, strategy and an outlook; - NL regional and international cooperation 	Jörg Gigler (Managing Director at TKI New Gas)
10:00 – 10:45	H₂ opportunities to fund cooperation projects between NL and Israel* <ul style="list-style-type: none"> - (Lighthouse) Projects in the EU - Subsidies & policies (FCH-JU, H2020) - International cooperation 	Jörg Gigler
10:45 – 11:00	<i>Break + Q&A</i>	
11:00 – 11:30	Best of both worlds; Cyber Security Protection in ICS (Industrial Control Systems), especially in the Hazardous Materials Industry	Yosi Shavit, Head of ICS Cyber Security Department Ministry of Environmental Protection
11:30 – 12:00	Presentation of Israel's hydrogen sector* <ul style="list-style-type: none"> - Fuel Cells and Hydrogen - National excellence center - International cooperation 	Dr. Gideon Friedman, Chief Scientist, Israeli Ministry of Energy
12:00 – 12:45	Best Practices in the Netherlands <ul style="list-style-type: none"> - Lighthouse projects in the Netherlands - Best practices (HyStock, H-vision, Hydrogen Valley and more) - The importance of a Hydrogen Backbone 	René Schutte, Program Manager Hydrogen, Gasunie
12:45 – 13:00	Wrap up and next steps <ul style="list-style-type: none"> - Virtual brokerage event on open Green Deal calls - Establishment of Dutch Israeli Hydrogen Business and R&D Forum - Cooperation opportunities for academia, industry, and government 	Dr. Racheli Kreisberg Jasper van Mastrigt, Netherlands Embassy in Israel
13:00	End of the online training	

* All topics can be interesting for laymen, but these topics are specifically interesting for laymen

Speakers' profiles:

Theo W. Fens, Phd. The Netherlands



Theo Fens is an experienced professional with a broad industrial background. His working experience encompasses more than 40 years in the industry (oil and gas engineering, electronics, telecom), consultancy (energy markets and IT), and research (physics and economy). Theo held different positions at E&P Shell International; in 2001 he was a Head of a Capgemini strategic research group running the Projects for Nuon, APX, Nuon, APX, EPZ, Essent and Eneco. Theo worked with Utility Consulting Partners on Essent, Nuon, TenneT, Enexis, Stedin and Alliander projects. Since 2003 Theo has filled a position as Senior Research Fellow at the Technical University of Delft (TUD), he also lectures on energy markets development; heads TFECo BV Energy Consultancy; takes part in a fundamental study – NOW Program in TUD on technologies utilization and a new energy transition. His educational background is electrical engineering and he holds a PhD in experimental physics.

Rene Schutte, The Netherlands



René Schutte joined Gasunie in 2006. He has worked in several commercial roles in energy procurement and shipping and grid connections for Gasunie Transport Services. Until recently René was managing the projects industry and markets department. In this role he was responsible for the direct to the GTS grid connected industrial customers and for implementation of new law and regulation requirements. As of July 2018, René is appointed as Program Manager Hydrogen for Gasunie. In this role he is responsible to implement a hydrogen program, which is a key part of the Gasunie strategy for the energy transition and future business.

Dr. Jörg Gigler, The Netherlands,



Jörg Gigler (1967) has been working on sustainability for 25 years, the last 12 years focusing on the interaction between gas, innovation and sustainability. Currently he is director of the Dutch New Gas Innovation Team (TKI New Gas) working on hydrogen, sustainable gases, power-to-gas, geo energy and carbon capture, utilization and storage. Jörg has held different positions in gas consultancy, the gas industry and at governments. He is a regular speaker at courses and conferences about sustainability, innovation and energy transition. Since April 2013 Jörg is also a self-employed consultant focusing on energy, sustainability and innovation. He holds different positions as board member in organisations focusing on energy and innovation. He studied Agricultural Engineering at Wageningen University (NL) where he obtained a PhD in Agricultural Sciences. Contact details: jorg@gigler.nl

Yosi Shavit, Israel



Yosi Shavit CISM, MBA has over 20 years of experience in the Cyber and Information Security field, including hands-on work, Consulting and writing Methodology. Yosi is a lecturer for cyber and Information Security at Achva Academic College in the information system track. In his current job, Yosi working for the Ministry of Environmental Protection as the Head of ICS Cyber Security Department. He is responsible of Cyber Security instruction and control as a regulator of Hazardous Materials Industry including of OT, ICS and SCADA Systems (more than 4,000 plants) and published a new methodology for Cyber Risk Assessment unique to Hazardous

Materials industry.

Dr. Gideon Friedman, Israel



Dr. Gideon Friedmann is the acting Chief Scientist of the ministry of Energy of Israel. Areas of expertise include Renewable energy, the electricity market, smart distributed grid, Energy Efficiency, and electric transportation. Stanford University Ph.D. in Physics, Purdue University M.Sc. in Economics, Tel Aviv University B.Sc. (Magna Cum Laude) in Mathematics & Physics. Diploma in Bioinformatics. Over 15 years of industry experience in both management and R&D in semiconductor metrology, medical instrumentation, biotechnology, and energy efficiency. Published opinion articles in Israel's largest newspaper, Yediot Aharonot, also in Calcalist and Globes. Social activist involved in local government in Mevasseret Zion near Jerusalem, mainly in education and transportation issues.

Netherlands Embassy in Israel profiles:

HE Hans Docter



Ambassador Hans Docter (1966) serves in Israel since August 2019. Before his appointment to Israel, he was the Director for Sustainable Economic Development and Ambassador for Private Sector & Development Cooperation at the Ministry of Foreign Affairs in The Hague. Hans Docter was Dutch ambassador to Ghana, Ivory Coast, Liberia, Sierra Leone and Togo from 2013-2016. He also served as special envoy for the Dutch Government during the Ebola crisis in West Africa, coordinating the Dutch efforts to help eradicate the disease. In 2015 he was the

senior communications advisor for the government during the Dutch referendum on the EU association agreement with Ukraine. Previously Hans Docter served as Deputy Ambassador of the Netherlands to Ethiopia and Kenya. He also served in Indonesia and Russia. Hans Docter has a degree in law from the University of Amsterdam.

Dr. Racheli Kreisberg



Dr. Racheli Kreisberg serves since January 2016 as the Innovation Attaché of the Holland Innovation Network, Ministry of Economic Affairs, at the Netherlands Embassy in Israel. She is responsible for developing R&D and business collaborations between Dutch and Israeli companies, Universities, and research institutions as well as between governmental organisations. Her work is focused on the High-Tech Systems and Materials (HTSM) top as well as the Energy, Life Science and Agro&Food top sectors. Hydrogen and energy transition are one her newest Dutch Israeli initiatives.

Prior to her position at the embassy, she managed her own consultancy company that specialized in the initiation and management of collaborative EU research projects (H2020) and served as an evaluator of the EU. Dr. Kreisberg holds a PhD in Biotechnology and Molecular Microbiology from Tel Aviv University (TAU), an Executive MBA from TAU, an MSc in Chemistry (summa cum laude) from the Technion Israel Institute of Technology.

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