EQ presents 1 day training on GREEN AMMONIA APPLICATIONS FOR THE NEW HYDROGEN ECONOMY TURNING FERTILISER CARBON EMISSION NEUTRAL

on Tuesday, 03 August 2021 1st Session- IST 02:30 to 05:30 PM | 2nd Session- IST 06:30 to 09:300 PM

Trainer Mr. Charley Rattan

Webinar on same topic

on Wednesday, 04 August 2021 | IST 07:00 to 09:00 PM



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ABOUT TRAINER

Charley Rattan Hydrogen and offshore wind business advisor and trainer. The course is led by Charley Rattan, international hydrogen expert and respected energy insider and facilitator bringing over 25 years' realworld renewable experience and a track record of successful major project delivery. Charley is a trusted strategic advisor to global energy companies and an advocate and facilitator for the emerging innovation energy market. Charley is a respected as a leading authority in hydrogen and renewables providing consultancy and training at high level across the globe including for key stakeholders, governments, consenting authorities and world organisations such as the United Nations.

COURSE FEE

₹**7,500** (18% IGST extra)

PLEASE PAY THE TRAINING FEE IN BELOW BANK DETAILS: Account Name: FIRST SOURCE ENERGY INDIA PVT. LTD. Account No.: 50200011285202 IFSC: HDFC0001772 Branch: HDFC BANK LTD SHOP NO.9,10,11, SHEHNAI 2, KANADIA ROAD, INDORE (MP)

Trainer Mr. Charley Rattan

ABOUT COURSE

Course objectives

- Green ammonia, what is it, why is it important and the role it could be playing in the energy transition
 This course is to be as interactive as possible for the participants

Structure / Hypotheses	Topics	Green ammonia projects – overview and discussion, deep dives into case studies Green ammonia projects 5. – supply chain considerations	 a. Description / discussion of plants currently in operation a. Demonstration plants (Oxford – Harwell, Fukushima) b. Plants and schemes under development / planning process (consenting, implementation, construction) a. NEOM b. Sluiskil (Orsted + Yara, electrolysis) c. Pilbara (Yara) d. Nebraska (Monolith Materials – methane pyrolysis)) e. Dyno Nobel, explosives manufacturer (Moranbah AUS) f. Enaex (Chile, ammonium nitrate explosives) g. Wesfarmers (AUS) h. Balance-Agri Nutrients (New Zealand, fertilizer) c. New applications - research projects / project pipeline / future outlook a. Optimal catalytic decomposition of ammonia (reducing energy losses with new inexpensive catalysts) b. Ammonia fuel cell technologies (e.g. NASA Glenn RC on direct ammonia SO fuel cells) c. MAN Energy solutions demonstration programme for ammonia marine engines (with MISC, Malaysia and Samsung Heavy Industries) d. NoGaps (Nordic Green Ammonia Powered Ships) e. Heat pumps (Star Refrigeration, UK) d. Operations and maintenance, employment opportunities Anmonia production for "traditional" applications (in particular fertiliser) a. Technology licensors (Haldor Topsoe, KBR, Thyssenkrupp Industrial Solutions, Casale) b. Engineering contractors c. Equipment suppliers (OEM's) d. Operations & maintenance services The extended hydrogen supply chain a. Offshore, offshore floating wind, mega scale solar, electrolyser, other equipment and services needed Route to market a. National and global opportunities for ammonia and hydrogen b. Who to business? d. Engaging with the ammonia, hydrogen and renewables industries
Introduction	a. Green ammonia? b. CO2 emissions classification c. CO2 emissions by sector d. Netzero target setting e. Importance of renewable ammonia: climate neutral production of fertiliser, other ammonia applications		
Green Ammonia– what it is	 a. Ammonia production technology, production facilities Ammonia production processes and facilities (Haber-Bosch); current sources of hydrogen (gas, coal, Chlorine production) CO2-emission-free hydrogen feedstock: essential building block for renewable ammonia: I. electrolysis of water ii. methane pyrolysis iii. Green or blue hydrogen, advantages and disadvantages b. Current ammonia supply chain end-to-end Ammonia applications and end -products (approximate breakdown of global production of ~ 170m tonnes into: agriculture industries (80%), metal treating, petroleum industry, mining, stack-emission control systems, refrigeration, yeast production, rubber / leather, pulp & paper) Existing supply chain: production / transport (pipelines, rail, truck, ship) / trade / feedstock uses Global ammonia trade flows: producers (net) exporters / importers national players multi 		
Potential role(s) of ammonia in decarbonising the energy system	 Global ammonia indee liows: producers, (ner) exponens / imponens, national players, multi- nationals Future outlook for ammonia production volumes and capacity Discussion of ammonia applications to decarbonise key elements of the energy system. a. Carrier to transport hydrogen over long distance How ammonia would work Competing solutions Advantages / disadvantages (energy efficiency, cost, safety etc.) over competing solutions b. Long term storage of renewable energy How ammonia would work Competing solutions (e.g. compressed or liquid air, flow batteries, hydro, stacked blocks) Advantages / disadvantages (energy efficiency, cost, safety etc.) over competing solutions c. Zero-carbon marine fuel How ammonia would work Competing solutions (e.g. biofuels) Advantages / disadvantages (round trip energy efficiency, cost, safety etc.) over competing solutions 		

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KEY DISCUSSION POINTS

- Importance of renewable ammonia: climate neutral production of fertiliser, other ammonia applications
- Green ammonia Applications for the new hydrogen economy
- Ammonia production technology, production facilities
- Green or blue hydrogen, advantages and disadvantages
- Potential role of ammonia in decarbonising the energy system
- Global ammonia trade flows: producers, (net) exporters / importers, national players, multinationals
- Future outlook for ammonia production volumes and capacity
- Discussion of ammonia applications to decarbonise key elements of the energy system.
- Advantages / disadvantages (energy efficiency, cost, safety etc.) over competing solutions
- Green ammonia projects overview and discussion
- Green ammonia projects supply chain considerations
- Policy and regulatory perspectives global initiatives and national nuances
- Key stakeholder perspectives
- Points investigating a green ammonia project

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