Air Products RFNBO Pre-Certification Project

H2fM® Hydrogen for Mobility

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16th Jan24

AIR PRODUCTS

Air Products is #1 in hydrogen

Hydrogen Production Key Figures

>110 Hydrogen production Facilities
(SMR, PHG, LHY, BHY, Electrolysis)

>8,000 tpd Capacity
Incl. ~600tpd Blue H_2 of Port Arthur

1,200 tpd to be built over next 5 years
Incl. ~650tpd of Green H_2 from NEOM

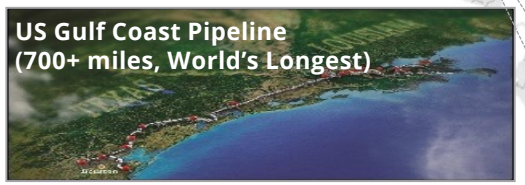

Fort Saskatchewan, Alberta


Corunna [SMR & LHY]


Rotterdam


CAPC (Chengdu)


Zhangjiagang



Marathon (Catlettsburg)


Tarragona


Kochi

Ascension Parish, LA


Pasadena


Valero (Port Arthur)


Shell (Convent)


Port Arthur, TX


LaPorte


Covestro (Baytown)


ExxonMobil (Baton Rouge)

Leading the transition to low carbon hydrogen production

>110 Hydrogen Production Facilities
(SMR, Electrolysis, Liquid and Gaseous H2)

>8,000 MTD Capacity
Incl. ~600 MTD of blue H_2 at Port Arthur

>3,300 MTD in development Incl.
Edmonton blue H_2
Louisiana blue H_2
NEOM green H_2
NY green H_2
OMAN green H_2

Edmonton, Canada blue H_2 and liquid H_2 plant

New York liquid H_2 Plant

Immingham, UK Import Terminal

Rotterdam Import Terminal and new liquid H_2 plant

Hamburg Import Terminal

CertifHy

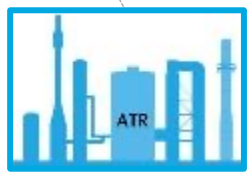
- Frankfurt, DE
- Litvinov, CZ
- Llanwern, UK
- Rotterdam, NL
- Stade, DE
- Tarragona,ES

NEOM green H_2 Saudi Arabia

OMAN JDA

Arizona liquid H_2 Plant

Port Arthur, Texas blue H_2



Louisiana, blue H_2

***CertifHy** : First non-governmental Guarantee of Origin scheme for Hydrogen in the world.*

NEOM

First commercial scale carbon-free Hydrogen project

Producing **650,000 kg/day** of carbon-free Hydrogen

Eliminates over three million tons of CO_2 emissions annually and smog-forming emissions and other pollutants from the equivalent of **over 700,000 cars**

Demonstrates **Best Available Technology** for providing carbon-free Hydrogen to the world

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RFNBO Hydrogen import in Europe

UK - Immingham

Air Products and Associated British Ports announced their intention to partner in bringing the first large-scale green hydrogen production facility to the UK.

The facility would **import green ammonia from production locations operated by Air Products and its partners around the world**. This would be used to produce green hydrogen, which would decarbonise hard-to-abate sectors such as transport and industry.

The NL - Rotterdam

Air Products and Gunvor Petroleum Rotterdam (GPR) have signed a joint development agreement for an import terminal in Rotterdam.

The Gunvor site in Europoort Rotterdam is one of several European locations envisaged by Air Products for the development of a green hydrogen import terminal. **It offers strategic access for receiving green ammonia from large-scale green hydrogen production locations operated by Air Products and its partners from projects around the world.** The green ammonia will be produced to hydrogen and distributed to markets within Europe, including the Netherlands, Germany, and Belgium.

DE - Hamburg

Air Products announced its intention to build Germany's first large-scale, **green energy import terminal** in the Port of Hamburg with **Mabanaft**, through its subsidiary Oiltanking Deutschland.

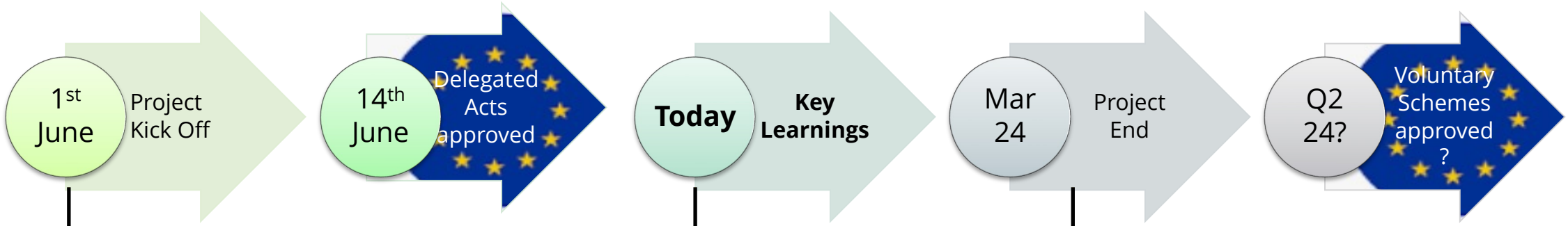
This joint development agreement is an important step towards the development of a green ammonia import and distribution infrastructure in the Port of Hamburg. The project was announced at a ceremony in Hamburg, which was **supported by German Federal Minister for Economic Affairs and Climate Action Robert Habeck and First Mayor of Hamburg Dr. Peter Tschentscher.**

RFNBO Pre Certification Project - AP Europe objectives

Air Products is aiming to qualify our product as RFNBO

Identify Blind Spots	• Identify and implement measures to ensure that the whole supply chain can be certified under RED II • Better understand the implications on non renewable inputs used in process steps
Evaluate Energy Sourcing	• Validate AP GHG calculation and identify opportunities to minimize carbon intensity • Study different energy procurement mix for landing terminals
Prepare Certification Systems	• Understand system requirements for RFNBO certification • IT tools to track and optimize CI batching

EU RFNBO Pre Certification Project



Objectives:
- Identify Blind Spots
- Assess different energy sourcing
- Prepare Certification Systems

Team Members:
- NGHC
- H2 for mobility team Europe
- **Meo Carbon**

Key Learnings

Every RFNBO *owner* needs to be certified
Carbon Intensity of our RFNBO H2 will be below 28,2grCo2e/MJ
Grid electricity for processing steps won't impact the *RFNBOness* of the H2
H2 pipelines can be used for mass balancing purpose

Next Steps:
- Certify our existing renewable H2 pathway
- Developing the Digital tools for compliance … automating is key!
- Start pre-certification project for UK schemes

Certification is key to accelerating the RFNBO global market

Robust certification schemes is critical to build trust in the markets

Incentivize green H2 demand

Harmonization on certification systems and standards is needed

- Convergence towards a new global single standard
- Mutual recognition of certification systems to remove administrative burdens

Generating a Cleaner Future

Hydrogen for Mobility

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