A HUB OF CHANGE

Sjoerd Boer, vice president of new energies at Advario, explains the new e-SAF hub development, in partnership with Power2X

APPROACHING GLOBAL climate targets calls for further development and infrastructure to support sustainable fuels. Advario and Power2X listened, and have partnered to develop a world-scale production and storage hub for synthetic sustainable aviation fuel (e-SAF) and other synthetic, ultra-low carbon fuels at the Port of Rotterdam, Netherlands.

The facility will have the capacity to produce over 250,000 tonnes per year of e-SAF, a non-fossil, synthetic fuel made from green hydrogen. It will be the largest e-SAF facility announced to-date, making sufficient ultra-low carbon fuel to fully power approximately 7,000 flights between Amsterdam and New York annually. 'The hub alone will deliver approximately 40% of the EU SAF mandate for 2030, which states that a certain percentage of SAF needs to be blended into jet fuel,' says Sjoerd Boer, vice president of new energies at Advario.

In addition to bringing down CO_2 and greenhouse gas emissions, the hub will increase local employment. Boer says: 'The hub will create around 200 new full time jobs, not to mention the hundreds of jobs it will create during the four years of construction.' Aside from achieving climate goals, the hub also puts out the correct message. 'There is room for a new industry to arise in greater Europe,' adds Boer. The facility will use imported green methanol, produced from green hydrogen and biogenic carbon as feedstock, as well as locally produced green hydrogen. Green methanol will be imported from locations where renewable energy is abundant. The facility will have a storage capacity of 230,000 m³, supported by marine, rail and pipeline facilities, to ensure a stable supply chain for the green molecules.

SUSTAINABLE CONSTRUCTION

While the hub is still awaiting FID, Boer explains how Advario plans to choose its EPC contractor. 'There will be a lot of attention to sustainability,' he says. 'And safety is our number one priority.'

Advario will be looking at a range of aspects in EPC contractors, including what materials they will be using, how those will be transported sustainably, and the contractors' vision on safety.

MEETING SAF MANDATES

The EU has set targets for aviation fuels, within the ReFuelEU mandate. 'Currently, approximately 2.5% of the global greenhouse gas emissions comes from the aviation industry,' explains Boer. 'And by setting these mandates, and enforcing fuel suppliers and airlines to blend sustainable aviation fuels, into traditional aviation fuel, they're going to actively drive down emissions.'

In the same vein, Boudewijn Siemons, CEO of the Port of Rotterdam Authority adds: 'SAF production facilities in Rotterdam currently supply 24% of Europe's aviation fuel need. According to the European Union's target, 20% of all aviation fuel is to be produced from renewable sources. The production of e-SAF in Rotterdam is therefore important to meet future SAF demand.' Boer muses that if these mandates were not in place, greenhouse gas emissions could actually triple by 2050 in the aviation industry.

WHY E-SAF FOR THE ENERGY TRANSITION?

SAF and e-SAF come with their differences. Boer explains: 'Traditional SAF has a biological origin. For example, sugar cane or HEFA (hydroprocessed esters and fatty acids). However, e-SAF is produced by green hydrogen from electrolysis, together with captured CO_2. Although the solution is somewhat more expensive now, as soon as new renewable power becomes available more widely, it'll be the better choice.'

SAF itself is a very cost-effective way to transition to greener fuels. SAF can be considered a drop-in fuel, as the composition is very similar to traditional jet fuel. This means you can use the same infrastructure and the same engines, allowing you to use a sustainable product, without having to change much else,

thereby driving down any extra and unnecessary investments. And e-SAF is even better for the environment.

Despite the initial expense, Boer sees e-SAF as a preferable way forward as there is no limit to how much e-SAF could be supplied when renewable energy sources further increase. 'The feedstocks for bio-SAF, such as cooking oils or sugar canes, are not infinite; e-SAF is the best way to sustainably scale up,' he says.

THE GATEWAY TO EUROPE

Advario acquired the 26-hectare former Aluchemie site in Rotterdam in April 2023. With its waterfront access and proximity to the key pipeline connections including the new hydrogen backbone and the Central Europe Pipeline System (CEPS), the site is positioned as a prime location for the e-SAF hub.

Considered the gateway to Europe, the Port of Rotterdam is a key strategic hub. 'Rotterdam in itself has one of the best ecosystems in Europe,' says Boer. 'Even within Rotterdam, the piece of land that we have acquired is perfectly located. It is adjacent to all the relevant backbones which exist there. So in terms of logistics, it's perfect. The port has water access, pipeline access and rail access, all on its doorstep.' Occo Roelofsen, founder and CEO of Power2X, echoes Boer's attitude towards the location of the hub: 'This strategically positioned site and innovative business-model aims to make competitive production of e-SAF at global scale in the heart of Europe possible.'

A POWERFUL PARTNERSHIP

The e-SAF hub is a partnership, along with Power2X. 'When we acquired the land, we spoke to many project developers. We chose Power2X for a few reasons,' says Boer. 'Firstly, those at the company are people very familiar with the industry, and have a proven track record in building complex projects on time and on budget. Secondly, they are also backed by an investor who, like ourselves, really has sustainability at its core. Thirdly, it's all about the people. We share the same vision and drive to make a positive impact.

There is a good energy between the two companies.'

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THE TIME IS NOW

The global trend towards using SAF has been on a steady rise for the last few years. Boer recognises that this is the right time to develop the hub. 'There are so many announcements, and so many projects, but there are not that many concrete examples where you see the development happening in real life, and that's what I really love about this one. I have been to the site many times, and I can see the transformation from an old industry to a new one happening in real life; it's great! The market is coming to life now, driven by the SAF and e-SAF mandates from the EU.'

Looking towards the future of the hub, Boer says they are excited to see the plant starting up, and the first vessel with e-methanol arriving at the jetty. 'That will be a good day!'

For more information:

www.advario.com

www.power2x.com

01 3D render of the side profile of the e-SAF hub. The purple area will be operated by Advario and the blue is Power2X's production site

02 3D render of the front profile of the e-SAF hub

03 Sjoerd Boer, vice president of new energies, Advario