

PROJECT ONE

ONENWS



Periodical newsletter – July 2021



Dear Reader,

This year, we are taking new steps with Project ONE to build a bridge to a more sustainable future. At the end of last year, we decided to change the scope of the project and to focus entirely on building Europe's most sustainable ethane cracker.

Why did we do this? Global demand for ethylene with a low footprint, by far one of the most used base chemicals, is increasing and is acute. Knowing that the youngest steam cracker in Europe is already 25 years old, new and more sustainable installations are needed to meet this demand. At the same time, the construction of a propylene unit remains part of our European olefins strategy. However, this will be

developed at a later stage as a separate project and will no longer be part of Project ONE.

With Project ONE, there is now a concrete plan for a new ethylene plant, with production emitting **less than half the CO₂ of the best performing comparable plants in Europe**. In this way, we kill two birds with one stone: not only the renewal but also the sustainability of our Antwerp chemical cluster.

Operating in special conditions due to COVID, our team continued to work thoroughly to prepare an **adapted permit application**. We plan to **submit this in the summer of this year for the entire project**, i.e. for the preparatory works as well as the construction and the operational phase of Project ONE. The application will include an analysis of the entire environmental impact of the project, as well as an extensive climate chapter. We will also discuss in depth how Project ONE fits in with the governments' climate objectives. We are confident that we will present a strong and convincing case.

In this issue of the newsletter, we give you a clearer insight into **why our steam cracker will be the greenest in Europe** and what impact it will have on the industry. We also show that in time we can further diminish the smallest footprint to climate neutral thanks to the built-in flexibility of the design of our installation.

Why wait several more decades if we can already make a difference now and accelerate the transition to a climate-neutral future?

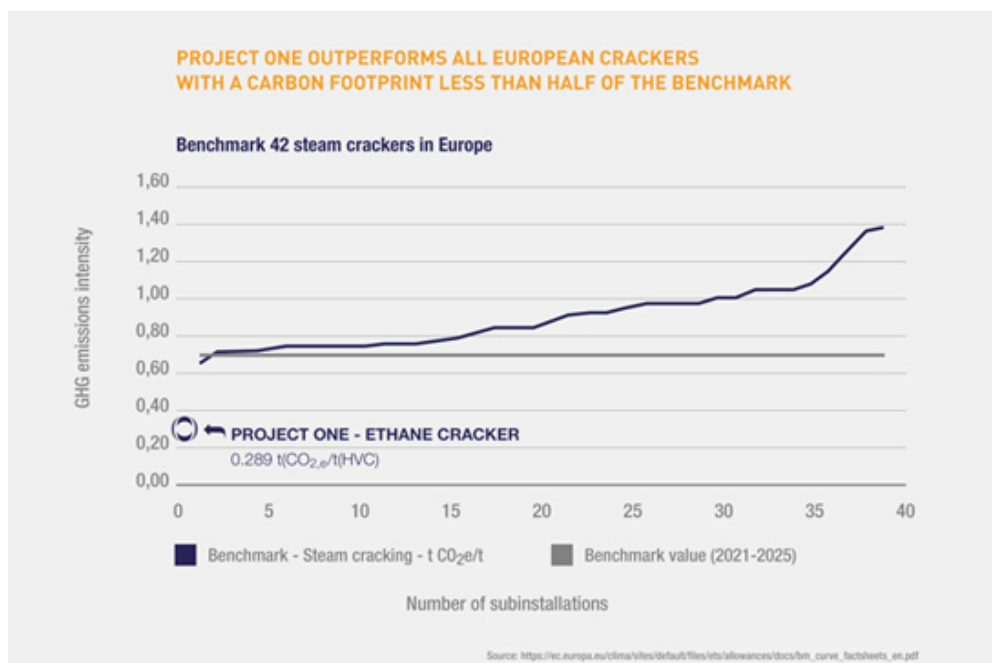
The time is now.

John McNally, CEO INEOS Project ONE

Paving the way to a sustainable future today

Impacting the benchmark defined in ETS

The route to a climate-neutral future runs in stages. Project ONE is already making a fundamental difference by making maximum use of the very best of what today's technology offers. If we compare the Project ONE ethane cracker with all other European crackers (there are about forty) within the European Emission Trading System (ETS), we see that we are literally shifting the standard. In the steam crackers category, Project ONE emits 0.29 tonnes of CO₂ per tonne of product, putting it at 43% of the benchmark (0.68 tonnes). That benchmark is determined by the 10% best performing plants. Once our ethane cracker goes online, it will significantly lower the benchmark, which will encourage other players to make additional sustainable investments or they will have to pay more for emission rights. Eventually it will displace older and less efficient production.



How will we achieve this reduction?

CHOOSING ETHANE FOR OPTIMUM FEEDSTOCK CONVERSION

Ethane is much more "selective" for ethylene than naphtha, a crude oil distillate that is the dominant feedstock of steam crackers today. The difference is remarkable: if you crack ethane, about 76% is converted into ethylene; for naphtha, this is only 30%. This means that much more naphtha is

needed to produce the same volume of ethylene. The cracking of ethane also produces more hydrogen than naphtha. **This makes ethane the best possible feedstock for the production of ethylene.**

USING HYDROGEN AS FUEL

The conversion reaction from ethane to ethylene releases more than 100,000 tonnes of hydrogen per year, which we use as an environmentally friendly fuel for the cracking ovens and steam generators. This significantly reduces our footprint. The combustion of hydrogen namely does not release any carbon.

MAXIMUM ENERGY EFFICIENCY

We design and strive for optimal integration: the low temperature of the feedstocks and the high temperature of the furnaces of the cracker are used elsewhere to save energy.

GREEN ENERGY

Project ONE's purchased electricity use is fully met by renewable energy, for which we have concluded two large wind power contracts with Engie and RWE.

Customers supplied with ethylene from Project ONE can thus reduce their CO₂ emissions by 2 million tonnes per year because they will no longer be dependent on ethylene from more polluting plants.

All options open for a climate-neutral future

Due to its strong starting position, Project ONE will be best positioned to move towards a zero footprint. We have already incorporated the necessary flexibility into our plants to integrate other technologies as soon as they are mature and financially feasible. This allows us to reduce our footprint further. For example, **it is technologically possible to feed the cracking furnaces and steam generators of Project ONE entirely with hydrogen, provided that enough**

climate-friendly hydrogen is available. With the investments currently being made in hydrogen technology and renewable energy, including in Flanders, it looks like this will be possible in future. Our design also already incorporates investments to set up a carbon capture installation, so that this option can also be utilised in the long term.

Today, electrification of a steam cracker is still on the distant horizon. Once this technology becomes industrially scalable and enough green power is available, our installation can take advantage of this as well. Thanks to the large quantity of hydrogen in the cracking gas that can be used as fuel, it suffices to electrify only part of the furnaces to allow climate-neutral production.





HYDROGEN FUELING READY
Availability of climate-friendly hydrogen is key

- Close to 60% of the heat duty can be provided by self produced hydrogen
- Furnace and boilers can be fueled by 100% hydrogen



CARBON CAPTURE READY
Pre-invest into

- Plot space foreseen
- Duct routing to transfer CO₂ to capturing unit



HYBRID CRACKER
Availability of technology and green power are key

- Close to 60% of the heat duty can be provided by self produced hydrogen
- Only 40% of heat needs to be provided by electrified furnaces

Want to know more?

[Project ONE: a bridge to a more sustainable future for Antwerp chemicals](#)

INEOS in the news

Since our last newsletter, the workforce of the existing INEOS sites has not been sitting still. Below you will find a brief overview of some of our achievements:

- **INEOS Hygienics:** To prepare the Flemish vaccination centres for the general public, INEOS Hygienics supplied 75,000 litres of hand sanitiser. In this way, we can do our bit in the fight against the coronavirus and regain our freedom together.

[Read more](#)

- **INEOS Hydrogen:** INEOS started up a new business focused on clean hydrogen, led by the Fleming Wouter Bleukx.

[Read more](#)

- **INEOS Phenol:** A first in Belgium in cooperation with ENGIE: at the INEOS Phenol site in Doel, the use of hydrogen was tested for the first time in a combined heat and power plant connected to an operational industrial installation.

[Read more](#)

- **STYROLUTION:** We made the VRT News with our breakthrough in advanced recycling of polystyrene, which allows us to turn polystyrene waste (such as old yoghurt pots) into recycled pure plastic. This report was connected with the roll-out of the extended PMD bag. A valuable initiative that now also collects styrene-based plastic (identified by the recycling symbol 6 on the bottom of the packaging) and makes it available to the recycling market. [View the report here.](#)

- **STYROLUTION:** We continue to focus on recycling research: for example, a demonstration project for the production of ABS plastics from recycled raw materials received European financial support, and VLAIP gave the green light for research into plastics recycling.

[Read more](#)

- **INOVYN:** INOVYN supplied hydrogen for a double first in Flanders: a hydrogen terminal tractor and mobile hydrogen filling station.

[Read more](#)

- **Petroineos:** INEOS and Petroineos have entered into a Memorandum of Understanding with the Acorn CCS Project to work together to develop Scotland's first carbon capture and storage system.

[Read more](#)

Want more news about Project ONE? You can find it here:

<https://project-one.ineos.com/en/news/>



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