

## **Chemical company OXXYNOVA at the heart of the EnZah2 project**

Chemical company OXXYNOVA is taking on a special role in EnZah2, a flagship project in Lower Saxony focussing on innovative production methods for synthetic plastics (e-fuels) and 'green methanol'.

For more than 44 years, the company, based in the district of Steyerberg directly adjacent to the Eickhofer Heide redevelopment area, has been producing a chemical raw material for the international chemical and plastics industry which is further processed for use in numerous everyday items and products.

In an idyllic setting, this unique chemical site can offer the EnZah2 project a host of new development and application opportunities for sustainable energy provision, benefiting not only Flecken Steyerberg but also the entire state of Lower Saxony.

In collaboration with its consortium partners Avacon, CAPHENIA and the Lühmann Group, the world's first commercial reactor from CAPHENIA for obtaining synthetic fuels – known as e-fuels and bio-methanol – is to be set up on OXXYNOVA's premises. The synthetic fuels could be used, for example, directly on site in Oxxynova's rail freight transport. This highly innovative concept is being developed by CAPHENIA, a company based in Bavaria. A test reactor is currently under construction in Frankfurt. The companies plan to build a commercial reactor directly on OXXYNOVA's site, which would also be operated by Oxxynova.

Why this site in particular? Because this globally unique technology developed by CAPHENIA for converting biogas, CO<sub>2</sub>, water and electricity into a synthetic gas as an intermediate product needs green electricity and hydrogen. Both green electricity and green hydrogen are to be produced in neighbouring wind power plants and an electrolyzer. These facilities are to be constructed in a wind farm on the site of Eickhofer Heide, which is directly adjacent, as part of the planned 'H2art of Lower Saxony' hydrogen project. Avacon would supply the biogas from the existing biogas plant in the immediate vicinity of the OXXYNOVA site; the biogas plant would be modified for this innovative new purpose.

OXXYNOVA would also be able to offer additional recycling options for the side-streams, namely heat and waste water, generated during production of the green e-fuels. *In other words, it is a highly innovative, cross-sector and system-building project, connecting numerous players in the region.*

The geographical proximity between the biogas plant, chemical works and wind farm has a number of other advantages, however. As an energy-intensive company, OXXYNOVA is interested in substituting natural gas with green hydrogen as part of its decarbonisation approach; the hydrogen could then also be taken from the neighbouring hydrogen hub. In addition, the bio-methanol produced at the site could be used in the production of the chemical raw material. “In doing so, OXXYNOVA would not only be setting a milestone for sustainable production in energy-intensive processes in its area of the chemical industry, it would also be assuming a pioneering role,” explains Dr Klaus F. Puell, CEO of the company.

OXXYNOVA is already a key player in a district heating project run by the district of Steyerberg, and, together with the biogas plant, will be supplying waste heat to the local district heating network from September this year. This network will then supply a third of all households in the district as well as public buildings such as the town hall, schools, nurseries, swimming pool, etc. with energy. It is one of the largest rural district heating networks in the whole of northern Germany – another flagship project on the path towards decarbonisation, in which Flecken Steyerberg and its partners are playing a key role.

But that’s not all. OXXYNOVA and the district have more projects in the pipeline. They are already working on a sludge drying project which also aims to drive forwards the decarbonisation of households and industry.

The construction of an anaerobic waste water treatment plant on OXXYNOVA’s premises is currently being explored as an option for this. The idea is to convert waste water produced by OXXYNOVA into biogas using microorganisms. OXXYNOVA can use the biogas as an energy source, which would reduce its CO<sub>2</sub> use by more than 7000 tpa. Once cleaned, the water will then be cleaned again in a second stage at the Steyerberg treatment plant. The sludge produced, and potentially sludge from elsewhere in the region, will then be dried after being drained, reducing the biomass of the sludge by up to 60% and allowing it to be transported in an environmentally-friendly way. The aim is to use the sludge obtained in this way for another municipal district heating network and for nutrient recovery.

In short, OXXYNOVA and its site are at the heart of innovative synergies in a pilot project that is one of a kind for Lower Saxony, and which has the potential to catapult the federal state to a leading position nationally for green hydrogen and its successful use in industry.

*“The collaboration between very different players and innovative, cross-sector approaches to drive forwards the energy revolution on a varied yet integrated basis in the Steyerberg region with a chemical site at its heart may well be unique in our state,”* explains state premier Stephan Weil. This will lend a new dynamic to OXXYNOVA’s industrial site in its current form, while also making the area more attractive for other companies looking to relocate and help to create new jobs.

### **About OXXYNOVA**

*OXXYNOVA is a producer of dimethyl terephthalate (DMT), a monomer that is used for the production of technical plastics such as polybutylene terephthalate (PBT) and polyethylene terephthalate (PET) in the form of granules, fibres and films. DMT is also used in the production of 1,4-cyclohexanedimethanol (CHDM), a component of co-polyesters, as well as for producing dioctyl terephthalate (DOTP), a phthalate-free plasticiser. All of these technical plastics are used as functional materials in the automotive, medical, electrical and electronics, construction, paint, personal care and household products industries, where they are further processed for use in a wide range of final applications and products.*

*OXXYNOVA has been reliably supplying liquid DMT to the European market for 45 years and is a market leader in this region. DMT has also been exported in solid form worldwide since 2017.*

*In the last few years, in addition to the traditional DMT core business, the company has built a second commercial pillar by developing its recycling and distillation business, with the company becoming established as a distiller of chemical side-streams and waste streams within the circular economy. A particular focus here is the purification by distillation of large volumes of glycol, tetrahydrofuran and methanol streams and mixes.*

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