

Chemistry to reincarnate old turbine blades

The Dutch recycling company Virol is using chemistry in the scrapping of test samples of blades from LM Wind Power. The target is to find a new chemical recycling processes to better the footprint for end-of-life offshore wind turbines.

In February 2020, Nina Kallio Business Manager at the Dutch recycling company Virol, attended a German offshore wind conference looking for relevant business contacts within the field of decommissioning.

She found it: “The LM Wind Power staff already knew about Decom Tools, the European project that Virol partners. And suddenly it all went very fast,” Mrs. Kallio explains.

LM Wind Power offered Virol samples of dismantled blades. The blades would be easily accessible in the Netherlands, and staff members from Virol went to LM Wind Power’s testing unit in Wieringerwerf. They left with a collaboration about the potential of chemical recycling of glass fiber from redundant LM Wind Power wind turbine blades.

Today, Virol is about to preprocess the samples by cutting and shredding them, so that they can be delivered and tested at a chemical recycling unit by August 2020. Results from the test are expected by the end of 2020 and will be presented in March 2021 as part of the Decom Tools project.

Eco-innovative concepts

Most wind turbines are designed for a service life of 20–25 years. After that, they are either decommissioned or refurbished — a field where there is still limited knowledge within offshore wind.

In the DecomTools project, which is funded by the EU’s Interreg VB North Sea Program, 14 European partners devise new, eco-innovative concepts for recycling offshore wind turbines.

The project is led by University of Applied Sciences Emden/Leer from Germany.

“We hope to reach two main goals in the project: To reduce the decommissioning’s costs by 20 percent and environmental footprint by 25 percent and to increase the know-how and expertise of the involved stakeholders from the North Sea region. The collaboration between Virol and LM Wind Power can give answers to some of the central questions, we strive to answer,” says Mr. Marcus Bentin, Professor at the university Emden/Leer.

Chemicals for new use

Virol’s test will be based on pyrolysis. The process focusses on the resin around the glass fibers from the turbine – a material that can be processed into chemicals that later on can be applied into new products from the chemical industry.

“We use Decom Tools to access the business potential of decommissioning” Mrs. Kallio says:

“What are the technologies available and what is the right strategy to approach for this new field of business? Also, we would like to define our role in this whole value chain,” she adds.

According to her, the full reincarnation of the offshore wind turbines is reached, when the industry can recycle everything in and around the product. That would be a cradle to cradle approach very much aligned with the green ambition, the rise in commercial wind power was born from.

“Decommissioning of the turbine blades is one important issue. But we also need to look into the production waste from the blade manufactures. That will be the next step. From a business perspective, decommissioning of the turbines is still a very project-based task. So, if we can complement that with the production waste recycling, we will have a steady business case that will benefit the global goals for CO2 emissions,” Mrs. Kallio says.

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