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The carbon dioxide emitted by fossil fuel power stations and many other types of plant could be used to generate methanol, say EU-funded researchers. They are developing a cost-effective method to turn this overabundant pollutant into a welcome resource. This process will draw on surplus energy produced by renewables at peak times.

Methanol is in great demand. It is a type of alcohol used to produce plastics and paints, to name but a few examples, and it is also a clean-burning fuel. The partners in the MethCO2 project are devising a method to derive it viably from the carbon dioxide emitted by power generation.

Hydrogen is needed to sustain this process, and the partners plan to produce it by electrolysis. Splitting water molecules in this way requires a lot of energy, which limits the technique’s suitability for many applications, but MethCO2 has found an elegant solution. The team intends to run the hydrogen generation process using excess energy that might otherwise be lost.

Oversupply of electricity is often linked to the generation capacity from renewables, which can be unpredictable — on a particularly blustery day, a wind farm could produce far more electricity than expected, for instance. The excess can destabilise the system, and power companies may have to pay to release it to the grid.

The MethCO2 method would enable them to store this energy in the form of methanol instead. It could thus help to solve several problems at once, potentially creating an excellent business case for this innovative approach to carbon capture and usage. Work in the project focuses on the example of a coal-fired power plant, but the techniques the partners are developing could be applied in many other industrial settings.

See also:
CORDIS
Project:
Synthesis of methanol from captured carbon dioxide using surplus electricity

Project Acronym:
MethCO2

Project website:


Links