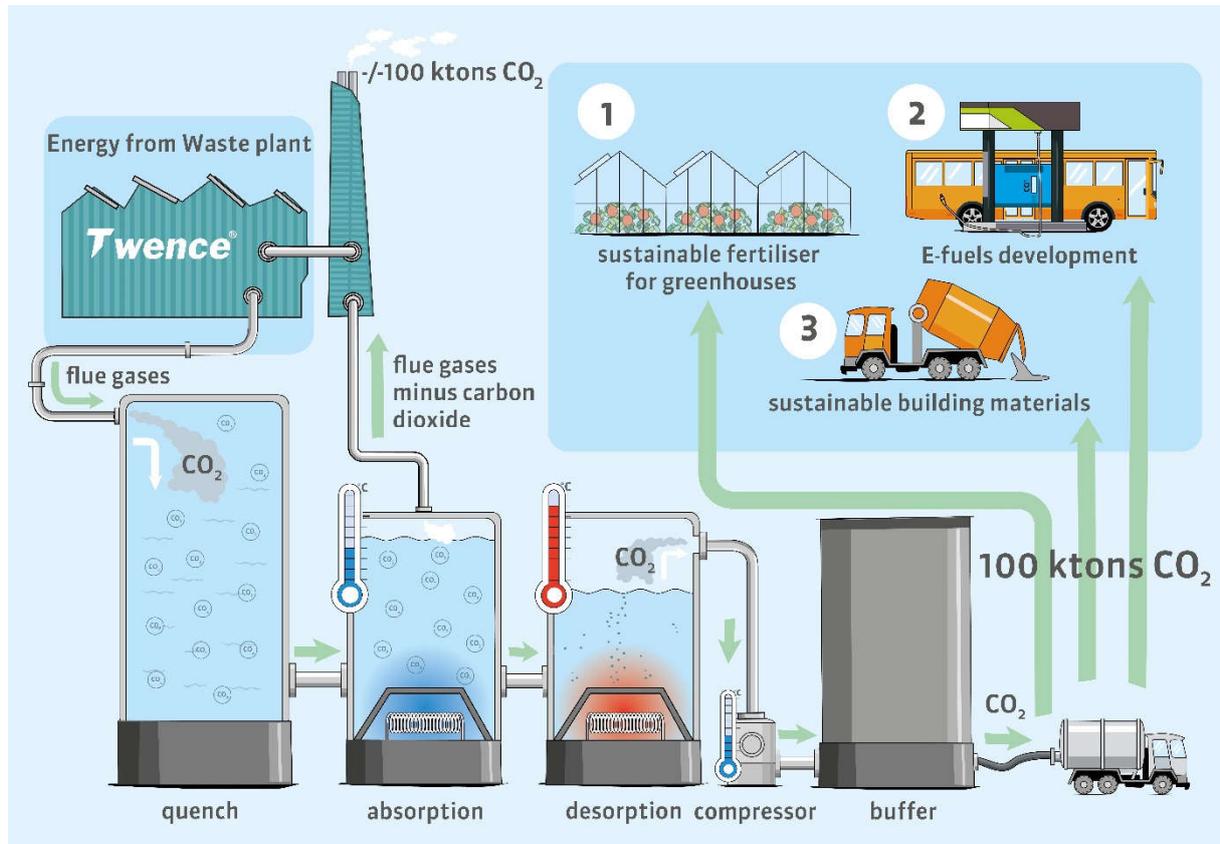


Large-scale CO₂ capture

Using knowledge from the CO₂SBC project for a next step



Twence is working on the idea to scale up the CO₂ capture from its Energy from Waste plant and make it available for useful application and reuse. This means this CO₂ will no longer be emitted directly, and that is good for the environment.

Reducing CO₂ emissions is of huge importance in halting further global warming. Twence can contribute to this. The plan is to reduce yearly emissions by 100,000 tonnes of CO₂. This scale roughly corresponds to the impact of more than 30 wind turbines in CO₂ equivalents.

After the carbon dioxide gas has been isolated from the flue gases, it is liquefied for transport to customers. There is a large demand for CO₂ for useful applications, such as 'fertilizer' in greenhouse horticulture or as an additive in the production of construction materials. If CO₂ from flue gases is used, there is no need to produce CO₂ for those applications, which means we kill two birds with one stone.

In Europe, the primary aim of many existing plants and new plants under development is to capture CO₂. By only capturing CO₂ if there is a market for it, we create an efficient process. Twence is thus taking a major step towards the circular economy and in our own development as a raw materials company.

Cooperation with Coval

In November 2017 Twence signed a letter of intent with technology developer Coval Energy from Breda to work together on investigating the development of fuels from CO₂. From 2018 we want to develop and build a pilot plant to produce the 'green fuel' formic acid. The intention is for it to be in production as of 2020. The plant will be powered in the first instance by CO₂ which is already available at Twence from the existing sodium bicarbonate plant.

Coval Energy develops technology for making formic acid with CO₂ and H₂ (hydrogen). Formic acid has an extremely high energy density – much higher than the current battery acids – and can be used to generate electricity in the fuel cells of vehicles. The use of formic acid will therefore increase the range of electric vehicles considerably. In the chemical industry, CO₂ and formic acid

have the potential as green raw materials to replace fossil raw materials. Coval Energy's technology has been developed to the point where the step from laboratory plant to industrial scale is now possible.

Sodium bicarbonate production

Our experience in capturing and using CO₂ has been growing since 2014. Every year we use approximately 2,500 tonnes of our 'own' CO₂ to produce sodium bicarbonate (baking powder, NaHCO₃), a product we use to clean the flue gases in our power plants. The fully integrated CO₂SBC plant was developed in cooperation with a spin-off from the University of Twente, among others. Due to the project's sustainable and innovative character, it received funding from the Province of Overijssel, the Dutch government and the European Union. All over the world, the successful recovery of CO₂ is still in its infancy. Speakers from Twente are invited to conferences throughout Europe where we share the knowledge we have acquired from the CO₂SBC project and the plant.

