



World-first Climeworks plant: Capturing CO₂ from air to boost growing vegetables

Hinwil (Canton of Zurich, Switzerland) / May 31st 2017

CO₂ is a valuable agricultural fertiliser: if used in the correct amount, it increases the growth of vegetables such as tomatoes and cucumbers by up to 20 per cent. “The plants become larger and stronger”, says Fritz Meier, responsible for greenhouse cultivation at the company Gebrüder Meier Primanatura AG in Hinwil, Switzerland. As of today the agricultural enterprise no longer receives fossil CO₂ via truck delivery but – in a world first – from a Climeworks plant that filters the valuable raw material directly from ambient air.

Back in 2008 Christoph Gebald and his fellow student Jan Wurzbacher first visited the family business of the Meier brothers. The two students of the Swiss Federal Institute of Technology in Zurich (ETH) had the idea to filter CO₂ directly from ambient air for sale as a raw material. “We presented our concept and concluded a memorandum regarding the possibility of purchase, in case we managed to build the corresponding plant,” Christoph Gebald recalls. The first business plan was then developed for a venture challenge course at the university.

Nine years later the first commercial plant of its kind crowns the roof of the waste utilization plant run by KEZO, the regional administration unit for waste recovery. “Since our first visit here we managed to upgrade the capacity from a few milliliters per day in the lab to an industrial scale of 900 tonnes per year,” says Christoph, now managing director at Climeworks. The method which Christoph and Jan developed with a team of more than 40 experts, is called Direct Air Capture and is now ready for commercial use. The realization of the plant in Hinwil has been supported with a contribution towards non-amortisable costs by the Swiss Federal Office of Energy (SFOE).

18 collectors filtering 900 tonnes of CO₂

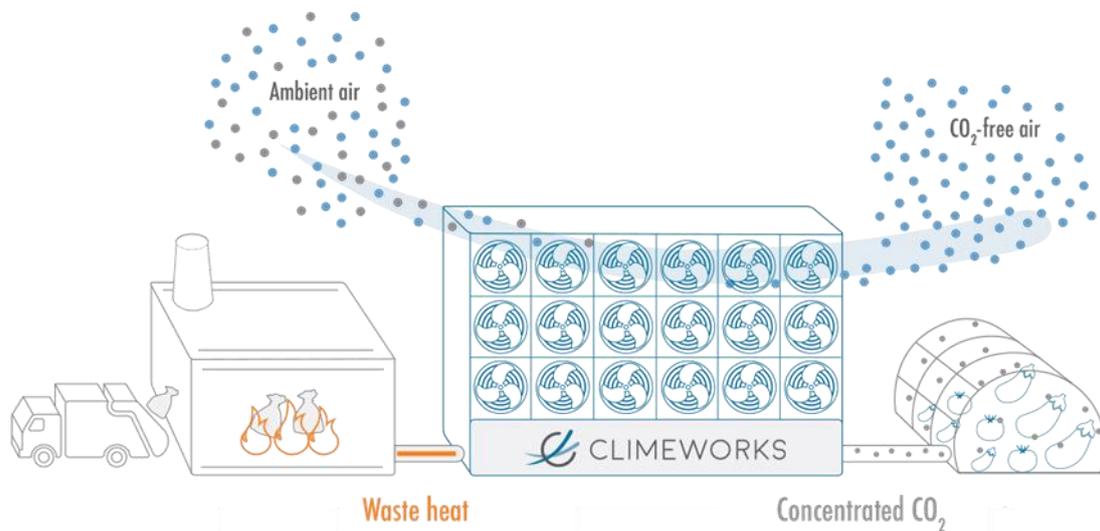
Eighteen Climeworks CO₂ collectors have been installed on top of the roof of the waste utilization plant, in view of the greenhouses 400 meters away. “The fans on the outside serve to suck in the ambient air,” Christoph explains. Within each collector begins the process of adsorption and desorption before the air with reduced CO₂ content is blown out again. “Our filters are saturated with CO₂ within a few hours”, Christoph describes.

To ensure the process of desorption, the saturated filter is heated up to about 100 degrees Celsius. “For this we use the waste heat from KEZO, making our process particularly resource



friendly”, Christoph explains. Then the high purity CO₂ is isolated and transferred to the Meier brothers’ greenhouses via gas pipeline. The agricultural enterprise annually buys up to 900 tonnes of the gas from Climeworks at market prices.

“Using CO₂ generated from local ambient air blends in well with our sustainable principles and supports the marketing of our products”, says Meier. The growth of cucumbers or tomatoes, which the company grows for Swiss wholesales, is increased significantly. Until now, a truck had to cover large distances to fill up a CO₂ tank to ensure their supply.



Facts about the Direct Air Capture plant in Hinwil, Switzerland

Type of plant	Climeworks DAC-18
Number of CO₂ collectors	18
CO₂ captured per day	2'460 kg (depending on factors such as weather conditions and air composition)
CO₂ usage	Enrichment of a greenhouse with CO ₂
Size of the filter system for CO₂	ca. 90 m ²
Size of the greenhouse	37'632 m ²
Impact within the greenhouse	Increase of crop yield of up to 20 per cent
Heat source	Low temperature heat from the waste utilization plant
Inauguration	May 31 st 2017



About Climeworks

Climeworks is capturing CO₂ from air with the world's first commercial carbon removal technology, capable of removing 900 tonnes of CO₂ from ambient air annually. The direct air capture plants remove CO₂ from the atmosphere to supply to customers and to unlock a negative emissions future.

The plants capture atmospheric carbon with a filter, using mainly low-grade heat as an energy source. The pure CO₂ gas is sold to our customers in key markets, including: commercial agriculture, food and beverage industries, the energy sector and the automotive industry. Customers utilize this atmospheric CO₂ in carbonated drinks or for producing carbon-neutral hydrocarbon fuels and materials. By using Climeworks' CO₂, the customers can reduce their overall emissions as well as lowering their dependence on fossil energy.

Climeworks' plants are modular, scalable and can be located independently of emission sources, allowing security of supply wherever there is atmospheric air. Importantly, our plants can be utilized for negative emissions, which will be vital in the quest to limit a global temperature rise of 2 °C. Compared to other carbon removal technologies, direct air capture does not depend on arable land, has a small physical footprint, and is fully scalable.

Founded by engineers, Christoph Gebald and Jan Wurzbacher, Climeworks has assembled the largest team of experts in the field and developed high-quality testing and production facilities. Climeworks will keep working to realise its mission to capture one percent of global emissions by 2025.

More information: www.climeworks.com

Contact:

Martin Jendrischik, media@climeworks.com, +49 341 52 57 60 50