

Future trends in CO₂ utilisation.

Han van de Riet, Operations Manager at Zeton B.V.
is in conversation with Esther Schröder



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Esther: "The last few years in media communications, we've seen buzz words like "circular economy", "sustainable industry", "CO₂ footprint" and "eco-friendly products". Is this something Zeton sees in practice?"

Han: "Due to public and governmental pressure to reduce CO₂ emissions to the atmosphere, we see several initiatives in the chemical process industry to develop new technologies. The traditional multinationals are investing in this field, and also several start-up companies are active, working to make their technology viable. Pilot and demo plants are needed to convince stakeholders that the technologies work in the real world."

Esther: "How do you expect these global ambitions will impact the chemical industry?"

Han: "The chemical industry must set a goal to reduce the amount of CO₂ emitted. This is to be achieved by new technologies, reducing energy consumption, bio-based feedstocks and shifting to sustainable power sources for their chemical processes. Reducing CO₂ in the atmosphere can also be achieved by using CO₂ as base chemical for processes i.e. CO₂ utilisation. In this way, CO₂ can be partly made circular to reduce or eliminate the use of fossil-based raw materials."

Esther: "Zeton is active in supporting customers in scaling up their processes. Did you see a change in the past years in the types of projects that we see due to trends

like sustainable manufacturing and CO₂ utilisation?"

Han: "A growing percentage of our projects are related to sustainable manufacturing and CO₂ reduction or utilisation. Even the more traditional processes are optimized in relation to these goals. For example, we have recently seen pilot plants for polymers focus on the use of CO₂ as building blocks for the polymer."

Esther: "Specifically, what value does Zeton bring to these types of projects?"

Han: "Start-up companies have more difficulty securing the required investments to bring their ideas through to a commercial plant, but they move a lot faster than larger, more established companies. Zeton's flexibility and experience can be of added value to help these companies realize their scale-up goals, in an affordable and expedited way. Our engineers are very good at translating the ideas of technology developers into real world plants, and they offer support through all stages of development for these new, innovative technologies."

Esther: "Do you think CO₂ utilisation and reduction will become a normal aspect of existing chemical industries, like, for example, safety and protection of the environment?"

Han: "Yes, I do. The first indication is that traditional energy and oil and gas companies are switching to greener feedstocks and processes. The political will to decarbonise energy-intensive industries is there, the funding is there and, increasingly, the public commitment of multinational chemicals producer executives is there."

Esther: "Might future plants employing CO₂ utilisation or reduction be smaller than their traditional ancestors?"

Han: "Some technologies like biofuels are suitable for a specific throughput that matches the feedstock availability or market size of the product locally. This is called distributed manufacturing. These production plants are smaller in size, and fit very well with the scale-specific project approach for modular skid-mounted plants that Zeton focuses on. A photo of such a plant features on the front cover of this edition of Horizons."

Esther: "What are some other examples of projects Zeton has completed in this

emerging technology area?"

Han: "Zeton has built plants for the direct use of electricity - generated by wind and solar - in processes and factories where CO₂ is used as a feedstock to produce fuels and chemicals. An example where CO₂ is used to make a valuable product can be found on pages 8 and 9. Another example of CO₂ utilisation is the direct use of CO₂ in a fermentation process to convert CO₂ into a fuel, and Zeton has delivered plants for that too."

Esther: "What makes these projects unique and special?"

Han: "Oftentimes, new processes are operated under more extreme conditions, or require the use of exotic material of construction, for example. Identifying scale-specific solutions for the equipment in these processes, and delivering on the process and mechanical design challenges they present, are key to our customers proving their new technology in the real world, before they scale up to production scale."

Esther: "How does Zeton's commercial offering compare to engineering companies active in this field?"

Han: "The scale of pilot and demonstration plants used in CO₂ utilisation project fits very well within Zeton's modular design-build approach. Several technologies in the carbon capture and utilisation (CCU) field use syngas-based technologies to convert CO₂ into chemicals and fuels, which Zeton has extensive experience with from our gas-to-liquids project portfolio. Also, Zeton is technology independent, so we are free to work with any customer, and any technology, and we do."

Esther: "What are Zeton's hopes and ambitions with respect to CO₂ utilisation?"

Han: "With over 35 years of experience in helping customers scale-up their process technology, Zeton is uniquely placed to play a part in the fight against global warming. We can best do this by actively supporting the development of new CO₂ utilisation technologies through the delivery of state-of-the-art pilot and demonstration plants to customers who are active in this area." ■