"We're making biocoal economically viable"

Volker Zwing is the manager of CS carbonSolutions, which was founded one and a half years ago. The company owns the exclusive rights to use the patent portfolio of a biomass conversion method that was developed at the **Max Planck Institute of Colloids and Interfaces** in Potsdam. We spoke to Volker Zwing about how far the practical realization has come.

You are using a process that Max Planck researcher Markus Antonietti developed three years ago, attracting a great deal of attention: hydrothermal carbonization. What exactly is this?

Zwing: The process converts biomass into coal and coal-like products under pressure and at a high temperature. In contrast to other biomass methods, which very often require dry biomass, we can, or better, we want to use wet biomass, because the process occurs in water anyway. This means that we can use biomass that currently cannot be used practically, and that is sometimes even a problem to dispose of.

What are the greatest difficulties in its industrial realization?

Zwing: The core problem is the energetics: the process itself is exothermic, meaning the reaction releases energy. And this released energy must be controlled intelligently in order to use it again to create a self-sustaining process – otherwise it is of no economic interest. With the classic pressure cooker principle, where energy must be supplied from the outside for every new filling to get the process going, you can prove that hydrothermal carbonization works in principle. But of course this makes no sense energetically.

How do you solve the problem?

Zwing: In my opinion, it can be solved only by operating a non-stop – that is, continuous – process. With this principle, we're making biocoal economically viable.

What end products result from this biomass conversion?

Zwing: The spectrum is very broad: Biocoal can be used in a variety of forms, right down to carbon-based industrial admixtures, such as those used in manufacturing tires. In the simplest case, the biocoal could be burned, but it is actually too valuable for this. We are rather aiming to use it as a material: as alternatives to coal products that are currently produced from fossil coal, such as filtering charcoal or metallurgical coal. A further possibility that is currently being researched extensively is the use of biocoal as a soil conditioner. This has the potential to bind carbon dioxide in the long term. Exactly which products result from the process also depends on how the process is managed and on the biomass that is fed into the process.

You are currently building a pilot plant. When will it be ready for operation?

Zwing: The pilot plant is slated to start up this year. If it works as we envisage, the first pre-series plants will go into operation next year. We have already had extensive talks with partners, for instance with local governments that are looking for alternatives for the disposal of their organic waste, green waste or sewage sludge. We have also spoken with agricultural businesses where a large amount of cattle manure is produced. People in industry are also interested. The idea is that our company will not only supply the machines, but operate them jointly with our partners, particularly during the first few years, to ensure the quality of the method.

The interview was conducted by Tina Heidborn.

Photo: Norbert Michalke