Interview Peter von Zumbusch

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Bert Beyers: Hello Mr von Zumbusch, perhaps you could briefly introduce yourself?

Peter von Zumbusch: I'm an energy and process engineer by training, have worked for Wacker Chemie for almost 30 years, have worked in various engineering fields and also spent seven years working for Wacker Chemie in China, and have been the plant manager at the Burghausen plant for three years.

You are located in the chemical triangle of Bavaria and Wacker has its largest production site there. So you need a lot of energy.

We are located in the south-east Bavarian chemical triangle with the three most important sites in Burghausen, Gendorf near Burgkirchen and Trostberg. Around 20,000 people are employed directly in the chemical industry at these three sites, in a good 20 companies. The Burghausen plant alone employs 10,000 people, 8,000 of whom work for Wacker Chemie. Wacker Chemie in Burghausen requires around three terawatt hours of electricity per year. That is roughly equivalent to 900,000 households in Germany.

Probably also has something to do with semiconductor silicon production.

That's right. A significant proportion of the electricity we consume here in Burghausen goes into the production of polycrystalline silicon. This is used to make photovoltaics on the one hand and computer chips on the other. Around 50 per cent of the global market demand for semiconductor silicon for computer chips comes from Burghausen. This means that every second chip you have in a computer, mobile phone or car is made with polysilicon from Burghausen.

Do you also need thermal energy in addition to electricity?

We need about as much heat as electricity. That is unusual for the chemical industry. That's because we need a lot of electricity. In other words, we need three terawatt hours of electricity and three terawatt hours of heat per year. If you look at the electricity requirement, around 55 per cent is covered by the public power grid and around ten per cent by our own hydroelectric power plant in Burghausen. And around 35 per cent from our gas turbine from a combined heat and power plant. This gas turbine therefore supplies 35 per cent of our electricity and at the same time around 40 per cent of our heat requirement as live steam. We already cover the remaining 60 per cent of this heat requirement from process waste heat, i.e. sustainably.

We are living in turbulent times. The keywords: Ukraine war and energy transition. Does that affect you?

Yes, that has had a very noticeable impact on us. Firstly, it was a very critical situation for us when Russian gas had to be cut off in such a short space of time due to the Ukraine crisis. In the end, it worked out well. We were also well prepared for this, but it was a critical transition phase. And at the moment, the price situation in particular is an issue. Both electricity and gas prices were far too high at times. We have now brought some of them down again. But of course they are still far too high in the face of global competition.

Could you summarise that in figures?

Our Chinese and US competitors can work with electricity prices of between three and five cents per kilowatt hour. We are in the double-digit range.

That hurts then.

This not only hurts, but is also prohibitive in the long run. Because electricity costs are a significant proportion of our production costs. If you are so far above that, the product can no longer be placed on the market.

What does that mean in perspective?

That electricity prices must come down here in Germany. We have made great efforts to achieve a bridge electricity price or transformation electricity price for energy-intensive industry. I understand that there are also regulatory concerns about this. But we believe it is urgently needed. We really are a company that is in favour of the energy transition because of our DNA. Industrial photovoltaics was more or less launched by Wacker Chemie. And we are a company that is highly committed to making the energy transition possible in the first place with our products. And we are convinced that a sustainable economy is possible. But to achieve this, you have to shape and sustain a transformation phase. And to do this, we also need to maintain and support certain industrial sectors. These include the energy-intensive sectors in particular. Yes, we are very worried if that doesn't happen.

At the moment, around 50 per cent of Germany's electricity comes from renewables. By 2030, it should be 80 per cent. How do you see that? Does that worry you too?

No, we're not worried about that; on the contrary, it has to work. We are convinced that it is possible to run an economy with sustainable energy. And we also believe that the statements that this cannot be managed in terms of storage and fluctuations in energy generation are not correct. We believe that it is possible. Basically, I have the

feeling that the people who are dealing with this issue intensively and objectively know what steps need to be taken. We also have the feeling that there are good people working at the Federal Network Agency who are setting the political framework to transform our economy. But then we also have to do that. And in the transition period, it is understandable that electricity generation is expensive at first. But it is also understandable that once the transformation is complete, energy prices will be competitive. So, and this bridge must be crossed.

What exactly should this bridge look like?

Sufficient wind and solar power capacities must be installed. We need to make the supply much more flexible. If you go to Norway today, every house there has a smart meter and every house has a forecast for the next 24 hours of what the electricity price will be. Laundry is done there when electricity costs nothing, because the electricity supply fluctuates more. Of course, industry can also utilise this, as they are the major consumers of electricity. And then it can work. Of course, you have to install a certain amount of storage and backup energy for dark doldrums. This will include a hydrogen network with hydrogen storage facilities and hydrogen-capable gas turbines.

So you believe in hydrogen? Although we know that there is still a lot to be done in terms of infrastructure, electrolysers and pipelines.

Exactly. You have to do something, that's the key word. And that's why we should start. But basically, yes. Hydrogen is part of the puzzle, and an indispensable part. I work in the chemical industry. It's always important to me that you take the right steps one after the other. The first step should always be to utilise hydrogen as a material, even in the chemical industry. We have to make our electricity supply fossil-free. Then we have to make heat generation fossil-free and then we have to make our raw materials fossil-free. And at the moment, a large proportion of raw materials in the chemical industry are fossil-based. In the future, we will be able to make everything from CO_2 and hydrogen - the entire toolbox of organic chemistry. All the products we know today, and in my view that is the first thing that needs to be changed. Hydrogen will also be needed for the dark doldrums. That is always a little unpleasant in

terms of efficiency. But I think we can cope with that in economic terms. After all, that's only a few hundred hours a year, and during that time the power grid will have to be supported with hydrogen if necessary.

What do you think of natural gas in connection with carbon capture?

I'm in favour of that. I think it's unrealistic to build a nationwide European hydrogen network and hope that it can be filled exclusively with green hydrogen from the outset. You need a lot of volume. And in the beginning, we will only achieve that with hydrogen from other sources, such as blue hydrogen. That is part of this transition period. But during this time, we have to use methods that are pragmatic and that can work.

Wacker itself wants to be climate-neutral by 2045 - just like Germany. That's not so far away. What are the next steps? And what else will you see in your professional life?

A lot. You know, the 2045 targets, those are the nice ones. Because you and I will no longer be in charge. Maybe. We probably won't even be asked anymore. But Wacker-Chemie has also set itself the goal of halving the absolute CO_2 emissions of the entire Group by 2030 compared to 2020. You don't find that very often in our industry and it's a very, very ambitious target. When you consider that our investment projects typically run for three to five years, it becomes clear that we have a very specific project roadmap and know exactly what we need to do to achieve these targets by 2030. Some of these projects are already underway, others will be launched in the next few years. I said earlier that we want to switch to green electricity. That sounds relatively simple at first. We will no longer be running our gas turbine on fossil gas. So we will have to draw another 35 per cent from the grid. That's what we're going to do.

What does that mean in concrete terms?

We are in intensive discussions with the Federal Network Agency to ensure that the infrastructure, i.e. the power and high-voltage lines, are built. This is in progress and the deadlines are right. We also find

the cooperation with the Federal Network Agency to be very constructive. At the same time, we will gradually switch our electricity procurement to green electricity via power agreements. This is also already underway. We have already achieved certain quotas and have a clear roadmap on how we want to achieve them. Then there is the heat, which was previously supplied from our gas-fired power plant. We are in the process of planning projects to produce this heat with heat pumps. As a chemical company, we have a somewhat more favourable situation because we are relatively heat-rich, as we send so much electricity through our processes that heat is also produced as a by-product. And this heat, which we still release into the river today via cooling water, will then be converted back into vapour using heat pumps.

You said earlier that it was sporting...

Yes, very sporty. In concrete terms, this means that the cooling water flows are catalogued for each process plant: What heat flows occur at what temperatures? Then you can calculate across the entire plant: What heat flows can I take together to put a heat pump on it and what efficiency do I then get? And then you can start designing the heat pumps. That's an exciting task at the moment, because you can buy a heat pump for a detached or semi-detached house on every corner. But heat pumps on the scale that we need here at the chemical plant are actually technologies that are being developed. And we have some very interesting research projects in which we are working with major manufacturers such as MAN, Siemens and Thyssenkrupp to drive these technologies forward.

If you think about the energy transition as a whole at the moment. Do you have a good feeling or a bad feeling?

I am a little worried. It seems to be difficult at the moment to organise majorities for obvious necessities. For example, when it comes to the industrial electricity price, i.e. the electricity price for energy-intensive companies. I am personally convinced that we owe it to future generations to switch our economy to sustainable energy. Because we stand by the fact that there is man-made climate change and that we have to fight it. From our point of view, this is simply a necessity. The good news is that we believe this is possible and we even see it as an opportunity. But the political framework conditions must be created. And to do this, we need to develop sustainable energy

generation, hydrogen networks, carbon capture and storage or utilisation with great speed and determination. That seems to be a bit difficult at the moment.

Do you also mean that in economic terms?

If you switch on a heat pump at the current electricity price, the steam that I generate from it is almost twice as expensive as the steam that I take from my gas turbine at current prices. A prudent businessman should not actually spend a lot of money on things that make the product more expensive to produce afterwards. This is a simple maths example. If the electricity you put into the heat pump is only half as expensive, then yes, it's a deal. And then we can do it. As a commercial enterprise, we have to draw up profitability calculations. That's why it's difficult for us to move forward unless these conditions change and a political framework is created to enable internationally competitive electricity prices.