



## “We are pulling out all the stops”

01/02/2018 Albrecht Reimold, Member of the Executive Board for Production, gives an interview about the expansion of the Zuffenhausen Porsche site, the Mission E project, and the future of automotive production.

How is the Zuffenhausen 2020 project progressing?

Everything is running to schedule, but I'd like to add something here. Traditionally, Zuffenhausen was all about the Porsche 911. But step by step, we have integrated the 718 model lines into production and we now build all of the two-door sports cars at the main plant again. In order to satisfy the high level of demand, some of the production for the 718 Cayman – overspill production – is carried out at the VW site in Osnabrück. That will continue in 2018, as the success of the 911 means we are running at peak production in Zuffenhausen. When I joined Porsche exactly two years ago, we were building around 200 sports cars each day. The figure now is 250 vehicles per day; an increase of around 25 per cent.

In that context and with an eye on the future and e-mobility, we have been looking at potential future developments for the plant in Zuffenhausen. How about focusing only on two-door sports cars at our headquarters? Should we invest a lot of money in new production lines or adopt a greenfield strategy?

The key suggestion came from the works council: Involve the employees in the future plans. In practice, employees pay 0.25 per cent of every rate increase up to 2025 into a pot. This future contribution is used to finance investments linked to getting started in the field of alternative drive technology. In 2026, salaries will be adjusted as if the pro-rata non-transfer of wage increases had never happened. Thanks to this participation and other productivity actions, we have succeeded in bringing Mission E to Zuffenhausen.

A blueprint for similar projects for your Group colleagues?

At Porsche, the future has tradition. The "Zuffenhausen 2020" project has three basic ideas. The most important is the contract to secure the site, which we negotiate every five years with the employee representatives. In addition, this means we don't continuously have to secure new areas; especially in the Stuttgart area. For Mission E, we have stripped down the existing factories and we are making better use of the space. With this approach, Porsche is setting benchmarks in terms of sustainability. The German Sustainable Building Council (Deutsche Gesellschaft für nachhaltiges Bauen, or DGNB) has awarded us a platinum certificate for the first time, for the expansion of Plant 4. This area covers around 29 hectares and is home to facilities such as the new engine plant. Ultimately, I feel certain that Mission E will become another milestone in our history, like the 911 of 1963. A true Porsche icon.

And how is construction work progressing?

I have worked in the automotive sector for 30 years now, but I have never been involved in anything like this, with a complete restructure taking place alongside normal operations. Or, to be more precise, alongside a plant operating at maximum production capacity. The construction companies and our planners are delivering a logistics master class every day. And we also have our neighbours and the residents here in Zuffenhausen to consider, and we are keeping them fully informed. We take their concerns seriously, and one of the measures we have implemented is a hotline. If a crane is squeaking in the wind at night, for example, or the road surface is extremely dirty because of the demolition work, then we take care of it. That increases costs, of course, but it is only thanks to the excellent collaboration with the city, the regional council, the state and also the residents that we have so far been able to keep this immense construction project on track with no major complaints.

What stage has Mission E test manufacturing reached?

We are already enjoying seeing the first prototypes. Members of the production team are also involved in the pilot production phase, so that experience can be gained at an early stage. The technical development and our planners are working together to drive the feasibility of building this vehicle forwards. And everything is already going pretty well.

Isn't it true that you don't yet know every individual phase that is required for Mission E production?

It goes without saying that have a basic plan of how it will all be achieved. But the employees add their own ideas to the mix, so we are optimising on an ongoing basis. And this process of continuous

improvement in all phases will continue until production begins.

When will you actually put Mission E into production?

The initial equipment will be brought into the buildings in early 2018. But we are ultimately looking at 2019.

Why is Mission E an individual project, instead of being part of a flexible manufacturing process that can handle all engine types?

Our core area of expertise is mixed-model manufacturing with a high degree of individualisation. If we were to decide tomorrow to manufacture this type of electric vehicle in Leipzig, we would integrate it into the existing line; we see that as the best way. But our sports car production at Zuffenhausen – as I've already outlined – is currently at full capacity, so further expansion is impossible. That is why we have decided on a second line. But that has nothing to do with wanting to make it in isolation.

In the future there will also be Premium Platform Electromobility – or PPE for short – which you are developing in collaboration with Audi. Doesn't that set a time limit for the manufacture of Mission E? The PPE vehicles will mean that Mission E production is no longer required, won't they?

What we plan to do with the PPE architecture is transfer the existing model lines into the age of e-mobility. Working with Audi, we are taking responsibility for creating the vehicle architecture of the future. Mission E is an independent, separate model line and is the ideal way to supplement and expand our product portfolio.

So what you're saying is that a second generation of Mission E is entirely possible?

For the moment we are focusing on the first generation. The iconic 911 is now in its seventh generation, with countless derivatives. Our creativity knows no limits and, naturally, we are also considering derivatives for Mission E. But one thing at a time.

What is the planned lifecycle for Mission E?

Normally, production lifecycles are set at somewhere between five and seven years. But we are seeing a trend towards shorter cycles these days.

Mission E is presumably considered part of the Group production network. So could Zuffenhausen produce something other than a Porsche Mission E?

You mean another brand using our platform? That kind of thing is always a possibility and there are also plenty of ideas about that within the Group. But that decision isn't in Porsche's hands.

And are you also already investing money in structuring Mission E production so that it is compatible with the network?

We believe in the success of Mission E. That means that we are pulling out all the stops to develop the required volumes to meet our own sales requirements. We are happy to pass on our technology, but I can't foresee any free production capacity at the moment.

When do you expect the first derivative of Mission E?

Naturally, we are investigating proposals. But you will need to be patient for a little longer.

Aside from Mission E, is there a Group strategy for electric powertrains?

Work is in progress on that with the Components division. At Porsche we are working closely with our Audi colleagues. The powertrain has always been a core area of expertise for Porsche, and the situation is no different with electric vehicles. It is a fundamental part of our DNA. That is why we are also manufacturing the powertrains for the first purely electric Porsche in Zuffenhausen. As we are not a high-volume manufacturer, the large volumes are being discussed and decided within the Group. But we can definitely envisage high-performance powertrains at Porsche.

And this electric motor will be available for other brands to purchase from Porsche?

Fundamentally, yes. This is already the case with the V8 engine. The only proviso is that we have the necessary production capacity.

How do you reconcile the Porsche DNA with an electric motor?

In terms of the technical data, we can identify various points. High continuous output, acceleration reserves and reproducibility with power take-off are essential features of Porsche electric motors. Efficiency and performance are characteristics that are controlled via corresponding high-performance electronics. Even when it is electrified, the powertrain remains a distinguishing feature for Porsche.

And the cell chemistry is also a differentiator, isn't it?

Yes, definitely. For example, how often can I demand maximum output from the battery? We have plenty of ideas about how we can also offer the typical Porsche DNA to our Mission E customers.

You are currently planning annual production for Mission E of 20,000 units; is that correct?

The initial design of the work areas is set up to support production of around 20,000 units. But, of course, we have left a little leeway to increase that.

Have you already received some orders?

There is plenty of interest and we have been receiving enquiries from customers almost since we first presented the concept study at IAA 2015. But we haven't accepted any so far.

There are reports that the entire project is under enormous cost pressure, particularly the electric powertrains project..

All projects are essentially under enormous cost pressure. And, naturally, expenses are significantly higher than planning for a greenfield strategy. Just clearing the existing construction areas – i.e. the demolition work – was in the region of more than 50 million euro. Now, we are raising the new buildings up again – during normal operations, no less. Simply put, that costs more money. Ergo, this "more money" must be reduced wherever possible.

How are you doing against your budget?

My boss is satisfied with my work.

You are also working on the Zero Impact Factory.

The issue of sustainability has always been very close to my heart. I see it as a social obligation, not just a sticking plaster. At my request, we have been using renewable electric power at all Porsche sites since January 2017. In Zuffenhausen, we will be switching the heat supply to biogas from 2020, eliminating up to 5,000 tonnes of environmentally damaging carbon dioxide every year. We have already taken numerous steps towards making our factories CO<sub>2</sub>-neutral. Although we haven't reached our goal yet, we are making good progress.

What is the difference between CO<sub>2</sub>-neutral and Zero Impact Factory?

The Zero Impact Factory focuses on the "cradle to cradle" production method, which has no waste, no sacrifices and no restrictions. Unlike current material flows, which are often created with no consideration for conserving resources, the concept promotes regeneration into circular nutrient cycles. The goal is for value that is created to be retained for people and the environment.

And is that your goal across all plants by 2025?

The concept is in place up to 2025. We have numerous sub-goals along the way, and we mustn't neglect them. In future, we need to get to grips with the product at an even earlier stage: What materials are being used? How can we feed them back into the cycle? Everything that we contribute in terms of energy and materials must ultimately be retained in a cycle.

Which Porsche plant will be the first Zero Impact Factory?

We are working on that at the moment. No decision has been made yet on which production facility will

lead the way.

What is Porsche's strategy for modular production or autonomous production?

We are sticking with a line concept, and thus with a stringent flow for manufacturing our vehicles. I imagine there will be deviations from this principle for customisations. We have opted for a flexi-line for Mission E: In other words, instead of a fixed mechanical line we use automated guided vehicle systems (AGV) that transport the body sections to various stations in a set sequence. Simply moving the body sections constantly backwards and forwards from station to station just makes the overall route longer. In contrast, clever organisation along a virtual line means the material can be directed in manageable quantities, for high levels of efficiency.

So you are almost getting rid of the assembly line, as the things drive themselves?

...and are also flexible. We could change the cycle lengths. Or pause the AGV for sensitive jobs and then have them move to the next station more quickly, to stay on schedule. The flexi-line gives us maximum variability, which matches our philosophy.

Will this make automotive production cheaper and/or faster?

First of all, we don't need to pour concrete for any pits; we simply need an even surface. This also means that the intermediate levels in the building aren't as thick any more. On the other hand, we have had to work hard to convince our employees. They can ride along on an assembly line conveyor, but they have to walk alongside an AGV. We used a test operation to contrast all the advantages and disadvantages and ultimately received a clear commitment from our employees to the ultra-modern flexi-line.

So how much are you saving compared with assembly line manufacturing?

The investment savings against a conventional assembly line conveyor are around three million euro. In percentage terms, that's around 40 per cent. But the underlying concept goes far beyond the figure itself. An assembly line like this offers significantly more options in terms of adaptability and flexibility.

Are you a fan or a critic of automation?

I am a fan of efficiency. It benefits nobody if we save money in the plants and then spend it on programmers for maintenance. Things need to be more efficient overall. There are plenty of show plants, e.g. for automated tailgate installation. But the technology hasn't yet reached the level where it is as sophisticated as a human being. So, in the future, Porsche will still have its focus on people.

Aren't you tempted to set up another production facility in the USA or in China?

There are plenty of things that still tempt me on a personal level, but I don't want to encourage speculation at the moment.

Not yet...

We always have a finger on the pulse. On an international level, we observe how the markets and legal framework conditions are changing. But manufacturing plants in the USA and China aren't under consideration for Porsche at the moment.

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