9:11 Porsche. Podcast.

Transcript of Episode 11: eFuels: Complementing e-mobility

Guests:

Dr. Michael Steiner, Member of the Executive Board, Research and Develop at Porsche AG

Walter Röhrl, former rally and racing driver, brand ambassador

Host:

Sebastian Rudolph, Head of Communications, Sustainability and Politics

Intro

[00:00:17] **Sebastian Rudolph**: Welcome to a new episode of the 9:11 Porsche Podcast. My name is Sebastian Rudolph, and I'm responsible for Communications, Sustainability and Politics at Porsche AG. With this audio magazine, we want to give listeners an insight into the world of Porsche and at the same time address a broad range of exciting topics. Today we have set up our studio in Weissach, the heart of our innovation work and the birthplace of Porsche racing cars for over 50 years. We can nevertheless see the three white Porsche 911 cars soaring aloft in front of us: we've taken a miniature version of the sculpture with us to set on the table here. Today's episode is dedicated to a highly interesting topic for our future: eFuels. I'm delighted to be able to talk about the potential of these synthetic fuels with two experts: motorsports legend Walter Röhrl, and Michael Steiner, our Head of Research and Development. Hello Michael, hi there Walter, great to have you with us.

[00:01:14] **Walter Röhrl & Michael Steiner**: Hello Sebastian!

[00:01:16] **Sebastian Rudolph**: Before we start discussing the sustainability of eFuels and how they are used at Porsche, let us first introduce our two guests:

[00:01:28] **Station voice**: Michael Steiner was born in Tübingen, Germany, in 1964. After completing his school education in Lindau on Lake Constance, Michael studied mechanical engineering at the Technical University of Munich where he worked as a research assistant before beginning his career at Mercedes Benz. In 2002, he joined Porsche as "Head of Innovation Concepts". Among other things, he was in charge of the Panamera model series, and

was also responsible for the design and development of complete vehicles. He has held the position of Chief Development Officer at Porsche since 2016.

Walter Röhrl was born in 1947 in the German city of Regensburg. His title as the "Best rally driver of all time" underlines Walter's successful career in motorsports. He is one of the few drivers to have won world championships in both rallying and racing. Since 1993, Walter has been acting as a brand ambassador for Porsche all over the world. With his excellent driving skills and ability to explain a car's driving behaviour not only precisely but also in very clear and simple terms, Walter Röhrl continues to influence the tuning and technology of Porsche road sports cars to the present day.

[00:02:32] **Sebastian Rudolph**: Walter, as we just heard, you're not only active directly on the road but off it too, when it comes to the design and tuning of vehicles. Perhaps you can tell us first of all what's so special about your work, both here at Porsche and out on the road?

[00:02:49] **Walter Röhrl**: The special thing undoubtedly is that I very intensively feel how a car is behaving, and can communicate this quite well to the engineers. Of course they know more about the technical details – I don't have enough technical understanding for that – but I have a very sensitive feel for a car's performance. Whether it's the chassis, the steering, the engine or the response characteristics. And I'm lucky to have found a great partner right here in the company, Roland Kussmaul, with whom I designed most of the cars in my time – in particular the GT cars. We are absolutely on the same wavelength. He knew exactly what it meant whenever he asked me: "Well, is it good?" and I would say: "It'll do". He'd reply "It'll do? Then we'll have to improve it!".

[00:03:41] **Sebastian Rudolph**: Walter Röhrl is a legend, a motorsports legend. Michael, what's it like having someone around who is able to sense the inner workings of a car like that? In the same way a car whisperer would say: hmmm, we need to turn a screw further here, adjust something there. How does the Design department deal with this personal input?

[00:03:53] **Michael Steiner**: Oh, it's well worth listening to Walter. He not only has a very good feel for things, he can also describe what he feels. Only then can the engineers do anything with this, even if they sometimes have the feeling themselves that "It's actually fine the way it is." He challenges us, and in this way pushes us forward. So listening is worthwhile, and it's fun with Walter.

[00:04:12] **Sebastian Rudolph**: Walter, there's a photo of you refuelling a car with eFuels, synthetic fuels. You've also already been driving with synthetic fuels. What sort of an experience did you have?

[00:04:23] **Walter Röhrl**: Two and a half years ago I got a call from the Fraunhofer Institute to say that they wanted to build a test plant for eFuels near my home. I was present when the foundation stone was laid, so of course I've been following the whole thing intensively for the last one and a half years. Back then, we produced 15 litres from sewage sludge for the first time. We filled up my Porsche Turbo with it, and the professor from the Fraunhofer Institute rode up the mountain with me. And of course the car drove just like it always did. So, naturally for someone like me, who his whole life has always asked himself whether something is necessary or not, and if I can do anything for the environment (I'm a passionate cyclist and in my free time always take my bike), it was a wonderful feeling to say: now I can drive a car without having a bad conscience about somehow harming the environment. And that naturally makes me very hopeful that eFuels will make a difference.

[00:05:27] **Sebastian Rudolph**: Porsche fans, and I think also car fans in general, will have been listening very closely to that. Walter said that of course the Porsche Turbo drove just like it always did, even on synthetic fuels. Michael, this sounds so self-evident, but actually it isn't quite as self-evident as it appears. Talk us through what's going on with eFuels here at Porsche.

[00:05:47] **Michael Steiner**: Yes, then I'll follow on from what Walter was saying. Synthetic fuels – eFuels are synthetic fuels – have to be designed. They need to be mixed together in such a way, for example, that they are as similar as possible to today's fuels, so that the vehicle's properties remain unchanged. But they are produced in a completely different way. The fossil fuels that are burned today are energy that has been stored for hundreds of millions of years, made from dead animals and plants. The synthetic fuels are created by using renewable electricity from wind power or solar cells, and then using this electricity to split water into hydrogen and oxygen in a process called electrolysis. And this hydrogen is then the first element used in making the fuel. The CO_2 needed for this is taken from the air – in modern terms this is called "direct air capturing". The process then continues with e-methanol. This can be refined in further synthesis processes into raw petrol, and then refined again into fuel that complies with the DIN EN 228 standard. That's the current standard at the moment. This makes it possible to synthetically produce a fuel with the same properties as today's fuels almost without leaving a CO_2 footprint, because the CO_2 is extracted from the air beforehand. So at this stage we're in the circular economy and the disadvantage of fossil fuels has been eliminated.

[00:07:07] **Sebastian Rudolph**: And a combustion engine can also be driven efficiently with this fuel. Electromobility is a hot topic at the moment, here at Porsche like everywhere else. Can you put that into context for the listeners, Michael? How do electric cars and synthetically fuelled cars go together?

[00:07:25] **Michael Steiner**: Yes, this is a very exciting discussion, for the general public too. If you have renewable electricity, for example in the German power grid, then it makes sense to use this electricity directly to drive an electric vehicle. The total energy efficiency, from the wind turbine to the car wheel is unsurpassable. But we must not forget that we import a great deal of energy today, and will continue to do so in the future. Europe imports more than four times as much fossil power as the regenerative power that we can produce. We have to replace this imported fossil power and make it sustainable, and liquid energy sources such as eFuels are the ideal solution. They will allow us to conserve regeneratively produced energy in other regions of the world, liquefy it, bring it to Europe and, in addition to e-mobility, use it to drive sustainably with the existing fleet or in motor sport, perhaps also in one or two new combustion engines. Then you don't have the bad conscience that Walter mentioned, but can also drive a combustion engine sustainably.

[00:08:33] **Sebastian Rudolph**: We'll talk more about the possible uses of eFuels in motorsports or in existing vehicles in a moment. But before we do that, let's hear some facts.

[00:08:48] **Station voice**: What are eFuels? eFuels are liquid fuels produced from water and CO_2 using renewable energy. Depending on the production method, the result is synthetic petrol, diesel or paraffin. These fuels allow vehicles with internal combustion engines to run almost CO_2-neutrally. In the medium term, eFuels thus have the potential to combine the future with tradition.
How is Porsche promoting the development and production of synthetic fuels? Porsche has begun with an initial investment of 20 million eurso in a pilot eFuel plant in Chile. Its concentrated know-how in fuel compatibility will allow Porsche to forge ahead with the development of eFuels for high-performance engines. Partners include Siemens Energy and ExxonMobil. The integrated pilot plant for industrial eFuel production in Chile is the only facility of its kind in the world.
In which areas will Porsche use eFuels? Electromobility remains a top priority for Porsche, and eFuels could be a useful asset in this connection, as ramping-up e-mobility will take a considerable amount of time. With the help of eFuels, classic Porsche models, for example, can also make an immediate contribution to the reduction of CO_2, and hence to sustainability. For

the time being, it is planned to use eFuels in Porsche motorsport vehicles and in the Porsche Experience Centres.

[00:10:17] **Sebastian Rudolph**: Walter, as a motorsport legend, you of course know that innovative technologies are often first tested in motorsport. But why is that, and where does the practical advantage of moving from the racetrack to the road lie?

[00:10:30] **Walter Röhrl**: First and foremost, motorsport is an ideal environment for accelerating development. That's always a highly sensitive area. You can get to a point in motorsport where you have underperformed in the last race, and realise that the next race is only four weeks away, and you know you'd better come up with something fast. Work then proceeds accordingly under extreme pressure and with concentrated know-how to quickly find a new solution. And that's the big advantage: when you co-develop something in motorsport, you of course end up with a perfect car for serial production. And the development time is also very often substantially reduced. I've witnessed this myself. I drove a prototype at the Le Mans in 1981 – it was officially called the 924 at the time, but was already a 944 – and it was always a particular strength of Porsche that they tried things out first in the rough-and-tough arena of motorsport before going into serial production, and were consequently successful.

[00:11:27] **Sebastian Rudolph**: And it's the same with synthetic fuels: Porsche Mobil 1 Supercup has been talked about as a lighthouse project. Have you ever received any feedback from this scene?

[00:11:39] **Walter Röhrl**: No, I haven't. I see it mainly on TV when I watch the Supercup. But I think it's well known. The Supercup is definitely the most interesting one-make race in the world, and also the most arduous. This year in particular, I saw that when 36 speedsters take off, things get really tough, and any weaknesses would show.

[00:12:02] **Sebastian Rudolph**: Michael, let's pass the ball to you now. How do you see motorsport and eFuels – is that a good combination?

[00:12:08] **Michael Steiner**: Certainly. A justified criticism of motorsport is that it is not sustainable nowadays with the combustion engines. But with the right fuel, an eFuel, a synthetic fuel, it works, and a lot of people are talking about it. But we are already driving. I think that's the difference. This fuel has proven itself in the Supercup, which really is a gruelling event. We're learning that we can show what the fuel can do, what's possible, and we like that.

[00:12:37] **Sebastian Rudolph**: Walter told us about the enormous pressure that builds up in the racing world – in a positive, sporting sense. Always having to be better, to find another new idea, shave a tenth of a second, sometimes a hundredth of a second, off a time, which can then be enough to make the difference. You also have a phased plan, for organically-based and e-methanol-based fuels. Why is such a step-by-step plan important, what are you hoping to achieve?

[00:13:00] **Michael Steiner**: We are following this phased plan because we want to be fast. You can easily produce synthetic fuels from waste biomass, today in the here and now. Of course, strategically speaking, this isn't the right option, because there would not be sufficient quantities of waste to supply a large fleet. But to produce synthetic fuels, to test them, it actually is the right way – in this case only fuels made of e-methanol from hydrogen. We have a very clear plan. Next year we will produce roughly 130,000 litres a year at the pilot plant. We will then gradually increase this capacity, and in 2024 we want to produce 50 million litres, in 2026 approximately 550 million litres a year, to show that it really works, and not just experimentally or prototypically in motor sports – we're learning quickly in this respect – and that large quantities can also be produced, and actually used to fuel vehicle fleets.

[00:13:57] **Sebastian Rudolph**: Porsche is cooperating with Siemens Energy in this pilot project. How important is this pioneering work? And why is Porsche undertaking something like this in an area that you wouldn't immediately associate with Porsche?

[00:14:09] **Michael Steiner**: We could also have sat back and said let others take care of the production of fuels – we'll wait. Only, if everyone waits, then nothing happens! Someone has to start taking action. We have found cooperation partners, for example with Siemens Energy, ExxonMobil, AME in Chile, and many more who are willing to invest in this complex new process of producing synthetic fuels together with us. There's also a lot of German mechanical engineering involved, and the goal is to show what is possible and, of course, to prove that fossil fuels can be replaced with such regeneratively produced liquid energy sources; and that's what it's all about in the end.

[00:14:53] **Sebastian Rudolph**: To be able to keep the combustion engine on our roads for a longer time, so to speak. Walter, you have a whole lot of treasures in your garage. I believe I'm right in saying that there are also some Porsche jewels in there. Are you particularly attached to any one or two of them?

[00:15:07] **Walter Röhrl**: Ohhh, that's a difficult question. I love all of them, that's the problem. Although, it's really quite a task keeping them all in motion. But, of course, this is what I'm truly hoping for, that I can keep on driving these old cars in the future without having a bad conscience, because I'll be able to run them on eFuels. I think it has been said that 70 percent of all Porsche cars ever produced are still running. So that would be wonderful, of course, if we could keep them on the road, and I would be really happy if I could still actually drive these cars for the next ten or fifteen years. And it's just a very emotional experience for me to drive such an old car. We're always talking about sustainability; this is proof of sustainability. Running a car that is 50 years old on eFuels. What more can you do? That's the epitome of sustainability.

[00:16:04] **Sebastian Rudolph**: The ball's back in your court now, Michael: would you like to add something?

[00:16:08] **Michael Steiner**: Yes indeed, that really is one of the main goals, to be able to sustainably operate vehicles in the existing fleet, be they vintage cars or simply second-hand vehicles. They have all been built already. That means that the energy, the energy expenditure, for their production already lies far behind us in the past. Each year longer that such a vehicle can be driven, especially if it is run on the right fuel, is a good year, and a sustainable year, for such cars. So that's one of the goals, and if you look at it on a global scale and not just at the big megacities, where e-mobility will certainly catch on quickly, then we have well over a billion, one and a half billion, vehicles in the existing fleet around the world. It will take decades until we replace them step by step with electric vehicles. And what happens in the meantime? In the meantime, we need different fuel.

[00:16:58] **Sebastian Rudolph**: It should be said that Porsche relies on a triad of powertrains: the combustion engine, hybrids and fully electric sports cars. Walter, do you have a favourite drive system?

[00:17:10] **Walter Röhrl**: I must say, it depends on where I live. If I live in a big city, and drive 15 kilometres to the office every day, and at the weekend 60 kilometres into the countryside, then of course there is nothing better than an electric car. I'm the kind of person who gets into a car and usually doesn't get out of it before clocking up 500 kilometres, and in this case there's only one option, and that's the combustion engine ...

[00:17:32] **Sebastian Rudolph**: ... and the hybrid is a bridge between the two ...

[00:17:34] **Walter Röhrl**: Yes, exactly, it's a bridge. Maybe one day I'll get to that stage. But at the moment I always say, in the city I ride my bike or walk. But when I'm older, I might need to drive into town. So a hybrid would be a good solution.

[00:17:47] **Michael Steiner**: The hybrid is quite definitely a good solution, precisely because it can drive such short distances emission-free if you charge it with regenerative electricity. And then, if you can also drive the hybrid over long distances using eFuel, wow – that's perfect! Of course, I also like to drive a naturally aspirated 911 from time to time – I have a GT3 Touring, which is a vehicle I also like to drive at the weekend – but normally I drive electrical vehicles.

[00:18:16] **Sebastian Rudolph**: Now we've come to the point where I would like to play a little quiz with you. I'm going to ask each of you three questions about each other, turn about. So, we'll have a little race stage and see who crosses the finishing line first. Walter, we'll start with you, a question about Michael: Which of these quotes is from Michael Steiner?

- "If we only start developing new products when all the regulatory issues have been clarified, it's already too late."
- "We have a marathon ahead of us that goes by the name of transformation."
- "Sustainability is increasingly becoming a hard currency."

[00:18:54] **Walter Röhrl**: I think the first one.

[00:18:57] **Sebastian Rudolph**: Such a quick answer, and of course he's right. Michael said that. Would you like to explain the background for us?

[00:19:02] **Michael Steiner**: Yes, that's right. It was about eFuels. If we all just keep waiting and no-one invests and does something, well then, nothing will happen.

[00:19:10] **Sebastian Rudolph**: Well now, Walter has taken the lead on the first lap. The question is, can you catch up? Michael, which of the following quotes is from Walter?

- "Racing means life. Anything before or after is just waiting."
- "Good drivers have the flies on the side windows."
- "Basically, it's about being the first to call it a day."

[00:19:32] **Michael Steiner**: Probably the second one. But I'm not certain.

[00:19:37] **Walter Röhrl**: Yes, that's right! It was the second one.

[00:19:40] **Michael Steiner**: Wow! One all.

[00:19:41] **Walter Röhrl**: Although, I don't drive like that in reality. I did say that, but I'm exactly the opposite. I drive straight ahead, I don't zigzag.

[00:19:49] **Sebastian Rudolph**: So, a draw after the first round. A neck-and-neck contest. Let's move on to the second category of questions. It's about Michael Steiner again. Which Porsche object did Michael have in his bedroom for years when he was a teenager?

- A Porsche calendar
- A 917 poster
- A "Standard 218" model Porsche tractor

[00:20:11] **Walter Röhrl**: You can rule the last one out. It's not all that easy, but I could imagine, maybe a poster of the 917 would look quite good.

[00:20:21] **Sebastian Rudolph**: Walter has pitted in. It was the Porsche calendar. That means that Michael now has the chance to overtake. Who else ever gets a chance to do that? Overtake Walter Röhrl? What was Walter's first car?

- A 911 G model
- A 356 B coupe
- A 911 Carrera RS 2.7

[00:20:43] **Michael Steiner**: It could not have been the last one. Walter would not have been able to afford it.

[00:20:50] **Sebastian Rudolph**: So was it the 911 G model or the 356?

[00:20:54] **Michael Steiner**: Walter probably bought a car at an early age and then the 356 would have been less expensive. So, that's what I would guess, the 356, not because he didn't like the 911, but simply because it was cheaper.

[00:21:06] **Walter Röhrl**: Back then, it was in 1967, the first 911 had already been built, but of course it would have been too expensive. So I bought a second-hand 356. It was my first car.

[00:21:16] **Sebastian Rudolph**: Have you still got it?

[00:21:17] **Walter Röhrl**: No, unfortunately not, but I have since bought two others. A 356 coupé and a 356 cabrio. Both built in 1965, already with the disc brakes, and still simply fun to

drive. And it's also incredible in terms of social acceptance. When you turn up somewhere in a 356, people wave at you and it's really great.

[00:21:40] **Sebastian Rudolph**: A neat driving performance by Michael. He has now nosed ahead. You have the chance to catch up again, of course, and with that we'll go to the next question: Which series was Michael Steiner in charge of?

[00:21:53] **Walter Röhrl**: Panamera!

[00:21:57] **Sebastian Rudolph**: That's the Walter Röhrl we all know. He doesn't even need to hear the answers. But he's right. A nice piece of driving. Michael, you now have the chance to answer the last question about Walter correctly. Which profession was Walter Röhrl originally supposed to learn?

- Baker
- Mechanic
- Mason

[00:22:19] **Michael Steiner**: I can only guess that. Probably what the family or maybe his father did. I once read something about his father being a stonemason. So, I could imagine that he was also supposed to take up his father's profession.

[00:22:35] **Walter Röhrl**: Exactly, that's right. It had all been pretty firmly planned.

[00:22:40] **Sebastian Rudolph**: That's right Michael. You've won this race against Walter Röhrl because you know him so well …

[00:22:46] **Michael Steiner**: …, because from a young age I have, I would say, admired and followed him …

[00:22:52] **Walter Röhrl**: Congratulations, Michael! Well done!

[00:22:55] **Michael Steiner**: I could never have managed that on the road.

[00:22:58] **Sebastian Rudolph**: Thank you both very much for taking part in the quiz. And now it's your turn, dear listeners, you once again have the chance to win a prize in this episode of our 9:11 Podcast.

[00:23:11] **Station voice**: Porsche AG is giving away three motorsport baseball caps signed by Walter Röhrl. The competition runs from now until the release date of the next 9:11 Porsche

Podcast episode. To enter, simply send an email with the answer to the competition question to 9:11-podcast@porsche.de Porsche will draw a winner from all the correct entries. Anyone aged 18 and over can take part. The conditions for participation can be found in the Porsche Newsroom at newsroom.porsche.de/podcasts, along with a few tips. Good luck!

[00:23:48] **Sebastian Rudolph**: So, all that we need now is the question, which is – and before I continue, I have to say that neither Michael nor Walter are allowed to help – what is the name of Porsche's eFuels pilot project in Chile? Just send your solution by email to 911-podcast@porsche.de. We're looking forward to your answers. So, my dear guests. Today's podcast episode is coming to an end. Time has flown by. I have one final question: Porsche is a brand that wants to fulfil its customers' dreams, and sometimes you fulfil your own dream by getting into a car. Michael, maybe the question for you first: a little tale from your past or present combined with a dream for the future?

[00:24:32] **Michael Steiner**: As far as cars are concerned, the best experiences for me are when I get to drive on the handling track in Nardò and there, of course, with cars that were specifically built for this purpose. GT3s or GT3 RSs. My dream for the future would be that, with the help of eFuels, we can develop, build and sell such cars in the future too.

[00:24:55] **Sebastian Rudolph**: What about you Walter?

[00:24:57] **Walter Röhrl**: I would say the same thing for the second part too, of course. Michael saying how much he loved having those occasional opportunities to drive in Nardo reminded me that I had the pleasure of driving those cars almost every day for 25 years. That was a dream, of course. I dreamed as a child, under my brother's influence, that there was one brand and one brand only, and it was called Porsche, and then I began to dream that I might actually own a Porsche some day. Now I've been able to do something for the company for 29 years, and I also have Porsche cars at home. I'm happy as can be, and when eFuels come along, everything will fit to a T.

[00:25:33] **Sebastian Rudolph**: Then I'd like to say thank you very much, Walter, and many thanks to you too Michael, for this great conversation, thanks to both of you!

[00:25:39] **Michael Steiner**: Thank you. It was fun. And also to all the listeners, all the best and stay healthy!

[00:25:43] **Walter Röhrl**: Thank you! It was very interesting for me, I learned some new things. All the best everyone, and enjoy your driving!

[00:25:50] **Sebastian Rudolph**: Thank you also, dear listeners, for joining us. Subscribe and rate us, send feedback and suggestions to 911-podcast@porsche.de. I wish you all a wonderful summer. Stay healthy! Bye!