

Investor Update 2021
BASF Battery Materials
Transcript Q&A
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BASF Participants:

- Dr. Martin Brudermüller, Chairman of the Board of Executive Directors
- Dr. Markus Kamieth, Member of the Board of Executive Directors
- Dr. Peter Schuhmacher, President, Catalysts

Charlie Webb (Morgan Stanley): How does the cost per ton compare between the investment in the Shanshan joint venture and if you had built the equivalent capacity yourselves?

Markus Kamieth: This is, of course, a number we would not disclose for competitive reasons. I can tell you that the investment of Shanshan into their respective capacities in China is very competitive and also built, of course, over time in a Chinese environment.

We know for a fact that if Shanshan or anybody else would also invest in Europe, they would also have higher investment cost in Europe, e.g., due to the regulations we have here.

But I can say that with our footprint, we will now be looking at very competitive assets, with low specific capex in China. We will also be in a very similar situation in Europe, but these costs are not necessarily comparable.

Chetan Udeshi (JP Morgan): The initial capacity target for the Schwarzheide site is 24 kilotons. However, this doesn't seem enough to power 400,000 BEV cars as was announced. My estimate is that it is probably only half of the 400,000 BEVs. Is there more coming in the second phase?

Peter Schuhmacher: Certainly, Markus already announced that we have a CAM 2.0 project. If you take the European market, it is 18, 19 million cars by 2030; you may have a much higher penetration of electromobility to come.

So, even the CAM 2.0 or the next phase of investment won't be enough. We will invest in stages in parallel to the capacity development of our customers.

Markus Kamieth: Just to add, let me also be clear: It depends very much on how big the battery is that you assume will be built into a car. Maybe the 24,000 tons are not enough to power 400,000 Daimler EQS. But it will be enough for 400,000 smaller cars. Maybe we have adapted it when we gave out this number in the first place and we have somehow modelled a smaller car with a smaller battery.

But now you have both figures, and the 24,000 tons is what we build, that will start up in 2022.

In our strategy, the capacity in Schwarzheide in 2030 will be significantly bigger than the 24,000 tons, of course, which is just Phase 1.

Christian Faltz (Kepler Cheuvreux): You will establish yourself also as one of the leading players in battery recycling, as alluded to in the presentation. Can you quantify how important the recycling business will be for you a few years down the road?

Peter Schuhmacher: We will be global, and we will do this globally, but looking at the European footprint, we now announced a step into a prototyping plant which will start up 2023 in Europe. In Europe, by 2025/2026, we believe that roundabout 10% of our metals will already be derived from a commercial plant that we will have in place by then.

It will take time until you get to numbers that we see in our very successful recycling business that we entertain in the PGM space for the auto catalysts, where we are currently already above 30%. But this is a number that you can achieve after decades of precious metals being in the market. So, 10% and then successive growth over time.

Markus Kamieth: When we project numbers of 7 billion sales by 2030, this number does not include independent sales for a recycling service. So, it will be a significant element of our operating model, of our offer to a customer. But we do not make independent financial projections now for the recycling business.

Matthew Yates (Bank of America): The Chinese market has been shifting over the last two years more towards LFP chemistry. Why do you think such materials would be less attractive to customers in the western world?

Peter Schuhmacher: I think Markus was not saying that this is less attractive. You need to have a differentiated toolbox in this market. You need to have it on the CAM side, you need to have it as a battery cell manufacturer. The LFP chemistry and the specifics of the battery are well-suited for what we would call the entry segment part of the volume segment. So, there is no debate that LFP will get a space.

At this moment, most of the battery cell manufacturers in Europe are not entertaining qualifications yet for LFP. This is why you can firmly forecast that by 2025/2026, when qualifications which are in the game right now come into commercial scale, will have the NCM chemistry. Over time, LFP will come for the low-cost, low-range entry segment. But for the performance segment, mid-range, longer-range, you need a different chemistry.

Jaideep Pandya (On Field Investment Research): How is the processing fee developing for changes in metal prices? And what is the impact on margins in a rising or falling metal price environment?

Markus Kamieth: It is actually quite simple: The business model that is emerging right now for these cathode active materials is not very different from a business model that we also have e.g., in auto catalysts. You have a certain metal price component that is transparent to the market. That will be, let's say, a pass-through of e.g., a nickel price that is attached to a publicly indexed price.

Then you have what we call a processing fee, which is basically the margin that covers then our returns, but also, of course, the cost and the investments that we have put in. Now, this means that there is not necessarily a one-to-one correlation between high-price, low-price metals and the size of the processing fee. The size of the processing fee is, at the end of the day, what we negotiate for and what we expect as fair returns from this industry. So, I wouldn't put this into the context of high and low-price scenarios for metals.

But we expect that the model will be a pass-through of metal so that there is no fundamental exposure to high prices on the chem producer side or e.g. on our side.

Tim Jones (Deutsche Bank): In your long-term 2030 targets, what do you assume for pricing within the cathode materials market? Do you think automotive companies will pay more for a lower carbon cathode product? Or is this going to be something they demand but are not willing to pay for?

Markus Kamieth: I would say, I have a lot of experience in the automotive industry. I would say, the pattern of demanding it, but not necessarily willing to pay for it is quite prevailing in the automotive industry – but that just as a side remark.

If you look at the stage that the material industry is in right now, you can see that sustainability aspects, i.e., CO₂ footprint as well as recycling, is an important topic, but it is not yet key to the commercial decision in all cases. Right now, many customers are driven by getting the material in the first place, getting a material qualified from reliable suppliers. But we are already seeing that things like the CO₂ footprint and targets that we can already announce to our customers play an important role in the decision of which way customers go, especially in Europe.

Eventually, the automotive industry is also going to have to face the situation that if there are significantly higher investments to be made on the supplier stage or e.g., in the metals area to obtain sustainability criteria, these costs will be passed on eventually to them. It is still too early to say to what extent and whether the degree of differentiation is going to be material. But I think it is fair to assume that in an industry that gets a lot of support and consumer demand and at the end of the day also builds its strategies around sustainability, at the end of the day sustainability criteria that you offer as a supplier will be differentiator.

Martin Brudermüller: Tim, maybe to add to that: If you look at the total footprint, the Product Carbon Footprint, Scope 1, 2 and 3, you will see that the overwhelming part of a car is Scope 3. There is actually only one major part where the automotive companies need a lot of energy; that is for the coating process. That is, I think, more than a third and then the rest – screwing, welding, connecting – actually does not use a lot of energy.

If a car supplier, an OEM, offers a car to the consumer which has no CO₂ footprint, they actually have to go massively for the materials that go into the car. That is not necessarily only the green steel; it is actually a lot of the CO₂ associated with the chemical materials. In a battery-driven car, the major and the biggest part is with the battery. That is why: If they want to go that way, they have to pay for it.

Geoff Haire (UBS): You say the CAM market by 2030 will be €100 billion. Does that include the value of metal? In your 2030 sales target of €7 billion, what do you expect the split will be between recycling and cathode production? Do you see a big difference in the margins between cathodes and recycling?

Markus Kamieth: We will not split now our financial projections into CAM and recycling. We don't see this as necessarily two independent businesses. I think I mentioned that we see this as an integrated offer to our customers and I think they will play extremely important roles; the main dimension that we project our financials on is our CAM market – if that helps you.

You also asked whether the €100 billion, the market size, includes metals. Yes, it includes metals. It therefore correlates to the €7 billion. The €100 billion is really a rough estimation, not only talking about the market insecurities, but also you have to assume a certain metal price for nickel and cobalt. We are really ballparking here.

I just wanted to make sure that everybody understands the magnitude that we are talking about, of a market going from very small to a €100 billion in a decade. That is not something you see typically in the chemical industry.

Jaideep Pandya (On Field Investment Research): What is the probability of a spin-out of the Battery Materials business from BASF Group in the future?

Martin Brudermüller: We don't think about spinning that off; we just built it up. That is a huge endeavor now; you saw the plan. But I think it makes a certain sense to operate that more separately from others. They also need the flexibility in terms of how that business develops and how they guide it.

The dynamics in that chain are maybe best reflected from the management team if they have some kind of separate structure, but definitely not to sell it off.

Christian Faitz (Kepler Cheuvreux): Chemical content 2.5 times higher for a battery electric vehicle, which was shown on a slide, versus a combustion engine car: Is the value factor similar?

Markus Kamieth: That is actually a value factor. This is a factor in euros and not in kilograms. In kilograms, I wouldn't even know. But this is a euro number.

Andrew Stott (UBS): How important is the recycling business opportunity to the 30% EBITDA margin target? Or put another way: Is there an underlying margin target for CAM that you can share? When would you expect to be at optimal scale production for recycling?

Markus Kamieth: I hear that you are trying to take this apart. I would assume this comes because maybe some companies are trying to do only recycling.

We very strongly believe that these are two legs of a very robust business. You're not going to get different, let's say, margin expectations and a different P&L recycling versus CAM out of me today and probably also not in the future.

With regard to the size of the recycling business – Peter, maybe you want to give a little bit of perspective: when will this come into scale?

Peter Schuhmacher: I already mentioned that we expect by 2025 to be in commercial scale and from then onward it is going to grow.

Markus said it is an integrated offer. If you look at the European directive and regulation, in fact, by 2030, a CAM material needs to include already 3% of recycled material. We will have more in our CAM. That is why we prefer not to split it out.

But to give you some flavor: Definitely, if you look into the PGM recycling, if you do it right, it can be a very profitable business model. There are lots of announcements and technology also plays a role in the recycling market. But eventually, this will be also like in the CAM: It will be excellence in process engineering, in the processing of the chemistry and the scaling.

You need to have scale and you need to have superior returns of the metals to make this a profitable contributor of our overall endeavor. We believe we have the technology, scope and size to do this.

Markus Kamieth: Just to give you one additional, maybe anecdotal part of this recycling story: If you look at the next years, you can already start a recycling operation and we will do so with our smaller prototype plant in Schwarzheide. The predominant material that we will actually get back is production scrap.

Today, there is a lot of inefficiency in CAM manufacturing in the market, a lot of inefficiency in cell manufacturing. So, a lot of that will be production scrap.

The end-of-life batteries volumes will come in probably more towards 2025 or later. Then this will become a pretty sizeable operation for us.

That also shows you: There is still a lot of inefficiency in the overall battery materials value chain, and we see this as an opportunity for us. It also shows you that a real recycling industry is still in its infancy.

Chetan Udeshi (JP Morgan): What does “24 kilotons capacity fully contracted to strategic customers” mean in practice? Does it mean there is a take or pay agreement? Do customers have to pay even if they don’t take contracted volumes? Have they paid any prepayments? Can you clarify how many “strategic” customers have signed up for the first 24 kilotons of capacity?

Markus Kamieth: We do not want to answer any of those questions. What we just say is that the capacity that we built there is contracted to a customer with a commercial agreement that we have. So, once we start up, once the demand emerges, we will start supply right away and the ramp up of this capacity will be as quick as you can expect. All of the other things are, of course, highly confidential and we do not disclose contract details with any customer.

Peter Schuhmacher: And we won’t disclose the contractual situation for the CAM 2.0. You can contract a plant only once and that is why we are looking into the next phase of expansion already.

Sebastian Bray (Berenberg): The global market share split shown between cathode chemistries in the mid-term would appear to suggest a substantial decline in LFP market share in China from over 50% currently. What drives this decline? Lower costs for competing chemistries like NCM and equivalents?

Markus Kamieth: I think you are over-interpreting our slide a little bit. We indicated with the shaded area that this is something that will have to play out. We do not want to give you a firm number, a firm split on this whole NCM versus LFP split because this is a very dynamic area.

So, projecting this out to 2030 in China, I think this would be: We could give you a number, but it would not make too much sense. The key message was that both LFP and NCM will grow. If you look at the overall size of the bar, you can see that there is a lot of room to grow. And you can also see that with our focus area, of focusing on Europe and focusing on, let’s say, a part of the market in China, not necessarily the entire Chinese market, with our strategy to focus on NCA and NCM chemistry, we feel very comfortable that we will have significant growth opportunities.

To say it a little bit bluntly: In our case, whether LFP in the future has 20% or 27% share of the entire cathode active material market, for us, at least for the next decade, will not make a substantial difference.

Peter Schuhmacher: Let me add to that. You need to look at the numbers from a global perspective. The numbers are global. I referred already to the fact that e.g., in Europe, you can walk project by project, cell player by cell player, factory by factory that will come up and you can understand the chemistry.

The majority, in fact, I think almost all of the chemistry currently in qualification, is NCM or NCA-based. It is a similar situation in the new upcoming market in North America.

With that growth, you balance part of what is happening in China. Definitely, LFP chemistry in China has a space and will stay. For the stationary market, no reason to go into NCM chemistry.

A low-cost segment can do LFP. By the way, this will be an interesting question in the future. In the low-cost segment, you will see competing technologies as well. You will see the sodium-ion battery that was recently announced by CATL. You will also see what we are strongly pushing in our partnerships, the manganese-rich chemistry which has its merits because electrochemically it is superior to the LFP.

So, the jury is out on the numbers. It is a rough ballpark guess and I think you will see differentiated technologies over time.

Georgina Iwamoto (Goldman Sachs): Are automotive OEMs thinking about recyclability of the battery and the EV as a whole as being critical for the long-term sustainability of the EV industry? Or is there a chance we repeat the linear business model mistakes of the past?

Martin Bruder Müller: This is also a bit of a guess. But I think they go for full recycling. In Germany there already is the “Altwagenrichtlinie” (End-of-life vehicle directive); there are a lot of recycling requests already. As Peter said, in the CAM there is also already the obligation from the European Commission to ramp up the recycling.

I would say that the future car concepts go for full recycling of all the materials in there, which caters very nicely to also what we do with ChemCycling and distinct recycling models. To expect anything else, I think, would be a mistake.

Markus Kamieth: In the battery, it is very easy to understand how even purely economic recycling makes a lot of sense because of the tightness of nickel, probably increasing prices of some base metals. You can relate again to the precious metals recycling, which is economically just a very straightforward thing to do.

Peter also sits on BASF’s Global Automotive Steering Committee, and there we discuss recycling models and requirements by OEMs also in other product categories. I can tell you: The topic of recycling and recyclability is very big in almost all product categories that we have. We even talk about cooling fluids, we talk about, of course, everything that relates to plastics, plastics materials, polyurethanes.

The automotive industry is a big driver of circular business models also in that respect. I think the vision of having a car fully recyclable and to trigger industries that are able to deliver on this technologically, this will be the next big thing, also from my perspective, at least in automotive.

Andreas Heine (Stifel): CAM has substantial growth, but how does it look for BASF’s combined automotive catalyst and battery materials business?

Markus Kamieth: We have a very successful automotive emissions catalysts business. With everything that we have described here, you can see that the internal combustion engine is not going to be around forever.

But the automotive emissions catalysts business is not a one-to-one correlation with the number of internal combustion engine cars that are being built and produced. We still see a lot of growth opportunities and we will also see, in fact, market growth for the automotive emission catalysts market going forward because we have still an increasing number of emissions regulations.

So, automotive emission catalysts are still part of the solution of getting to a lower emission and lower carbon dioxide mobility society. This is actually going to increase further in market penetration with increasing emission standards.

Then you have different stages of markets. For example, if you look at emerging markets, the trend of growing output of cars with internal combustion engines will still be visible. Plus, you have segments where automotive catalysts are being used, like in heavy duty, where the substitution to electromobility will be slower or the relative value that will go into these automotive emissions catalysts will still increase.

Overall, the market is still increasing. We still have a growing business, also for quite some time. But, of course, eventually the market will go away. But we believe that the automotive emission control technology will still have a very attractive place also in our portfolio going forward.

Martin Brudermüller: Looking at the infrastructure, the charging station discussion here in Europe, in Germany, it is already very challenging and that also comes with a financial burden.

If you go to some continents like Africa, or some developing countries, it is not to expect that this is immediately going to happen. For that reason, there will be also a life for combustion engines.

Markus Kamieth: One other thing is, of course: You have technologies and technology advancements, also in the internal combustion engine, that will still be deployed. Automotive OEMs will no longer invest into creating maybe big jumps, but there are still developments, we are also actively engaged in four platforms that will be launched still in the next years.

Charlie Webb (Morgan Stanley): Over what timeframe do you expect tight conditions in Europe for CAM? Does this account for the sizeable investments from EcoPro and Posco Chemical?

Peter Schuhmacher: If we understand under “tight conditions” a short market, in fact, this the case. As of today, a majority of the first battery cell factories that require CAM and that came on stream and come on stream as of today, are based on imports from Asia.

So, the market is net short currently in Europe. Now, our plant comes on stream. A competitor plant is to my knowledge in commissioning. This is not enough to compensate for the huge growth. Even if, right now, further players announce to get into the European market, we see actually this net shortage situation probably to persist over years because the growth of capacities, of announced cell capacity is far bigger than the growth of announced CAM capacity including ours.

Gianmarco Migliavacca (Neuberger Berman): How do you intend to fund the entire capex for the new Verbund site and battery materials projects and how can this be managed within the framework of a single A rating and the progressive dividend policy?

Martin Brudermüller: Hans and myself have alluded in of the quarterly results to it where we, I think, showed a principal slide.

First of all, we assume that will continue our strong operational business and this is what the whole BASF Group is striving for, to really keep our business on a best-possible excellence level.

Then we also have some of the divestitures and on the other hand the capex for the two growth projects, plus the base load, which we discussed earlier on, which is fueling the remaining business.

This equation is fitting to our needs at the very end, so that we will have maybe the one or the other year which is a little tighter and a little bit looser; it also depends on the single projects. But that whole situation affects us in our dividend policy. We have certainly looked into what we can afford.

But what we also said earlier: Both China and Battery Materials bring us to a, I would say, tense spot in the next years to fuel that growth. That means that some other elements are not possible, which I think is totally fine.

Sebastian Bray (Joh. Berenberg): What are the drivers of margin improvement to 30% EBITDA margins, versus presumably low level now for cathode material? Will it be the portfolio mix or process technology improvements?

Markus Kamieth: I would not necessarily subscribe to your hypothesis that margins are significantly lower today. Of course, margins today are not comparable to an EBITDA margin in 2030 because today we have a lot of cost of building this business. We have investments, we have R&D costs that, of course, are over-proportional to the size of the business. But I would say the underlying assumption is not that there will be a miraculous underlying margin improvement until 2030.

You have to keep in mind that this is a quite asset-heavy business. So, the specific investment into cathode active materials, precursors, metals, recycling is quite high. I think margin expectations in the stated order of magnitude are plausible. They also compare reasonably well in cross-comparisons to e.g., the automotive catalysts business, where we have a similar business model.

So, yes, right now, we have significant cost in this business build-up of Battery Materials. But, of course, once we get into scale, this will improve significantly. So, no magic bullet that there will be an underlying margin improvement; that we didn't account for, plan or shoot for.

Matthew Yates (Bank of America): OEM forecasts for EV penetration seem to be getting higher and sooner. Given the lead times on building CAM capacity, when do you have to start thinking about the next wave of capex projects in timing and size to support the potential demand growth?

Markus Kamieth: The question is: When do we start thinking about this? – Well, we are thinking about this a lot and also for quite some time. We are trying to find, of course, the right time for the next investment. It is a bit of a trade-off; once we build the next investment, we want to have an as firm as possible commitment also from the market, of course; we want to make sure that we put in the right capacity with the right product split in mind and we want to have a chance to deploy our latest and greatest technology.

We will make the appropriate decision at the best possible time. But we don't have to start thinking about this. This is already in the planning and we are talking with customers as we speak – Peter does it probably every week – about when the next investment comes, at what scale and under what conditions.

Chetan Udeshi (JP Morgan): Did we get the right impression from your talk that BASF would potentially use Shanshan's capacity to export to Europe and the US? Is this feasible under the current import tariff regime?

Peter Schuhmacher: It is feasible, but it is not in our strategy to do this over the long term. When you qualify new material, you want to de-risk the process. When you qualify a new cell plant in the US or in Europe, you want to do it with an established technology that you may have in China.

So, you may start up a plant with a supply out of China or a supply out of our Japanese plants. Then, you do the transfer into the localization of the value chain because this is how you reduce the CO₂ footprint; this is when all the sustainability merits of our business model kick in.

But it is definitely helpful to have global capacity available because there is also a lot of scheduling risk in that business: new plants starting up on the customer side, new plants starting up on the supply side and you would want to balance this out properly. That is why, over time, the one or the other supply out of Japan or China may happen. But strategically, we will localize that demand close to our customers.

Martin Brudermüller: Peter, I think it is fair to say – that was mentioned by Markus – We are the ones with the biggest global footprint. I think that is an asset to the companies that you can do this.

This is basically also what BASF is doing in many other products. Just think about acrylic acid. We have many plants where we then can also do pre-marketing and all that comes with it from these plants.

So, it is in principle not a new business model for a globalized company. We will run that element more or less along the same philosophy.

Geoff Haire (UBS): What recycling technology will you use in Schwarzheide?

Peter Schuhmacher: Recycling is not only one technology, first and foremost, because you deal with various metals and you need to deploy a toolbox.

This is what is probably unique for BASF: We have proprietary technology to extract the lithium at very, very high recovery rates. This is what is disclosed by us.

But you also need to look at the nickel and the cobalt, which is the other majority of the battery materials, where the value sits. Here, it is established in the industry – in China, in Japan, in Korea, recycling is done already – that you work with refining technologies more out of the metals industry. But you can put a spin on it to enhance the recovery rates and to reduce the overall capital exposure of such a plant.

Martin Brudermüller: Peter, I think we can refer to the last Research Press Conference where we have also given you some backgrounds and, I think, the slides are still on the homepage to look up what our thoughts are on this.

Jaideep Pandya (On Field Investment Research): What is your view on market size and BASF's position in the market segment of energy storage? Are there any plans from BASF on battery anodes?

Markus Kamieth: First of all, energy storage is, from our perspective, strategically a bit of a side product, if you want. We focus very much on batteries and CAM technologies that are deployed in electromobility. Of course, there is an overlap.

We have customers that also take according materials and make energy storage systems out of them. It is not our strategic target area, but we will hit that market as well through our customers; that is quite clear.

Peter Schuhmacher: Just adding on the stationary energy storage batteries: This market has a different requirement, probably more LFP-played. There are, in fact, some NCM projects also in that space. But the NCM chemistry addresses volume constraints. I just want to underline that. That is what you have in a car.

On the anodes, there is lots of new chemistry out there. At this moment, we entertain projects where we match the customization of our CAM with new anode chemistry, which is, by and large, at this moment silicon-based chemistry.

We have a cooperation with a company we are invested in, Sion Power. They go into the lithium metal anode, which is the next big thing that is going to happen. Whether this happens actually in a solid-state battery or in a liquid lithium-ion battery first, is to be seen.

But the core of our business model is very clear: At this moment, we want to be strong in CAM, PCAM, recycling and the metal access. That is enough to play. This is where we focus. Then we will see over time; there is lots of opportunities, but not at this moment.

Markus Kamieth: The anode is a system partner, so to say, in the whole battery system. We keep an eye on it. We cooperate also with anode players to make sure that battery developments are going forward. But we have our hands full on the CAM side and, I think, this is going to be the strategic area and the focus for us going forward as well.

Dominik Frauendienst (Ayora Capital): Would you be able provide a rough indication of how much of the €3.5 billion to €4.5 billion capex will be allocated to capacity build-up?

Markus Kamieth: If you want, at the end of day, most of it will be capacity build-up. But it will be capacity build-up in these four areas, of course, that I mentioned. It will be split between CAM, a capacity build-up in base metal, e.g., base metal refinery in the collaboration with Eramet. It will be PCAM, so precursor materials, and it will be recycling.

I do not want to get into a split now between those four areas because a) this is in flux and b) this would go a little bit beyond the level of transparency that we would like to give at this time, also due to competitive reasons.

Charlie Webb (Morgan Stanley): There have been quite a few OEMs questioning the cathode processing fee, e.g., Tesla, and see it as a big opportunity to cut costs that is in focus. How does BASF address that? Is it as simple as scale offsets price pressure on processing fees?

Markus Kamieth: Peter – potential customers complaining that the price or the fee is too high.

Peter Schuhmacher: We have been exposed for a long time as BASF to the automotive industry. So, the cost pressure from that side is not new to us. It is more pronounced, you may say, because it is a big piece of the future cost. But it is not only scale.

We feel comfortable in that space because eventually it is intelligence and excellence in chemistry, in processing and in dealing with the associated capex. It is high throughput that you want to have with a plant.

We see a lot of potential how to do this chemistry smartly. With that, on the one hand, we can cope short-term and then, similarly to other businesses with automotive, you have an evolution of technology and, over time, with new technology you get into new margin territories.

Markus Kamieth: Maybe it is a little bit an oversimplistic answer. But whatever we have to do has to be competitive against all people that would be trying to extract this type of returns from us. If we are not competitive in CAM, PCAM, metals and recycling, somebody else will come in and take our space.

I hope we could explain to you plausibly that we have ambitions, but also great positions to be competitive. That also means we have to be competitive against a make-or-buy decision that every OEM can make. Every OEM could make the decision “I make the CAM myself”, but, of course, they would have to also then compete against the economics BASF would be able to deliver and the performance and the IP and all this.

So, it's not so easy. But for sure, the pressure overall on the cost per kilowatt hour of a battery is going to hit everybody at the end of day. So, it is not going to be a game where you have a lot of buffer to be uncompetitive.

Martin Brudermüller: Let me also be clear: In this formula, there are still a lot of question marks, also for the automotive companies. You can have a target price per kilowatt hour, but if you have shortage in CAM and battery cell supply, then certainly this is also a different price.

If you match the ideas who wants to earn what and if you associate that with the massive investments over there, then it simply is not going to happen that certain investments are done if they don't get the return.

So, I would say, there are a lot of question marks in there: where you are, when you are there, do you have the right product, the right qualifications? I think we can make certain assumptions.

Markus Kamieth: But it feels much better – I can tell you – when going into this type of race if you know that your assets, your processes, your products are actually competitive because then you know: I can actually compete with everybody out there.

Luc Pez (Zadig Asset Management): Competitors keep on saying CAM business in China is not profitable today because of overcapacity and will remain so next year. What is your read on the China CAM business profitability?

Markus Kamieth: I would just say: Typically, I do not comment on the profitability of my competitors. If my competitors have a place where they cannot earn money or don't see profitability, that is not for me to comment on.

I can say, our business in China is profitable, as I said. We just formed a joint venture with a very profitable company, and we have full intentions to keep it like this.

Thomas Wrigglesworth (Exoduspoint Capital): What gives you confidence in your 30+% EBITDA margin? Is this a required margin to invest? Why shouldn't we think of the margin potential as the same as that of an ICE engine?

Markus Kamieth: At the end of the day, it is a margin that is comparable with the ICE engine automotive emissions catalyst technology. As I said, this margin is without metal; don't forget this. It is a margin that is required for further investments. From my perspective, it makes little sense to invest 3.5 to 4.5 billion capex into a business that does not contribute to the overall profitability and return on capital of BASF.

So, this is our clear ambition. This is why we project these margins. We have a lot of ways to come to this, to have plausibility behind these figures. It is not unreasonable to expect that.

So, I think this is very plausible and certainly not at the highest ambition level that we could imagine for ourselves.