



# **Capital Markets Day 2022**

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## **Mobility Transformation: Automotive Catalysts – Capture Peak Profitability and Maximise Value**

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Very good, thank you. Okay, good afternoon, also, from my side. And I'll do one slide more, transiting from the exciting future that Ralph is showing and the credible plan that we have, I'm now going to talk to you about another exciting, still very promising business that we already have today, which is Automotive Catalyst.

### **Agenda**

And after this presentation, I hope that you – that I was able to convey the message that this is still a business where we do expect quite some growth, where we do still see a lift up in value, and that we will have a credible plan throughout this 30 year – towards 2030, on how we're going to execute and actually make sure that we capture this value here at Umicore.

### **1. Mobility Transformation: ICE Gradually Declining, but Remaining Dominant Powertrain for LDV and HDV by 2030**

So, let's get started.

#### **Accelerating Mobility Transformation**

*ICE remains dominant powertrain solution in 2030*

We're going to start off with the markets. And you see the graph has been flipped. And it's not a coincidence that you will see that here, of course, for the light-duty vehicles, we're still expect 66% internal combustion engines in 2030. And if I go to the heavy-duty vehicles, we're still talking about 78% of vehicles. So this is still very sizable market shares and the internal combustion engine remains the dominant powertrain.

And why is this important? Because on our road to clean mobility, there will still be a lot of internal combustions being built. And that means that if the last internal combustion engine is sold in 2034, these vehicles will still be on the road until 2050. So what we do really does matter and that's why there's still a lot of value in this business with the upcoming legislation, which I will touch upon later on.

#### **Light-Duty Vehicles**

*Peak in ICE car production expected in 2023*

Now, if we look forward and if we look in our plan, we still see a peak coming for light-duty vehicles. We can debate whether it's 2023/24; when will the post-COVID ramp be there; when is the chip shortage finally resolved; will inflation have an impact, of course, on the customer demand? Yes, questions out there. Does that fundamentally change our plan? No, it does not, but we still see higher vehicles in the next years, also for the internal combustion engine.

You also see that the gasoline section is by far the largest segment, and, guess what, that's where we are really good and where we have a really good position. If you look to light-duty diesel, it's not so obvious on the graph, but this segment is dropping fast in Europe, yet

remains important in Southeast Asia. And there we also have the important customers in our portfolio. So, in 2030 we will still have 60 million internal combustion engines being built globally.

### **Heavy-Duty Vehicles**

*Continued growth in ICE HDV towards 2030*

Transiting to the heavy-duty vehicles, or the HDD, here we still see a growth from 4 million to 5 million vehicles. And here I'm not including the non-roads, so not talking about the tractors or the big machinery which is also going to be emissionised. That comes on top; that's really additional value which you will not see on this graph. And big markets are, of course, China, the largest market, the fastest growing, but also India becomes important and Europe will also still have growth.

## **2. Emission Control Catalyst Market: Attractive Value to Capture the Next Decade**

### **Light-Duty Gasoline Vehicles**

*Substantial tightening of emission norms in Europe and China*

So, if you're talking about automotive catalysts, you really have to talk about legislation and what the impact is of that legislation, so let's have a look together. And here I'm focusing on the light-duty gasoline. And, as you all know, Euro VI – Euro VII and China VII are still coming up. And while we expect that Euro VII will be introduced earliest in 2026 and China VII probably a year later, we are expecting some news hopefully next month on the 20<sup>th</sup>. Then we should know what the emission standards are. At the same time, the Commission has surprised us already several times because we were expecting it end of last year, we were expecting it in April. Let's see if they really give us a target. And if you look, again, in 2030, light-duty gasoline vehicles, in China, 16 million vehicles still there; in Europe roughly 8 million vehicles, very sizable numbers.

What do we expect from the legislation? We expect – and this is on broad consensus with the market – that a reduction of 50% of the main pollutants; I'm talking here about, of course, the NO<sub>x</sub>, the carbon monoxide and the hydrocarbons. But also, there will be more stringent cold-start requirements. There will be stringent legislation on the particles, both in number as well as in the size of the particles, and there's going to be a requirement for secondary emission abatement, so you will be seeing secondary emission three-way catalysts coming in.

From a system point of view, what does that mean? This means – and in a Euro VI system typically you have three bricks. If you go to new legislation, the loading on these bricks will increase going towards 20 – to the Euro VII, and, on top, we do expect additional bricks to come in. So what does that result in? Well, this results in a minimum value uplift that we see for the gasoline section of 20%.

### **Heavy-Duty Vehicles**

*Upcoming tightening of emission norms in Europe and China*

On the heavy-duty vehicle side, there the timelines are more or less the same for Europe and China, with the big difference that in China, first we will see for the HGV the Tier 1, and later on – in the Tier 1 cities, and only later on we'll see it in the entire country. And here, this is also still a market of more than 2 billion vehicles in China, 0.6 in Europe, large numbers. And

also, here, the focus – okay, we’re talking HDD – it will be on reducing the NOx emissions under the best, where possible, conditions, while keeping fuel consumption low. Tighter particulates will also be there, cold start, increased durability. Trucks will have to be able – the system will have to be able to sustain 1 million kilometres, 1 million kilometres, and, of course, we still also have the focus on lower ammonia and nitrous oxide is also coming in.

So, from a system layout, what does that mean? Well, basically it means that we are transiting from a one urea dosing system to a two urea dosing system, basically to manage that we don’t get, basically, too much ammonia slip into the environment. So, the two-dosing system will help with that. Ultimately, this will also result in an uplift of 20% in value; that is what we believe and that’s what we will see.

### **Attractive Value to Capture the Next Decade**

*Emission catalyst market moving towards unprecedented value peak*

So if I combine all of this together, and now I’m switching, actually, from vehicles to catalytic leaders, so here I’m really talking in volume of the catalysts. Then you see that there’s still significant growth, and with our projections, actually the market in 2030 is as big as it is today. Same size, so still very attractive, yet the weight of the heavy-duty vehicles is more outspoken than what it is in 2021.

### **3. Umicore: Well Positioned to Capture Peak Profitability and Maximize Value**

Automotive catalyst emissions, emission abatement, a real technology business. So let me then also now explain a bit how we’re going to do this. And I’m going to, now, transit, basically, to the section where I’m going to explain to you how we’re going to capture this value.

### **Capture Peak Profitability and Maximise Value**

*Where to play*

So, where are we going to play? We’re going to capture the value by keeping our strong position in the light-duty gasoline and we will continue the growth path that we have started and the qualifications that we have under the belt in the HDD segment. And, therefore, our market share will also continue to go up, both in Europe as in China.

*Maximise business value through the plan*

We’re going to maximise the value. At Automotive Catalysts, the teams are obsessed about capacity utilisation and process efficiency; we have always been in the past and we’ll continue to do so. So that means we have always been aligning our footprint, be it either with investments or planned closures in line with market developments, and this is what we’re going to do. We’re even going to put more focus on it.

*How to win?*

And how? I’m going to tell you right now.

### **Capture peak profitability and maximize value: Embarking the Mobility Transformation together with our Customers**

Reliable transformation partner. The internal combustion is not out, so our customers will still need lots of these engines. And they will want somebody to be there for us in the long run,

even when they are transiting to battery electric vehicles. And guess what? Our focus will be we are going to stick with our customers, we're going to do this with them side by side.

*Committed and Reliable Partner for Our Customers*

And how were we able to do this? Because we have, already, very longstanding relationships with these customers. With some we work more than 50 years, 50 years. This means that, in our view, we're going to keep on serving them globally and we will actually be delivering products to them from regional plants where their engine manufacturing is, so we'll stay close to them.

We're going to be reliable and credible. That means, as mentioned before, we're going to stick with them throughout the journey, throughout the transformation. And why is that important? Because, yes, we all know what the ultimate goal is, yes, there will be, of course, electrification in the end. However, we don't know exactly how that road will be, and that means that we will need to create visibility together. If the speed changes, how will we adapt? And this is what we want to do, and that's why we are also developing and actually going into a different relationship in the sense that we want to create visibility for each other, work closely together and be agile together as the market moves.

Of course, we're going to remain a technology leader, not only to capture the value which is coming today and make sure our customers have peace of mind on the new legislation, we're also going to be there for them for cost-reduction programmes, unlock value for them, value for ourselves, and therefore, actually, value for the industry. And, of course, clean air sustainability is in everything that we do.

So, as mentioned, we're going to enter into different type of relationship with our customers; much closer, much more partnership-like. And it's not a coincidence that some of the names that you have seen in Ralph's presentation are also some of our key customers today, because they feel that we're going to stick and they feel that we're going to help them in their transformation.

**Capture Peak Profitability and Maximize Value: Strong Technology in Light of Upcoming Emission Legislation**

*Proven innovation leadership...*

Innovation, I was a bit fast, earlier on, going to the innovation because, maybe, while I'm not a scientist, maybe I was too passionate about this topic. But also, innovation, we do have a good track record, we have industry-leading, benchmark technologies for gasoline engines – gasoline catalytic systems. And that's why we have this solid market share, that's why we are so strong in this market. We are extremely strong in the GPF section, both in Europe and in China, and we have been developing closed-coupled GPF systems together with Volkswagen, as an example.

But also on the heavy-duty side, we are, technology wise, competitive, and this is proven by our market share gains that we are experiencing right now; the platforms which are ramping up with our technology. And here as well, we have co-development projects with Scania, where we introduced together the first dual-dosing system which will be the standard for Euro VII. You have seen that coming on the slide earlier.

*...With the right technology to grow*

Now, you're only as good as your last technology, right, so you always have to keep on working on the future, and that is what we are doing. And the good news is that we have the new technologies in place for Euro VII and China VII, which are coming up right now.

We've been working on reduced rhodium technologies, reducing palladium, and therefore introducing platinum in the mix to lower the overall cost of the system. And guess what? These technologies are running today on the road; we have qualified with global OEMs with our FlexMetal technology already today. So this is not a plan, this is reality.

Secondly, we're now introducing the secondary emission three-way catalyst brick to avoid ammonia slip, also for gasoline engines. The feedback that we're getting from our customers is just great, they're really happy with the product. So it gives me confidence that this is also a brick which will be landing in our basket as we go to Euro VII.

If I go to the heavy-duty diesel side, there we also have a very interesting development. Actually, something unique that we have, nobody else in the industry has it, and this basically is our UmiCOR catalyst technology. And what is this? We make our own substrates, substrates made from – paper substrates, basically, I should say. And, of course, it's not the paper that you have right there, that's quite clear, but it's fibreglass paper. And if you say paper, that means it's light, right? Light means less weight, means less fuel consumption. If you imagine a monolithic ceramic-based substrate, it's heavy, it takes time to heat up when you start up the engine. And the paper heats up very quickly. So cold start, very important; the engine has to perform less – less fuel consumption, less harmful gasses towards the environment. And, lastly, also these substrates have less back pressure, again less fuel consumption, and in HGV, it's all about the CO. So we're really enthusiastic about these products.

And I was also talking about durability, you go to 1 million kilometres now. That means that also your filters have to be washable. They have to be ultra-high filtration, they have to be washable, so basically they get taken out after 200,000-300,000 kilometres, they get washed and they have to still get that functionality. Sounds easy, difficult to implement, but we have it.

So the next-generation technologies are in our basket and therefore we are confident for the upcoming Euro VII and China VII NOx.

### **Capture Peak Profitability And Maximize Value: Longstanding Partner in Delivering Cleaner Air**

*Embedded sustainability value: Through sustainable operations and closed-loop services*

Sustainability, I said it. We're talking about clean air, clean mobility. Of course, sustainability is part of what we do, how we think, how we breathe and what motivates us. And also here – one more click, yeah – also here we look at ourselves first, so we're focusing on reducing our own Scope 1 and Scope 2 emissions. Our plant in Bad Säckingen, for instance, is running on hydro energy. Our plant in Americana was designed with the eco spirit right at the beginning in the team; they were passionate about it and very proud to bring it, also, to the management board, so that really lifts into the organisation.

We have been talking about spent automotive catalysts earlier and what the proportion was in our refining business. Well, we have been refining and recycling a lot of these catalysts already for a long, long time. And these PGMs, therefore, go back into our products. And that's not only great from a value point of view, it's not only great from a resource-scarcity point of view, but it also allows to lower the Scope 3 emissions of the entire value chain.

I was talking about technology, and if you talk about automotive catalysts, you want to meet the emission legislation. At the same time you also want to lower, to the maximum amount, the PGMs that are required. Again, unlocks value for the customer, unlocks value for ourselves, but also lowers the Scope 3 emissions. So this is all in the same spirit; we want to bring these emissions down.

*Cleaner Air at the Core of Our Business: Delivering to the strictest emissions standards*

Géraldine mentioned it earlier, approximately 3 billion tonnes of NOx emissions are prevented by our products already today in 2021. For some it's just a number; for us it makes us proud and makes us get up in the morning and say we're making a difference, not only for our business, but also for our families and the community in general.

**Capture peak profitability and maximize value: Organisational Agility**

*Organisational Agility to Manage the Different Transformation Stages*

Excellence. So all this is great, but how are we going to do this, right? So, in the next chapter I'm going to talk about the operational agility that we have and that we will focus more in the future. But also about the mind-set that we are going to implement, are further implementing, and how we're going to switch our brain from technology and growth to really going to efficiency, cost and cash. And we're starting that now and luckily we have time because the market will still peak.

So, mentally we're putting it, somehow, in three blocks, and of course these are not exact, hard periods, but it's just to give some structure in our thoughts. And in the short term we are focusing on capturing the peak and growth, so that means that we will still have selected capacity investments and we expect that our CAPEX will be roughly 20% higher than in 2021 in that period. In the peak, you will see that as of 2025/26, our CAPEX will start dropping below our depreciation level; and in 2030 will be down below 50% of our depreciation run rate at that time.

Capacity utilisation, over lunch I had quite some discussions with some of you and we are really passionate about capacity utilisation in the past and what we have been doing now. So, we will continue to align our operational footprint in line with the market developments. That can mean investment, but also, of course, plant consolidation.

Cost reduction. We still have to capture the peak. Technology is still extremely important in a first phase. We are still running our plants at full capacity or above 85%, so our cost base will be stable at the start. Yet, today, we are starting with the efficiency [inaudible], we're thinking much more end-to-end processes. We're introducing digitalisation to be ready to go down in our cost curve already in the second stage, and definitely in the final stage. So that means that in the maturity stage, in 2030, we will bring down our fixed costs, our annual fixed costs, with €100 million compared to 2021. So our fixed costs in 2030 will be €100 million lower than in 2021; a big number and please do remember it.

*Net working capital evolution*

Net working capital, it's going to increase because growth is great. Unfortunately you have to invest for it. It would be easier [inaudible] if you could invest without the CAPEX, I think, because that's a big topic in the room it seems. Now, working capital will move up at the start. Later on, it will start declining, not necessarily because our business is going down, but because we assumed a normalisation in the PGM prices, as Filip explained earlier. And ultimately it will be 40% lower in 2030 than it is today.

If we do all these things right, and we will do all these things right, we will be generating €3 billion cash over the 2022-2030 period, so in nine years – not 10, in nine years.

*Fostering an agility mind-set throughout the different transformation stages*

So, these are all great numbers and they all work well in an Excel sheet, and it's all very nice, but you need people to do it, you need to act on it. And that's why we have launched, already half-year ago, a cultural change programme. So we're going to transition, as I said earlier, from a growth technology, or pure growth and technology mind-set, to a cost-efficiency mind-set in the end. And it's a matter of perspective. So our colleagues are motivated by targets, they are motivated by what we measure and what we do, and if we engage, we do it with passion. So it's a matter of, also, transiting these minds, and that's where we're going to.

Now, maybe something that I didn't stress enough during this presentation right now is that Automotive Catalysts is much more than just cash, it's much more than just revenues, we have a great talent pool. And at Automotive Catalysts, we know how to talk to OEMs; we speak their language, we know their systems, we know their quality requirements, we have the network. And that makes a hell of a difference for Ralph and also for my colleagues in Fuel Cells because you really see these links coming up and you're talking to the same people.

That means we also have lot of talent, of course. And that means that this talent will, of course, will meet them still in the short term here at Automotive Catalysts. There's also a lot of talent that can help the growth of Fuel Cells and RBM. And we'll be launching active programs actually to move that talent, basically, from AC and Catalysis in the long run to either Fuel Cells and RBM. So also for our colleagues, there's a real good future ahead of us.

**4. RISE 2030****Automotive Catalysts – RISE: Capture Peak Profitability and Maximize Value**

So if I now wrap this a little bit up, what I would like that I was able to pass to you is that we are going to capture the market peak. We're going to stay this leader in gasoline. We are continuing to grow in the HGD segment, both in Europe and in China. We are going to be the reliable partner. We're going to be their weather customer. We're going to be side by side with them through this transformation.

Innovation remains at the core of what we do both in the short-term, but also for the cost optimization programs later on. Sustainability is really very close to us and also helps us going every day of the week. And we do have a plan and excellent execution.

So let me remind you, €100 million in fixed cost reduction in 2030, working capital going down by more than 40%. CAPEX below depreciation level, 50% below actually M2030. And



all this together, of course, will allow us to generate these €3 billion cash flow, which I have been talking about earlier. We have great returns, ROCE approaching 20% in 2030 and, of course, still very solid EBITDA margins.

So I think, at least in my mind, I would like to conclude that this is still a very sexy, attractive business that gives me energy every day. And I would like to work with my colleagues on this one in the next 10 years to make this real success. So thank you.