

Q1 2019 AMG Advanced Metallurgical Group NV Earnings Call

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TEXT version of Transcript

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Corporate Participants

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\* Jackson M. Dunckel

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\* Michele Fischer

AMG Advanced Metallurgical Group N.V. - VP of IR

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Conference Call Participants

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\* Henk Veerman

Kempen & Co. N.V., Research Division - Research Analyst

\* Krishan M. Agarwal

Citigroup Inc, Research Division - Analyst

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Presentation

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Operator [1]  
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Good day, and welcome to the AMG Advanced Metallurgical Group Earnings First Quarter 2019 Conference Call. Today's conference is being recorded. At this time, I would like to turn the conference over to today's speakers. Please go ahead.

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Michele Fischer, AMG Advanced Metallurgical Group N.V. - VP of IR [2]  
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Welcome to AMG's First Quarter 2019 Earnings Call. Joining me on this call are Dr. Heinz Schimmelbusch, the Chairman of the Management Board and Chief Executive Officer; Mr. Jackson Dunckel, the Chief Financial Officer; and Mr. Eric Jackson, the Chief Operating Officer. AMG's first quarter 2019 earnings press release issued this morning is on AMG's website. Today's call will begin with a review of the first quarter 2019 business highlights by Dr. Schimmelbusch, Mr. Dunckel will comment on AMG's financial results and Mr. Jackson will discuss operations. At the completion of Mr. Jackson's remarks, Dr. Schimmelbusch will comment on strategy and outlook. We will then open the call to take your questions.

Before I pass the call to Dr. Schimmelbusch, I would like to comment on forward-looking statements. This conference call could contain forward-looking statements about AMG Advanced Metallurgical Group. Forward-looking statements are not historical facts but may include statements concerning AMG's plans, expectations, future revenues or performance, financing needs, plans and intentions relating to acquisitions, AMG's competitive strengths and weaknesses, reserves, financial position and future operations and development, AMG's business strategy and the trends AMG anticipates in the industries and the political and legal environment in which it operates and other similar or different information that is not historical information.

When used in this conference call, the words expects, believes, anticipates, plans, may, will, should and similar expressions and the negatives thereof are intended to identify forward-looking statements. By their very nature, forward-looking statements involve inherent risks and uncertainties, both general and specific, and risks that exist that any predictions, forecasts or similar projections contained by such forward-looking statements will not be achieved.

These forward-looking statements speak only as of the date of this conference call. AMG expressly disclaims any obligation or undertaking to release publicly any updates or revisions to any forward-looking statement contained herein to reflect any change in AMG's expectations with regard thereto or any change in events, conditions or circumstances on which any forward-looking statement is based.

I will now pass the floor to Dr. Schimmelbusch, AMG's Chairman of the Management Board and Chief Executive Officer.

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [3]

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Thank you, Michele.

During the first quarter 2019, AMG generated \$347 million of revenue, \$50 million of EBITDA and \$15 million of net income attributable to shareholders. The improvement in EBITDA during the quarter was mainly driven by AMG's Technologies due to increased profitability associated with our turbine blade coating furnaces and higher aftermarket sales compared to the first quarter of last year.

AMG's -- AMG Critical Materials generated an EBITDA of \$31.2 million during the first quarter of 2019, a slight increase from \$30.8 million in the first quarter of 2018, thanks to strong financial performance in vanadium, chrome, antimony, which was partially offset by lower gross profits in tantalum, graphite and silicon and additional ramp-up costs associated with lithium in Brazil.

AMG Technologies achieved an EBITDA of \$19.3 million during the first quarter, a 40% increase over the same period in prior year. Order backlog was \$224 million as of March 31, '19. In addition, despite ongoing working capital investments and capital expenditures related to the expansion projects, AMG maintained a low level of net debt due to strong profitability in the quarter. AMG generated a continuing high return on capital employed of 28.3% in the first quarter '19.

I would now like to pass the floor to Jackson Dunckel, AMG's Chief Financial Officer. Jackson?

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Jackson M. Dunckel, AMG Advanced Metallurgical Group N.V. - CFO & Member of Management Board [4]

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Thank you, Heinz.

I'll be referring to the first quarter 2019 investor presentation, which we posted on the website this morning.

Starting on Page 2 with an overview of the financial highlights of the quarter.

AMG's financial performance in the first quarter was strong, with revenue and EBITDA showing improvement versus the prior year. Revenue for the quarter grew by 12% to \$347 million, thanks to an 18% increase in revenue in our Technologies segment. EBITDA increased by 13% to \$50.4 million in Q1 2019 from \$44.5 million in Q1 of last year, which was again due to a very strong financial

performance in AMG Technologies and the increased profitability associated with higher titanium master alloy prices.

Net income attributable to shareholders for the first quarter decreased to \$14.8 million compared to \$18.4 million in the prior year, with fully diluted earnings per share following that decrease to \$0.47 per share from \$0.58 per share on the prior year.

Turning now to a review of our 2 segments.

On Page 3, you can see AMG Critical Materials.

Q1 2019 revenues increased by 10% to \$229 million versus the prior year. This improvement was driven by higher average vanadium and chrome prices and an increase in sales volumes of lithium concentrate and antimony products.

In terms of gross profit for Critical Materials, adjusted for exceptional items, it increased by \$1.6 million or 4% compared to last year's first quarter. This increase was driven by higher vanadium, chrome and antimony profitability, offset by additional ramp-up costs associated with lithium in Brazil and lower sales volumes in graphite's heat insulation business as well as a decrease in silicon metal prices.

The Critical Material SG&A expenses in Q1 2019 increased by \$1.7 million or 9% compared to the same period in the prior year, primarily due to higher professional fees. EBITDA for Critical Materials segment was \$31.2 million, a slight improvement of 1% quarter-over-quarter, with EBITDA margin relatively consistent with the prior year at 14%.

Moving on to AMG Technologies, which is on Page 4 of our presentation.

Revenue increased by \$18 million in AMG Technologies to \$118 million or 18% compared to prior year. First quarter gross profit adjusted for exceptional items increased \$5.1 million or 19% to \$31.3 million. Adjusted gross margin was relatively consistent at 27% compared to 26% in the first quarter of 2018. The growth was mainly driven by higher titanium master alloy prices and higher revenue generated by the delivery of turbine blade coating, nuclear waste recycling and casting furnaces.

SG&A expenses remained consistent at \$15.9 million in the first quarter compared to the same period in 2018.

AMG Technologies' first quarter EBITDA increased by 40% or \$5.6 million to \$19.3 million from \$13.7 million in the first quarter of 2018, largely due to higher levels of gross profit. The company signed \$56.2 million in new orders during the first quarter of 2019, which represents a 0.82 book-to-bill ratio, driven by strong orders of heat treatment furnaces for the automotive market and induction and remelting furnaces for the aerospace market.

Turning to Page 5 of our presentation.

You can see that AMG's first quarter 2019 SG&A expenses were \$37.4 million compared to \$35.6 million in the first quarter of 2018. This was primarily due to higher professional fees in our Critical Materials segment.

AMG's first quarter 2019 net finance costs increased to \$9.2 million compared to \$6.5 million in the first quarter of 2018. Interest expense associated with AMG's long-term credit facility increased due to higher levels of gross debt and higher interest rates associated with the long-term nature of our facility.

AMG recorded an income tax expense of \$5.9 million in the first quarter of 2019 as compared to a tax expense of \$9.7 million in the same period of 2018. The decrease in tax expense is due to lower profitability as well as a benefit from the impact of the Brazilian real on the company's deferred tax positions. Due to the volatile nature of the company's deferred tax balances, AMG believes that the cash tax rate is a more meaningful metric. AMG paid taxes of \$3.9 million in Q1 2019 as compared to tax payments of \$2.2 million in Q1 2018. AMG's effective cash tax rate increased to 19% in comparison to 8% for the same period in 2018. The prior year rate benefited from net operating loss carryforwards in the United States, which were fully utilized in 2018.

Turning to Page 6 of the presentation.

You can see that cash from operating activities decreased to \$7 million in the first quarter of 2019. This was due to a higher -- due to higher working capital investments at AMG Critical Materials as well as higher interest and tax payments. AMG's annualized return on capital employed continued at a high level of 28.3%. Working capital days were higher in Q1 2019 due to higher average prices experienced in the quarter and ongoing higher working capital level from 2018.

AMG finished the quarter of 2019 -- the first quarter of 2019 with \$14.6 million of net debt. The increase from year-end was due to increased investment in working capital in the first quarter as well as capital expenditures of \$12.8 million. The largest expansion capital projects in the first quarter were at AMG's lithium, vanadium and heat treatment facilities.

In terms of liquidity, AMG's balance sheet is exceptionally strong and we are in full compliance with all debt covenants as of March 31, 2019. AMG had \$536 million of total liquidity at the end of the first quarter.

That concludes my remarks. I would like to now pass the floor to Eric Jackson, AMG's Chief Operating Officer.

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Eric E. Jackson, AMG Advanced Metallurgical Group N.V. - COO & Member of Management Board [5]

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Thank you, Jackson.

As we noted last quarter, we continued to be highly focused on managing working capital and price exposure and delivering operational innovation and improvement. This is especially important in these volatile market conditions.

Operationally, we only have good news except prices in which we do not control. I will touch on a few highlights.

AMG Vanadium's first quarter profitability improved considerably compared to the first quarter of the prior year, primarily due to strong production volumes and higher average ferrovanadium sales price. Ferrovanadium index prices averaged just under \$40 per pound during the first quarter of 2019, 40% higher than the first quarter of last year but 26% lower than the fourth quarter of 2018.

As announced, we plan to build another Cambridge-type plant, with the capacity to process up to 30,000 tons of spent catalysts annually, in the operational vicinity of Cambridge 1. Given the environmental regulations for handling of -- for a recycling facility for spent resin catalysts, we presently estimate the capital expenditure for Cambridge 2, including contingencies, to be about \$300 million. We are in progressed application proceedings for a tax-exempt bond facility in the similar amount, which will be a 30-year low-interest facility. The engineering work for Cambridge 2 is underway and the management team in Ohio has been strengthened accordingly.

Elsewhere, profitability improved quarter-over-quarter in AMG Superalloys, driven primarily by continued expansion of our higher-quality products and in AMG Antimony due to higher sales volumes and margins.

In AMG Brazil, profitability in our mining operation was reduced by lower tantalum and lithium prices and the expensing of our ramp-up costs. I am pleased to inform you that AMG's lithium concentration plant start-up is proceeding well. We've reached a 90 tons per hour feed rate, which is 95% of capacity, and a metallurgical recovery rate of 55%, which again is 90% of our target, and are producing in-spec materials that meets our customers' requirements. Most importantly, latest estimates essentially confirm our target production costs per ton. Our EPC contractor expects to achieve 100% of target capacity by the end of May.

In AMG Technologies, in titanium alloys and coatings increased profitability, largely due to higher titanium aluminide and titanium master alloy volumes versus the prior -- the same period last year and strong chemical margins. This segment continues to grow given our increasing market share for low-pressure turbine blades destined for the LEAP-X engine program and focus on titanium aluminide powders for additive manufacturing.

In AMG Engineering, order backlog remains strong at \$224 million, with more than 30% relating to higher-value turbine blade coatiers. Additionally, aftersales service and parts revenue continues to grow, increasing 7% quarter-over-quarter. We continued to focus on those issues that we can control, namely operational improvement, working capital management and price risk management, as well as executing on our AMG Technologies' lithium and vanadium expansion projects.

I will now pass the floor to Dr. Heinz Schimmelbusch, AMG's Chief Executive Officer.

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [6]

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Thank you, Eric.

In summary, both of AMG's divisions performed well, generating higher EBITDA quarter-over-quarter despite increasing global market volatility. In the first quarter, we had an exceptional performance in AMG Technologies, in particular with AMG Titanium Alloys & Coatings due to higher titanium master alloy prices. In terms of our lithium projects, we are very pleased with the progress of our first spodumene plant. And as Eric detailed, we look forward to being fully ramped up by end of May.

However, as we look at the current market environment for lithium, we have decided to shift our attention to increasing capacity at our spodumene 1 plant. We call this spodumene 1 plus, and we expect it to add an incremental 30,000 tons of capacity. The significant advantage of spodumene 1 plus as the next step over spodumene 2 is that spodumene 1 plus can be done within the infrastructure of spodumene 1 and, therefore, imply a substantially lower CapEx and a higher return on capital employed compared to spodumene 2. In numbers, CapEx for spodumene 2 was planned at \$110 million, spodumene 1 plus is at \$25 million.

During 2018 and 2019, we increased our competence in battery materials substantially. We built an industry-leading team with deep lithium experience. These new hires have heavily influenced our downstream decision-making, and we are now planning to build a lithium carbonate and hydroxide plant at our mine in Brazil. The timing and economics of this downstream plant are still to be finalized, but this plant will enable us to capture substantially more of the lithium value chain and will reduce the marketing risk. The combination of spodumene 1 plus and the investment into lithium chemicals plant will replace our project known as spodumene 2.

As Eric mentioned, we are working on what we call Cambridge 2, the doubling of our capacity in Ohio. This is the recycling capacity. This will be the largest project AMG ever undertook. And the returns are resting on cash flows from recycling fees and also from the sale of recovered metals. Furthermore, we are continuing to progress our cooperation with Criterion, the catalyst division of Royal Dutch Shell, to provide a global offering of an end-to-end differentiated catalyst supply and reclaim solution for refinery customers.

The most important strategic initiative within AMG is the formation of AMG Technologies, combining AMG Engineering and AMG Titanium and Alloys under one management company. In addition to the joint cluster of aerospace customer, the key rationale for this reorganization is the growth potential we see in offering customers of our metallurgical vacuum furnaces, a build, own and operate alternative. For example, a customer asking for metallurgical vacuum furnace plant is offered an alternative to outsource the respective operation to AMG, which then converts and processes the job on behalf of the customer under long-term contracts. We will detail these growth opportunities at the AGM later today.

Though our Critical Materials business continues to experience strong demand of its products, it has experienced a very high price volatility. With spot prices for vanadium, chrome, silicon called metal in this case -- silicon, tantalum and spodumene down significantly year-end 2018 -- versus year-end 2018.

To illustrate the unexpected dramatic fall in vanadium prices in recent weeks, let me tell you 2 figures. The decline from year-end 2018 to the end of Q1 '19 is 41%, and the additional decline to today after the first quarter closed is 23% -- additional 23%. In light of this and similar weaknesses, in other materials, we have adjusted our target to exceed \$150 million of EBITDA in 2019.

AMG's confidence in the longer-term trends in this business unit remains strong. As such, we are targeting to exceed \$200 million of EBITDA in 2020, and that is unchanged. AMG's 5-year target EBITDA will be detailed at the Annual General Meeting today at 1:00.

Operator, we would now like to open the line for questions.

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Questions and Answers

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Operator [1]

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(Operator Instructions) First question will come from Krishan Agarwal.

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Krishan M. Agarwal, Citigroup Inc, Research Division - Analyst [2]

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I have 2 question. First one, on the guidance. The \$150 million revised guidance, is it fair to assume that you've taken 3 components into consideration? First, it's like full mark-to-market of the pricing exposure you mentioned in your release for major commodities, and the second is like flat year-on-year sort of EBITDA from the AMG Technologies, and at least like 2 quarters of full contribution, as you said, from the spodumene plant. As you mentioned, that plant is ramping up to full capacity by May.

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [3]

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The guidance is all set. We traditionally have operational meetings with all of our operations, and then there is a decision-making process, which is resting on scenario-planning models. This is far more intricate than having flat to our mark-to-market because if you mark-to-market, by the way, it implies that you know what the market is you are marketing to. So market to market implies that you know something about the market. And since the future is uncertain, we are planning in ranges for each of the materials, very thoroughly analyze the ranges given the difference in volatility of the various product -- of the various commodities. So that then is worked into an overall model for the company and then we looked at it, that was yesterday, by the way, after working hours. And then the Management Board makes a decision. So that is how this goes. It's a very sophisticated -- it's not resting on simple assumptions like rest of the year flat or something like that. We, for example, also noted that the spike in the vanadium price was then followed by a negative spike in the vanadium price. And we know this game. It happens -- it's not the first time. And then negative -- and then



normally, we settle on an equilibrium price, which then is slightly above the historical equilibrium price. And the vanadium price, as we all know, is on a long-term growth trend. So that the rolling 3-year average, for example, trends up all the time in vanadium. So I hope that answers your question.

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Krishan M. Agarwal, Citigroup Inc, Research Division - Analyst [4]

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Yes. I understand. Second question is on your SP 2 project. So I mean, if you were to look holistically, do we see that SP 1 is ramping up by first half? And then what are the expected time line for SP 1 plus adding 30,000 capacity? Do we assume it coming by like mid-2020? Or is there any time line for that?

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [5]

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The SP 1 plus, which we are very happy about because it is an excellent opportunity to, in relatively short distance, expand our profitability in Brazil, will have a time line of about 12 months, maybe 15 months if you include contingencies to be implemented. And so that's a very high priority. And it is going parallel to the finalization of the engineering work for lithium carbonate and hydroxide, and that decision is imminent. You're looking at June as a guidance.

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Krishan M. Agarwal, Citigroup Inc, Research Division - Analyst [6]

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Okay. And then finally, just a reconfirmation. Your discussions with Ecopro, I mean, has sort of the discussion ended or is there any still something ongoing?

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [7]

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Ecopro is one of our preferred long-term takers of material from the chemical plant envisaged to be built in Brazil.

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Krishan M. Agarwal, Citigroup Inc, Research Division - Analyst [8]

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Okay. And then the discussion on the partnering with them for the hydroxide is sort of not going anywhere?

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [9]

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What did you say?

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Krishan M. Agarwal, Citigroup Inc, Research Division - Analyst [10]

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On the discussion with Ecopro in terms of partnering with the hydroxide plant is not happening. Is that the way to look at it?

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [11]

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Well, the definition of partnering is rather flexible. A long-term contract, for example, is a form of partnering because long-term contracts can have various forms, and some of these forms are stronger than an equity partnership.

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Krishan M. Agarwal, Citigroup Inc, Research Division - Analyst [12]

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Okay. And one final question for -- probably for Jackson. You shared today the working capital outflows were driven by the higher prices, particularly for vanadium. So do we expect some kind of release in the next quarter given the prices have come down?

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Jackson M. Dunckel, AMG Advanced Metallurgical Group N.V. - CFO & Member of Management Board [13]

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Typically, you would see that in our business model. So you definitely saw it in periods of lower prices in prior years. We can't make a comment, obviously, in terms of our outlook on prices, but that's the way our model -- that's the way our business model works, so it's a fair expectation.

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Operator [14]  
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Our next question comes from Frank Claassen.

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Frank Claassen, Banque Degroof Petercam S.A., Research Division - Analyst [15]  
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Yes. Frank Claassen, Degroof Petercam. Coming back on the vanadium prices, yes, what is your view or explanation for the recent drop? What are the dynamics in the market? And what is your view longer term given that, of course, you'll make a big investment in Cambridge 2? So some extra comments on that, please. And secondly, on your CapEx guidance for this year, for '19, if I remember correctly, it was \$80 million to \$120 million. Is this still the case? And can you maybe specify this range?

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Jackson M. Dunckel, AMG Advanced Metallurgical Group N.V. - CFO & Member of Management Board [16]  
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I'll jump in and do the CapEx guidance first and then let Dr. Schimmelbusch talk about the vanadium market. Yes, we did say \$80 million to \$120 million. We would narrow that to approximately \$90 million for this year.

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [17]  
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Now to vanadium, I want to upfront make a point to avoid a misunderstanding. When we are expanding Cambridge 2 or building Cambridge 2, doubling the capacity in Ohio, we're looking at a very thorough decision-making process and a very thorough negotiation process with various suppliers. The key element of vanadium, in our case, recycling of recycling, is the recycling fee. We are not a mine. We are extracting metals, but the first thing we extract is a fee. And the fee has seeable volatility in the short term because it's contractually fixed and it is trending upwards because of the negotiations of supply contracts. And it's the most important element of profitability of our vanadium activity. Without this recycling concept, we wouldn't necessarily invest in the happy guys who enjoy volatility. We have 3 metal price strains, and we have, most important, the recycling fee strain. We are paid to take the material. We have negative mining costs. So a mine has necessarily positive mining costs because it's a mine. A recycling plant is heavily structured and negotiated, is

positive at extremely low if not negative vanadium prices. The recycling fees are expected to increase. And why is that? That is because, globally, the spent catalysts are following fresh catalysts. If you will envisage a fresh catalyst, 18 months later, you have a spent catalyst. And the spent -- the fresh catalyst market, over the next 6 years, is supposed to increase from an order of magnitude, fresh catalyst, of 200,000 tons to over 350,000 tons. And that has a reason, namely the HMO 2020 (sic) [IMO 2020] legislation. That's the maritime fuel restrictions of sulfur to 0.5%. That has obviously consequences for the desulfurization refinery industry. And what is a desulfurization refinery? It is an assembly of catalysts. And these catalysts contain molybdenum and nickel, and increasingly vanadium, as the geological circumstances reside in this. And therefore, if you have additional 150,000 tons of fresh catalyst, you have over 200-and-higher thousand tons of spent catalysts. Now that has to go somewhere. Since China has closed its borders, at least legislatively, you have to recycle it or you landfill it. Landfill is not a good idea when you have hazardous waste because it comes back to you somehow someday, especially when you have deep pockets. Therefore, recycling. We are the world's largest recycling company. We intend to be the world's largest recycling company in future. That's -- the first step is Cambridge 2. The second step is a joint venture with Shell to utilize the fact when we go global in such large circumstances and in remote areas, we are very happy to be associated 50-50 with Royal Dutch Shell, okay? So far to the recycling aspect.

Now to the vanadium price aspect. The vanadium price has a history of rising average rolling forecasts, 3-year, 5-year averages are trending up, and that has demand and supply reason. And all of that happens primarily in China.

Now let me mention something about supply. Supply in China comes from stone coal mines, sounds expensive, is expensive and is environmentally cumbersome. It comes from slags. Iron ore, which contains vanadium, is being processed into steel, and that process delivers slags as a byproduct, as a residue. Those slags are a principal source of vanadium. But you should be reminded that China is undergoing now a restructuring of steel -- of the steel industry as likely in the West has happened over the tens of years. We are now experiencing the building of electrical arc furnaces in China as against blast furnaces because the scrap has to be processed and the scrap increasingly replaces iron ore. And the scrap obviously doesn't have any vanadium. To the contrary, the mini steel mills, so-called mini steel mills, are the principal consumers of vanadium. Now -- and then the waste imports and I mentioned that already. That's the supply side.

The demand side in China is dominated by 2 elements. One is the rebar legislation. The specific content of vanadium in a ton of steel in China is significantly below the Western average. Now that is changed by the rebar legislation. The objective of the rebar legislation is to save steel because alloy steel, vanadium alloy steel requires then less steel for the same purpose. You save steel, and therefore, you save CO2. That's the rebar legislation. The only question is, will that legislation be enforced? And to what extent will it be enforced? Nobody knows that. I mean, there's no expert who knows that. We have people in China. We are happy with discussing with them about that subject, but nobody really knows the enforcement of legislation in China.

The other demand is the battery demand. We have information about a particular large stationary battery in one of the China provinces, which is short 3,000 tons of vanadium. That's 4% of the world production. If this project decides to now eliminate its short position, it actually needs 4,000 tons, so they bought already 1,000 tons, but then they stopped because of the vanadium price spike. If they

go back into the market, then the vanadium price will be different than if they postponed to go into the market. Given that scenario, you will understand that we are not simply making an assumption and then go our way. We are scenario planners, and we are working on this in a very hard way, and then we make a comfortable -- a decision which makes us comfortable as experienced metal guys.

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Operator [18]  
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Our next question comes from Henk Veerman.

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Henk Veerman, Kempen & Co. N.V., Research Division - Research Analyst [19]  
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Henk Veerman of Kempen & Co. I have a couple of questions also on the topics already discussed because some things are still not fully clear to me. When you talk about the guidance 2019, firstly, \$150 million of EBITDA, the current pricing per pound is \$23, right? If that pricing is the average for this year, just for sake of clarity, would you get to this \$150 million guidance? In other words, to what extent does the guidance today -- does it hold for the current pricing volatility in the market? That's my first question.

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [20]  
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We -- I can only say that that's a repetition. It's -- you are not looking at something where there is one scenario with one vanadium price assumption for the rest of the year, and that is then the basis of the guidance. This is a series of modeling work, which make -- which ends up at a situation where we look at 3 or 4 scenarios which could happen and then we come to that guidance in a conservative way. I know that you have a model and you'll have to have a price which you can plug in, and that makes you comfortable. But we wouldn't be comfortable by just having a model and putting in one price. This is a scenario planning. Everybody in the commodity industry knows that this is working that way.

Now one of the models, we have maybe a \$30 price for the rest of the year in average, but of course, not in average as a flat line, but as a quarter-by-quarter situation or month-by-month situation. So this is work. This has various assumptions of various prices. And finally, the vanadium price is less important than the recycling fee, which, of course, you have probably also in your model. And I would like to encourage you to put that in the foreground of your work on modeling the future because it's the most important element of the vanadium recycling thing, and that goes up. So I avoid to give you a one-dimensional answer because it would not be truthful.

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Henk Veerman, Kempen & Co. N.V., Research Division - Research Analyst [21]

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Okay. And in the \$150 million, I mean, lithium, it looks like it's ramping up according to plan, up to the 100% in May. But looking at EBITDA contribution this year, is it fair to say that the EBITDA contribution from spodumene 1 is still fairly limited this year driven by start-up costs?

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [22]

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That's true. Let me remind you what Eric Jackson has said. We are very happy that this very large project, our largest so far, is now successfully completing its ramp-up. And that doesn't only apply to the rate of production, which is nearing in on the 100% on the full capacity utilization, but also that we have information which confirm our assumed cost level, which obviously is very low. Thinking about that, we are partly processing tailings and -- which have been mined previously and have a by-product mine because lithium is not the only product being produced in Brazil. Tantalum is a very important element of the profitability of Brazil. But you are right. The contribution this year, this year, because only more or less 0.5 year of full production and -- is low. That changes, of course, next year. That changes, of course, next year.

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Jackson M. Dunckel, AMG Advanced Metallurgical Group N.V. - CFO & Member of Management Board [23]

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And if I could say it here, revenue recognition is based on CIF China as well. So there's a lag between, of course, our production and revenue recognitions.

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Henk Veerman, Kempen & Co. N.V., Research Division - Research Analyst [24]

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And if I talk then about spodumene 1 plus, is it fair to say that the incremental cash cost per MT are roughly similar to the, let's say, the \$250 to \$300 per MT that was guided for before?

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [25]

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Roughly similar.  
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Henk Veerman, Kempen & Co. N.V., Research Division - Research Analyst [26]  
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Okay. That's clear. And then my last question is on the Ecopro situation, I would say. Could you maybe specify a bit more what have been the developments over the last months? And also, now that you've sort of made an FID on the hydroxide/carbonate plant and Ecopro discussions are still ongoing, it seems like you are building this plant regardless of a long-term offtake agreement. Is that true? And if that's not true, are you also talking with different potential offtake partners?  
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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [27]  
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We are discussing with Ecopro. We are not commenting on Ecopro further because it's a public company like we are, and we have an NDA in place, NDA, nondisclosure agreement. The second question, we explore several concepts, one of which is Ecopro. And those things are dependent on complicated technological considerations, which are in the works when you -- and that purely -- that's carefully worded -- wording -- carefully wording outside the -- outside my direct association with Ecopro. Let me explain. Several customers, long-term customers of chemicals, for lithium chemicals, there's different ideas about qualities that they need: battery grade, technical grade, carbonate, hydroxide, sulfate, so different things. And we are analyzing several of those alternatives, and the decision will be taken in June.  
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Henk Veerman, Kempen & Co. N.V., Research Division - Research Analyst [28]  
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And just to be clear, you would not proceed with building a plant if there is not an offtake agreement in place? Or is that a dual track?  
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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [29]  
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Well, I'm not saying 100%. We want -- we tend to believe that it is wise to sell a large portion of what we are producing before you make a final decision, so that the plant is breakeven if you only sell

what you are contracted to sell. There are also concepts where you sell this to yourself. For example, you can produce technical grade in Brazil and sell it to a conversion plant in a Western European country, which is heavily subsidized, to increase the battery exposure of Western Europe. So there are very interesting concepts here under consideration.

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Operator [30]

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Our next question comes from Stijn Demeester.

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Stijn Demeester, ING Groep N.V., Research Division - Research Analyst [31]

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A few follow-ups from my part. So on AMG Technologies, it performed quite strongly with \$19 million EBITDA. This division tends to be less volatile quarter-over-quarter than the Critical Materials business, obviously. So should we think of this \$19 million as the new normal in run rate quarterly EBITDA going forward? Or are there exceptional items leading to this good performance in the first quarter? This is my first question.

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [32]

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And I like that question. AMG Technologies is the outcome of very thorough operational and strategic decisions and management building and other things. And the management -- the new management of AMG Technologies is busy in building a comprehensive business plan based on the various growth of potential which we want to unlock in this context. So that business plan will be finalized in maybe 2 months or so. And then we will look at it in various ways, and we will enjoy then a growing presence in the aerospace market, where we have long-term contracts, and in several products, very, very good market shares. When you think about turbine blade coating, we are the world leader. And if I would say that 23 plants -- or the 22 plants in the world are coating, and those 22 plants have been built by AMG. So we are the essential partner of the engine industry, and this particular is relevant for the LEAP engine, the world's largest engine program. And if you -- you should be reminded that the LEAP engine has a backlog of \$200 billion. And every week, LEAP engine has more elements to quote because of temperature considerations, operating temperature is higher than traditional engines. So incidentally, our backlog in coating exceeds \$100 million. So the coating is one. And if you mentioned that, immediately, you have to follow that by titanium aluminide where we again have a world leadership. Titanium aluminide is the replacement material of heavier materials in the cold section or the less hot section. There's no cold section, but in the less hot section of the engine. And that's another very strong growing element, again, into the LEAP engine as



it's one of the many engines. So we are looking at a growth company. And the titanium aluminide part of it is a build, own and operate. It wasn't conceived as a build, own and operate, but it operates under vacuum furnaces. In Nuremberg, last time I counted, I think, I hope I didn't miscount, there were 20 vacuum plants operated by AMG, built by AMG Engineering and operated by AMG Titanium. And this model of offering to the customers additional services, including the building and operating of those models, is successfully proven in our heat treatment engineering division, the one subdivision of engineering which offers heat treatment furnaces, either as you buy your furnace and you operate the furnace or we -- you give us parts you want to heat treat and we give you back the parts under long-term contracts and you keep owning the parts, meaning we don't incur working capital exposure. So these models, we believe in, and many customers like that complex vacuum furnaces are being not operated by themselves when they want to focus on their core abilities, but operated by somebody who knows exactly how to operate such a -- how to engineer, operate, upgrade, develop furnaces. So we are looking at a growth company here. In the aerospace sector, it has not escaped our attention that the aerospace sector has an average multiple, EBITDA multiple of 12.

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Stijn Demeester, ING Groep N.V., Research Division - Research Analyst [33]

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Okay. So should we think of the current rate as the new normal in terms of quarterly EBITDA? Coming back to the question.

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [34]

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I don't -- please, we only do one guidance, and that's the total.

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Stijn Demeester, ING Groep N.V., Research Division - Research Analyst [35]

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Okay. Understood. So following up on that. Do you expect an impact from the B-737 MAX groundings as you are exposed to its LEAP engine? Do you see an impact there in the supply chain?

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [36]

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No.

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Stijn Demeester, ING Groep N.V., Research Division - Research Analyst [37]

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Okay. That's a short answer. And I do appreciate that your guidance is built up as a sort of complex process of scenario planning. But now looking at the \$50 million delta between '19 and 2020, does this delta imply improvements in vanadium price assumptions? Or is it merely built on lithium, probably improvements in AMG Technologies and potentially other parts of Critical Materials, et cetera? Can you shed some light there?

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [38]

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I hate to repeat my wonderful sentence, which I constructed about the scenario planning and the various work we do prior to come to this guidance statement. It's not based on one run of one model, which would be it is a cluster of assumptions around plausible metal prices, plausible production rates, plausible capacity utilization, et cetera. So that's -- I mean you -- I don't know of any company who does it differently in my industry -- in our industry. We guide with a dollar figure. We don't guide with metal prices. And you know why? Because we don't know the metal price. It's the future. So you have to assume ranges of all these portfolios and then look at it and then do another run, and then you get comfortable with it and then somebody says, "I think in your run, the silicon metal price is too optimistic, the range." And then he makes his point and then you say, "Okay, he has a point." And then you reduce the silicon metal range a little bit in light of what the argument is, and then you make another run until you are satisfied. By the way, this has been presented after our weeklong operations meeting where all this work is being -- where everybody is scrutinized as regard to those ranges, production ranges and price ranges. And then we -- of course, yesterday, I've presented this to the Supervisory Board, not for decision-making, but to maybe somebody has an input there. And we have very -- for example, as regard to aerospace input, Europe, we have very big expertise in the Supervisory Board. So this is a very good work of -- under the eyes of our corporate governance responsibilities.

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Stijn Demeester, ING Groep N.V., Research Division - Research Analyst [39]

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I get that. But you also have to appreciate that analysts want to understand the building blocks behind those numbers.

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [40]

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If I was you, which I'm not -- if I were you, I don't know what the English. If I were you, I would also ask for the price because I have to model. If [I had to do a separate model] -- no advice. You want to have a one dollar figure for one price, and we don't do that.

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Operator [41]

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Our next question comes from [Andreas Margo].

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Unidentified Analyst, [42]

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Most of them have been answered. Maybe just touching a little bit on vanadium, on what happened to prices in the past. So if you can give us a bit of flavor as to how you would interpret this price drop in this past quarter. And just looking forward, I remember in the past few calls you mentioned about a price range when deciding on Cambridge 2 of \$25 to \$35 per pound. Have you revised that expectation or not? So that's one. And then the second one is on AMG Technologies. So looking at your book-to-bill ratio, for this quarter, this is below 1. I understand there is quarterly volatility. But if I remember correctly, this ratio has been trending down the past few quarters. What's your comment there?

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [43]

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We don't assign a lot of weight to quarterly results of the book-to-bill ratio because this is very volatile. We know the pipeline of projects, whether they are signed yet or in various stages of negotiation, and therefore, we have more information than is accessible for the public. The quarter -- the last 3 quarters have been relatively consistent, around \$60 million, and so that's low, and we expect this to be trending higher.

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Unidentified Analyst, [44]

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Okay. And on vanadium?

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [45]

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Vanadium, as regard to vanadium prices, number one, our recycling project is resting on recycling fee. And since I'm -- I shouldn't do that, but I will. If I have an order of magnitude recycling fees presently of \$30 million, and if I have a rising recycling fee scenario in future applicable to Cambridge 2, and let's assume redoing pro forma the present scenario, I would have then a recycling fee of \$50 million, order of magnitude, reflecting the fees of the future. And if I then double -- for just a second. And if I then double \$50 million because Cambridge 2 has the same capacity as Cambridge 1, then the recycling fee component of this operation is \$100 million. And that is by far the largest element of decision-making. I would do Cambridge 2 based on recycling fees only because it's a very positive number. So it's a conservative long-term assumption for the vanadium market, very conservative long-term assumption to it. We would do a scenario of \$25 to \$30. We would do one in \$35. We would do another one from \$20 to \$40, a lot bigger number. But that's not changing our decision to build Cambridge 2. Cambridge 2 will be built because we have enormous pressure of spent catalysts seeking a home.

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Unidentified Analyst, [46]

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But if we were to look at, let's say, a base case scenario, obviously, these used to be \$25 to \$35. Would you say that's going down to...

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [47]

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That's fine. In combination with the recycling fee, that's fine, that's fine. No problem.

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Unidentified Analyst, [48]

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So you wouldn't say that you've now gone down to \$20 to \$30 or, I don't know, \$15 to \$25?

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [49]

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I just said it's fine.

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Operator [50]

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(Operator Instructions) Our next question comes from [Nick Stroink].

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Jackson M. Dunckel, AMG Advanced Metallurgical Group N.V. - CFO & Member of Management Board [51]

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And I think this will be our -- sorry, I think this will be our final question. Thank you.

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Unidentified Participant, [52]

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Thank you for your elaborate update on the fundamentals of the Materials and Technologies business. This is highly appreciated. This is [Nick Stroink] from a family office calling in.

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [53]

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Thank you.

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Unidentified Participant, [54]

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I appreciate it very much that you elaborated highly on the Materials and the Technologies business in the current volatile environment. I guess this uncertainty has led to the fact that more than 12% of your shares are on loan, and these guys are not backing down. My take is that this is partly related to vanadium price most recently, while you are planning the biggest investment ever of \$300 million in this segment. In your -- in the models that you make, you have made several runs. Let's assume, contrary to expectations, that vanadium prices continue to decline. And we have an average price over the next few years that is kind of the same as the average price between 2015 and 2017, let's say. Are you still then able to generate a healthy return on this investment?

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [55]

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Yes.

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Unidentified Participant, [56]

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All right. That's very clear. Can you indicate then what the percentage of earnings growth in Materials was driven by volumes and what percentage was driven by prices last year?

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Heinz C. Schimmelbusch, AMG Advanced Metallurgical Group N.V. - Chairman of the Management Board & CEO [57]

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No. And that was the final question. Thank you very much. Ladies and gentlemen, this ends our Q&A. Thank you very much.

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Operator [58]

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Thank you, ladies and gentlemen, for joining us. You may now disconnect.