Presentation by the Executive Board of Knorr-Bremse AG

At the Capital Markets Lunch of Knorr-Bremse AG

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Transcription

00:00:00 Operator

Ladies and gentlemen, welcome to the Capital Market Lunch of Knorr-Bremse AG. This conference will be recorded. Participants will be in a listen-only mode. May I now hand you over to Ralph Heuwing, who will lead you through this conference. Please go ahead, sir.

00:00:31 Andreas Spitzauer, Head of Investor Relations

Welcome, good day, wherever you are, dear ladies and gentlemen. My name is Andreas Spitzauer, Head of Knorr-Bremse Investor Relations. I want to welcome you today to the presentation of our first half results of 2019 and the two divisional deep dives for Rail as well as for Trucks. As a reminder, the conference call will be recorded and is available on our homepage www.Knorr-Bremse.com in the Investor Relations section. You can find today's presentation and later a transcript of the event as well. One remark, in the Q and A sessions we have people in the room who will ask questions, unfortunately it is not possible if you are connected with us via the phone. It is now my pleasure to hand over to Ralph Heuwing, the CFO of Knorr-Bremse, please go ahead Mr. Heuwing.

00:01:27 Ralph Heuwing , Chief Financial Officer

Thank you. Ladies and gentlemen, welcome to our capital market lunch. Thank you for making your time available. Today's event is made up of two main tasks. First of all, I will present the highlights of our key financial figures for the first half of 2019 as well as the second quarter, followed by our regular Q and A session. My two colleagues, Peter Laier and Jürgen Wilder, will then go into a deep dive on our Truck and Rail divisions, including individual Q and A sessions. We chose this format today, because we have over the last 11 months since our IPO significantly expanded our capital markets presence. We have met a large number of existing and also newly interested investors in addition our sell site coverage expanded to 12. Doing the meetings in the recent months, we have noticed that many capital markets participants already have a good understanding of our markets and our equity story. At the same time, we have the impression that investor discussions tend to focus sometimes on relatively few issues, and do not always appreciate the full picture. The topics we therefore want to address in our divisional deep dive include the following: How might the truck markets look in the context of a cyclical weakening? And what levers are available to Knorr-Bremse in order to protect our margins? What are the real drivers for content per vehicle? What are our growth prospects in the rail markets? Where are the most interesting and attractive markets outside of China? What potential will the rail aftermarkets offer Knorr-Bremse over the next years? And of course, for businesses, how will Knorr-Bremse's innovation road map look and what opportunities will this bring for medium-term growth? A final word before we start: Admittedly, we are late in reporting Q2, but let me once more reiterate that after the full ERP implementation of our IFRS accounting, which will happen next April, we should be able to accelerate our reporting significantly towards MDAX standards. So please bear with us until then.

Let's start with chart 4 and our key highlights of the first half of 2019. Considering the increasing economic and political uncertainty, Knorr-Bremse's outperformance and resilience since the beginning of the year has been remarkable. Our results stand out when compared to direct competition or with other segments in the industrial goods sector, and particularly compared to automotive. They confirm the special robustness, which is embedded in Knorr-Bremse's business model. During the second quarter we continued to grow profitably and managed to push further ahead on our strategic agenda to broaden and deepen our product portfolio in both rail and truck. My colleagues will explain this in more detail later. At 3.6 billion EUR revenues were more than 8% stronger compared with last year's numbers. This dynamic development was driven by both divisions and indeed all regions. The strong order book of 4.5 billion EUR and the rather long-term nature of the contract, especially in rails provide good visibility and support for our revenue developments in the next quarters. Operating EBITDA margin which is also the basis of our guidance for profitability in 2019 reached 19.0%. After eliminating the restructuring charges for the plant closure of the production plant in Wülfrath. The first time application of IFRS 16 supported the EBITDA margin in the first half of 2019, also with a contribution of 70 basis points and we were particularly pleased that earnings per share improved 21% from 1.76 EUR to 2.13 EUR. To summarize the second quarter highlights, in short, we have again delivered on our IPO promise.

Moving to page 5, the strong financial results are clearly a reflection of the key elements of our equity story. All the points that we presented a year ago during our IPO are still fully valid. Both divisions benefit from their market leading positions and markets with high barriers to entry. Important mega trends like urbanization or like autonomous driving and increasing content per vehicle allow them to outperform their respective end markets. As a key innovator, Knorr-Bremse has set new trends in the Rail and Truck industry, especially in terms of efficiency and safety. Our aim is to maintain this high rate of innovation and quality and keep competition at a distance. Resilience is a cornerstone of our attractiveness. Both divisions incur around 90% of their respective costs in their respective regions. This high level of localization not only strengthens our relationship with our customers and enables us to score on points on homologations, it also means that we are a lot less exposed to risks arising from tariffs or from currency fluctuations. And last but not least a high aftermarket share and long-term customer relationships help alleviate some of the more cyclical risks of the OE business. Both RVS and CVS continue to show profitable growth. Our asset-like business model ensures good cash conversion and flexibility. Last but not least the executive team has a clear strategy and is strongly committed to Knorr-Bremse 's success.

Let me dive deeper into our revenue developments on page 6: During the first half of the year, revenues grew by 8.4% and reached a half-year record of 3.6 billion. The main driver of this development was our organic growth, which contributed 6.8% and reached the upper end of our full-year guidance. Revenue development in the second quarter was also quite pleasing and driven by both divisions. Nominal quarterly sales growth was 8.1% and organic sales growth 5.6%. In the backup of our presentation, you will find more details on the organic developments of our KPIs also on a quarterly basis. It is noteworthy that all major regions supported the increase of our topline. The strongest contribution, however, with some distance, came from North America. Here the revenue growth of 23.5% was clearly outstanding, reflecting good momentum in freight, locomotive, and aftermarkets for our rail division as well as content growth for our truck division, but also of course a favorable FX rate. In organic terms, we have been able to add nearly 100 million EUR of additional revenue in this region. The region Asia Pacific delivered a growth of 8% and Europe achieved 2% in revenue growth in the first half, year on year. On a quarterly basis, the regional development was pretty much in line with the half-year comparison. As you can see on the next chart, new orders grew less strongly than sales. Our order intake on group levels for the first half of the year was up by 1.8%, compared with the same period last year and reached 3.6 billion EUR. On an organic level, growth reached approximately 1%. The book to bill rate in the first half of 2019 reached approximately 1, slightly lower compared with the ratio in the first half of last year. In the second quarter of 2019, we recorded a nominal and organic decline in order intake on group level of around 2%. On the one hand this reflects early signs of a more hesitant order activity as one would expect from truck producers, especially in Europe. In addition, the rail divisions felt the temporary impact of some project roll-over from the second to the third quarter. Please remember that rail is a project business and as such larger orders can influence the quarter on quarter comparison. RVS has benefitted from larger orders in the prior year quarter and in the first quarter of 2019. We consider this a normal quarterly fluctuation and do not see it as any cyclical or even structural phenomenon. By the way, our July and August order intake for rail was again at a very healthy level. The order book of 4.5 billion EUR at the end of June this year provides a visibility of almost eight months of revenue, enough time to respond to any potential market changes which may be ahead of us.

Let's move to the development of our profitability on chart 8. Organic EBITDA growth was higher than revenue growth in the first half of 2019. Group EBITDA on an operating level, including the IFRS 16 effect and excluding restructuring costs of 60 million EUR for the closing of the production plant in Wülfrath came in at 685 million EUR in the first half of 2019. This equates to an operating margin of 19%, 100 basis points higher than during the same period last year. It is also one of the best half year EBITDAs a company has ever recorded. The performance in Q2 2019 was even slightly higher, reaching 19.1%. These numbers are a strong indication that we are well on track to achieve our operating margin guidance of 18.5 to 19.5% for the full year. The application of IFRS 16 supported EBITDA by 25 million EUR in the first half, and 11 million EUR in the second quarter. On the next chart you will see that on an EBIT level we were able to increase margins as well. In the first half of 2019 operating EBIT margin reached 15.6% compared with the operating margin in the same period last year, there was an improvement of 30 basis points with almost no tailwind from IFRS 16. Wülfrath influenced the EBIT in the first half by 27 million EUR, compared to the EBITDA effect the higher figure also includes depreciation or write-off on machinery. In addition, the first-time application of IFRS 16 resulted in a higher depreciation in the second quarter year on year, which had an impact of around 11 million EUR. Let's move on to chart 10 and focus on cash flow. The nature of seasonal developments of our cash flow is very well known to you. It is characterized by the effect of a build-up over the course of the year and significantly improved towards the end of the year. This amongst others, due to the fact that a number of projects will be completed by the end of the year. Our operating cash flow and our free cash flow in the first half of 2019 improved year on year by 25 and 19% respectively. Despite the revenue driven increase, the net working capital and higher investments towards capacity expansions. This happened due to a higher cash conversion of our strong earnings. Until the end of the year, we expect to further strengthen our operating cash flow by improving earnings as well as networking capital. Annualized operating ROCE was stable with a high level of 35.5%, for reasons of comparison we have excluded 150 basis points for Wülfrath as well as approx. 270 basis points for IFRS 16. The increase in capex reflects capacity expansion for the continued demand for air disc brakes in North America, as well as the Munich-based site development which we already introduced in the first quarter. In the first half of 19, the capex to sales ratio, excluding IFRS 16 was at 3.7%, in line with our mid-term guidance of 4 to 5%.

Let me look a bit deeper into the divisions and start with Rails on page 11. In the first half of 2019, order intake of rail vehicle systems was up 2%, an almost 4% on an organic level. As explained before, the development of the rail business is characterized by somewhat chunky orders, and after achieving a record order intake and a growth of 10% in the first quarter of 2019, we recorded an organic decline of around 2% in the second quarter. To put things into context, in the second quarter of 2018, we had received a major order worth more than 70 million EUR for Kiepe, our specialist entity for electrical equipment. I would like to add that in July the book to bill ratio of RVS rebounded again with a level of 1.18, especially the Asian region was strong, posting an even higher ratio, both numbers are much higher compared with group average in the first six months of the year. Let me be very clear: The rail industry and our RVS business are very healthy. In particular driven by megatrends, which my colleague Jürgen Wilder, will explain in more detail in the RVS deep dive. Drivers for order intake in the second quarter have been the good development of our Chinese aftermarkets, and HVAC in general. Additionally, we won several orders for freight cars, for locomotives, mass transit and service in North America. Our performance in the US freight market is especially remarkable, given the weak development of trade volume in the raw materials segment. Based on the strong demands for our product and services, our order book advances well. At the end of the second quarter, it reached 3.3 billion EUR and our visibility therefore sends us 11 months of revenue.

Let's look at revenues and EBITDA in Rail on the next chart. In the first six months of 2019, revenue increased by almost 8% to 1.88 billion EUR. Adjusted for disposals, M&A and FX effect, organic growth amounted to 8.4%. In Europe top-line growth was supported by almost all segments, such as high-speed trains, freight cars and regional and commuter business. The European aftermarket, too, developed very well. We also benefited from better revenue development of our major European customers. In Asia we realized continuous momentum in our Indian OE and aftermarkets, as well as in our Chinese aftermarket business. In China an increasing number of high-speed trains are entering the first phase of overhaul. In the first half of 2019, our Chinese aftermarket revenue increased by more than 20% year over year to more than 200 million EUR. In the region North America, revenues benefited from good demands for brakes overall. At product level, growth was driven by positive developments in the aftermarket as well as in the locomotive and freight segments. And we are particularly pleased that the EBITDA margin developed so well in the rail division. Here were able to achieve an improvement of almost 30% to 417 million EUR, even adjusted for the IFRS 16 effect, we recorded a growth rate of approx. 25%. EBITDA margin was at 22.2% for the first six months, and at 22.5% in the second quarter of 2019, both well above last year's figures at an excellent level. The drivers for this strong performance were the following: Positive scale effects with corresponding operating leverage, support from a better mix with an aftermarket business now, especially in Europe and in Asia, productivity improvements from our efficiency and cost measures and last but not least the disposal of our loss-making businesses called Blueprint and Cytec last year, which supported the strong margin development of RVS.

Moving over to the truck side, semiotic sale order intake and order book first. So, this is page 13, also here we have been outperforming market and competition. Order intake for CVS was at 1.66 billion EUR in the first half of 19, which is up 2% on nominal figures, but actually 2% down on organic figures. On a quarterly basis, the trends and changes were roughly the same year on year. Current demand in the truck industry has become more volatile than in previous quarters and is showing initial signs of weakness, especially in the US the order intake seen by truck OEMs decreased strongly year on year. This trend was in principle visible in Europe, too, but to a slower and smaller extent. Against this backdrop, we assessed CVS relative development in Q2 as strong. You might have gathered this already from a peer comparison. We currently expect truck demand in North America and Europe to weaken further in the coming quarters, especially in the U.S., one must certainly take into account that the truck market is expected to return to more normalized levels. After the strong rise in 2018 and also in the first half of 2019. But please note that even with a TPR decline of 15 to 25%, which most analysts and research companies are expecting for next year, that level would still be more or less where we have been in 2017. However, we also believe that it is too early today to determine the exact nature of an impending down-turn. Our message is twofold: First with continued content growth Knorr-Bremse should be able to mitigate some of the impact and second, we are well prepared in terms of cost measures to respond to such impacts. My colleague Peter Laier will provide more details about this in his deep dive. In the second quarter our order intake benefitted operationally from increasing content per vehicle across the globe, but particularly in Asia and in the North American regions. Especially the higher demand on the products in the area of driver system electronics as well as the on-going migration from drum brakes to disk brakes, as drivers behind our growth. Nevertheless, the decline at our European truck units could not be fully off-set. Overall organic order intake in the second quarter was around 2% below the prior year figure. Order book of our truck division stood at 1.3 billion EUR at the end of the second quarter, and this again provides visibility of five months of revenue, a sufficient level to support our guidance for the full year.

Moving on to revenue and profitability on the truck side on the next chart, CVS posted 1.73 billion EUR in revenue in the first half of 2019. Compared to last year's figures, this is a strong increase by almost 10%. This was supported, too, by the first-time inclusion of Hitachi steering as of April 2019. So organic growth, also eliminated for FX, stood at 5.1% versus the same period last year. With this development, our truck division once again substantially outperformed the corresponding first half production rate of Truck, which actually declined by 1.1%. CVS was able to grow stronger than the underlying markets in North America and Asia, once again we were also able to gain market share and grow content in a tougher market environment. In Europe we faced a softer development compared to the overall market due to a lower contribution from the aftermarket, driven by a more wide-spread destocking at some OEM customers and distributors. In the first half of 2019, CVS achieved an operating EBITDA of 281 million EUR as an operating margin of 15.3%. These numbers exclude the Wülfrath effect of 16 million EUR and includes IFRS 16 in the amount of 11 million EUR. In the second quarter of 2019, our operating margin was at 15,9% compared to 16.0% in the previous year's quarter. The key reason for this decline is also a lower share of aftermarket business and total revenue, as I explained. In addition, also the operating performance of Wülfrath was not supportive and had a negative impact on CVS margins. At the same time the division continued to face the same supply chain constraints which the whole industry faced, too. That is why we continue to invest responsibly in innovations, targeting mega trends that will support CVS future growth.

Let me conclude on the last page, page 15. Our main message here is, given the reliable performance in the first half of 2019, we do confirm our revenue and our operating EBITDA margin guidance for the full year. We expect organic growth of revenue between 3.8 and 6.9% in the total year of 2019. In the first half of 2019, we achieved 6.8%, so the upper end of this full-year range. In total this should lead to a revenue between 6.875 and 7.075 billion EUR. Based on this revenue level, we expect an EBITDA margin on an operating basis, excluding restructuring costs and including IFRS 16, of 18.5 to 19.5%. And, as you know, in the first half of this year we achieved the mid-point of this range. The current market environment has certainly become more challenging and volatile in recent months, above all political environments have become less predictable and issues such as BREXIT, trade war and sanctions are beginning to take their toll, not directly on Knorr-Bremse , but of course on economic activity and customers' demand as well as overall investment behavior, our CVS division is observing clear indications of a weakening demand and has indeed also begun taking action. On the other hand we benefit from the fact that our proportionately larger RVS division has proven quite immune to cyclical fluctuations. Maybe on the contrary, in the further course of events investments in infrastructure and logistics might even increase in times of the down-turn, as public funds are mobilized when private funds are receding. Combined with a growing public interest in climate protection, we expect the rail industry to benefit disproportionately. Finally, the potential return of quantitative easing in the U.S. and in Europe as well as any pre-election stimulus in the U.S. might soften the impact of the downturn. So what does it mean for Knorr-Bremse? First, we will continue investing in our relevant future megatrends and drive innovation to ensure attractive growth also in the future. Second, at the same time, we will increase our efforts, cost measures and in efficiency improvements to protect our margins in a more adverse environment. As you can see from the example of Wülfrath, we are not shying away from tough measures and we do act pro-actively. We are prepared. And thirdly we see the good potential for improvements in our cash flow and we will continue to work on cash conversion. For this, ladies and gentlemen, I would like to thank you very much for your attention and I look forward to your questions.

00:29:20 Moderator

Thank you, Mr. Heuwing. Coming now to the first Q and A session, so please raise your hand, wait for the microphone. And we will be happy to get your questions. Question no. 1 over there.

00:29:34 Alex Virgo, Bank of America, Merrill Lynch

You talked about the July/ August developments in RVS, I wondered if you could talk about the same comments with respect to order intake and customer behavior over the summer in CVS? That would be the first question. And then the second question, I wonder if you could just characterize or quantify some of the supply chain constraints and the impact that had on your margins in CVS in the first half? That would be helpful. Thank you.

00:30:09 Ralph Heuwing

Let me first comment on the supply chain constraints. We gave some dimension on that also in the first quarter call, so this may be somewhere between 50 and 100 basis points, and it is characterized by overtime and characterized by premium freight, it is characterized by supporting our suppliers to overcome constraints, and this of course has been most relevant in the North America region, which is still acting at very high, and Peter will go into this in his presentation in more detail. Order intake CVS, yes, I can confirm that it has been weaker starting in the third quarter, but the exact nature of that we will only disclose along with the third quarter figures, also because monthly fluctuations can be up and down, and we first want to see the full picture for the third quarter.

00:31:14 Akash Gupta (JP Morgan)

2 questions, please. The first one is on RVS, you said you have a visibility of 10 to 11 months. Can you split out how it is for OEM aftermarket, given that many of your customers' sale OEMs have a very long visibility on after-market and whether the shorter visibility on OE side would have an impact on this order moving from Q2 to Q3? That is question no. 1. And question 2 is on the U.S.. I know that you have a local presence there but was there any impact in your cost from Chinese tariffs, even (inaudible) you could give us some figures, that would be good.

00:31:58 Ralph Heuwing

Yes, sure. You know, naturally the aftermarket portion in the order book is a small one, because it is a faster turning business. Only scheduled overhauls, where we know it is going to happen three or four or five months from now, they might be in the order book. So, the mix in the order book between OE and aftermarket is more in favor of OE. But I think that this is natural for most businesses. And the visibility is, as I said, approximately 11 months. And of course, the chunkier part of the business is OE, that is natural. In terms of U.S. and impacts from tariffs, well, I mentioned that we have a relatively small portion of imports, so that is not a material impact, but what one can see of course is that sourcing in the U.S. itself has become more expensive in some instances, so steel prices, aluminum prices, just benefitting for the supplier, so the local suppliers from those tariffs, so they are raising prices because the landed cost of imports are increasing. And we do have price escalation clauses, as you know, but there can be a time lag between the moment when we have to pay higher prices and the moment when our customers have to pay a higher price.

00:33:26 Ben Uglow (Morgan Stanley)

A question for Ralph. I am curious to understand the margins drivers within RVS, it is a very nice progression of 22%. How big a deal was the Chinese aftermarket in that? You gave a figure of about 200 million, if I am correct, so roughly 25% of the aftermarket - is the mix shift from China a big driver for that margin? That is question no. 1. And question no. 2 is, how should we think about the margin in North America aftermarket, presumably the orders have grown. Is that going to be material to your margin mix over the next 12 months?

00:34:24 Ralph Heuwing

Okay. So first of all, I spelled out that there are a number of reasons which were positively influencing our rail’s margin, and the aftermarket altogether is one of them, not the only one, one of them and of course the good growth in China is within that, also a sensible contributor. But I would not say that it is only that effect. It is really four or five things that were pointing in the right direction, and not just on a seasonal basis but we would say on a structural basis. All of those things are going to also support us in going forward.

00:35:31 Ralph Heuwing

You know, if you have in mind that we made a lot more money in China, then I think this impression is mostly formed by those years' exceptional years of 2014 and 2015. Ever since, things have normalized to a I would say group margin, but within that, of course, China does play a positive mixed role. That is still true, but it is not the same differential that we recorded maybe four or five years ago. So, changes in the regional mix of aftermarkets I would argue are not a very decisive factor in the driving profitability, it is more the share of aftermarket that is driving it.

00:36:20 Philippe Lorrain(Berenberg)

Thank you very much. Just a quick question on the aftermarket you mentioned, in the truck business there is a present trend in aftermarket revenues in H1 where your business still grows. You are not the only one to mention that, SAF Holland also mentions that, Wabco mentioning that earlier this year. I was curious to understand why is that? That there is actually a decline in aftermarket and not just an under-performance versus the OE business?

00:36:56 Dr. Peter Laier

If you look to the aftermarket performance, we have to differentiate between independent aftermarkets and OES. Regarding independent aftermarkets you see with the upcoming down-swing of the truck business specifically in Europe that there are adjustments in the inventories, independent after-market distributors, that causes and that is a typical for the start of a downswing, at first as well as reduction in the sales and independent aftermarkets, after this adjustment that is usually bouncing back to a more normal level. This time we have a specific situation in OES, which is usually not the case, but we see that some big customers are adjusting their inventories for optimization of working capital and based on that we have a temporary reduced demand in OES, but we are expecting that that will come back in the next few months.

00:38:01 Speaker

Yes, I would really appreciate a comment maybe on Haldex moving into the U.S. truck brake market. How and if at all does that change the competitive landscape, and also, I would appreciate a comment if you are looking at that from a more interested standpoint now?

00:38:28 Dr. Peter Laier

First, according to our knowledge Haldex has no brake business in trucks in North America for disc brakes, they have some of disc brake business for trailers but not for trucks. We see ourselves as a clear market leader in the North American markets for disc brakes and with the expected air disk brake growth in North America, we think that we will participate in that over-proportionately. Regarding our interest in Haldex, as you know we are still holding some shares in Haldex and we monitor in that regard the performance, but at the moment there is no further reason to think about it.

00:39:21 Speaker

Thank you. And just one follow-up very quickly, also in terms of guidance, if you could give a comment on the guidance for order intake and how that is looking?

00:39:34 Ralph Heuwing

We have published a guidance for order intake in the annual report, and we believe that this also still holds up. We can confirm it just as much as revenue or EBITDA margins.

00:39:57 Andreas Spitzauer

Okay, next question at the end.

00:40:06 Leo Carrington (Credit Suisse)

Just away from the quarter, in terms of what the latest is with CEO appointment - can you share internal thinking or thinking of the board and in particular in regard to timing?

00:40:23 Ralph Heuwing

Yes, so Professor Mangold the Chairman of the Supervisory Board, he had offered a conference call right after the departure of Klaus Deller as CEO and he announced that the CEO search has immediately been initiated. To our understanding it is now reaching the final stages and we should be able to announce the successor reasonably soon, but as always, those things can only be announced once the ink is dry. And you should also know that Professor Mangold has promised that he will include the three of us in the final stage of that process. What he had also said is that the focus will be less on being let's say the better rail or the better truck expert but more someone who is able to integrate the team and create a high-performance organization, and someone who focuses on HR development, someone who focuses on strategy and further international growth.

00:41:52 William Mackie (Kepler Cheuvreux)

Hello, good afternoon. Two questions, please. Firstly, one of the opportunities to offset the potential downswing in CVS is clearly the addition of content of vehicles which you highlighted a couple of times in your presentation. Are you able to quantify to what extent that impacted results in H1 and to what extent the opening e.g. of the new disk brake factory in North America should have a structural impact on revenues going into next year? And secondly, coming back to the growth in North America, which was asked. The 24% that you report, could you give us at least a flavor of what the underlying growth was and how it is split between RVS and CVS in the period? Thank you.

00:42:42 Ralph Heuwing

Yes. So content growth, Peter in his deep dive will go into a bit more detail also on product examples, you are pretty familiar I think with the air disk brake story, but there is a lot more than this particular product. It is actually growth happening across a whole range of our offering. I think you can calculate backwards, basically comparing truck production rate on the one hand and our organic growth on the other hand, what the outperformance has been, of course there has also been a share gain, which we talked about, so it is both of these factors. But then let me also point out that those are sometimes even connected. So this specific example of air disk brake conversion, this is both an increase in the content. But with every truck, which is equipped with an air disk brake rather than a drum brake, the share that comes to us is increasing because of our relative position in this particular product. So it really has both of these impacts. Then you asked about the growth rates between rail and truck for North America.

00:44:08 Andreas Spitzauer

So what you have seen we have achieved in North America in Rail turnover in the second quarter of 2019 of 110 million, in Truck of 320 and in the second quarter of last year it was for Rail 100 million and for Truck 270 million.

00:44:29 Ralph Heuwing

So, in other words the relative growth in Truck was stronger than in Rail.

00:44:39 Andreas Spitzauer

Okay, now concluding the first Q and A session I would now like to hand over for the second presentation.

00:45:04 Dr. Peter Laier, Head of Commercial Vehicle Systems division

Yes, good afternoon everybody, a pleasure to be back here and talk to you. Regarding the deep dive for the division Commercial Vehicles I would like to start with an overview about our high-quality business model and the resilience of that business model and the resilience is specifically in those times I think a very important part of our discussion today. As you know, we are the global market leader in most of the areas where we do business. And we are the technology leader, and we strongly believe that via technology leadership we are able to gain those market leadership positions. So we are investing more than the competition in R&D, which is creating our innovation power and the last time I showed in a presentation that eight of the ten major innovations in truck business in the last decade came from us in the related business areas, that shows our innovation strength. Of course we are in a safety business, the barriers of entry are due to qualification high, and basically in our business there are only two global players acting with the related know-how and capabilities. We have proven that we are growing, that we are out-performing the truck production rate growth in the markets and we are still thinking specifically where the already mentioned content per vehicle and market share growth that we will be able to do that as well in the future. And regarding resilience, besides the strong aftermarket's performance and the strong aftermarket share we have. Again, the market-share growth and the content per vehicle growth is our model to work against, the site for sure, the action plans to keep the margin performance. And that is something I think there we have proven in the past and I will talk about that that we are able to react pretty fast on changes in the market with our improvement action plans to keep profitability in good shape.

Talking about revenue and market development, just a brief look back at the beginning. What you see here is the growth which we performed from 2010 to 2018, so coming from around about 1.7 billion EUR sales in 2010, we have achieved last year 3.16 billion EUR sales. That is a CAGR of 8%, while at the same period the TPR has grown by 3.5%. So, we clearly have outperformed the market over that period. And if you look to the different CAGRs and the different regions we have done that in every single region as well. So, our business model is working overtime, there was a question before guiding your attention to the right side of the chart about aftermarket share. Yes, you see that aftermarket share went down in that period from somewhere 37% to 27%, but if you look a little bit more in detail to that, that has nothing to do that we are weaker in aftermarket, we grow by 4%, which is a good growth rate for aftermarkets, but our great success in the OEM acquisition channel of new projects and the continuous growth by 10% in that via market share gains, via content per vehicle is clearly out-performing that and that is changing the ratio. I know for sure that the big elephant in the room, the question today is how we see the market developing in Trucks? And for sure our truck business is cyclical. Everybody knows that. And that has clearly to do with the dependence on macro-economic factors like GDP and production rate and freight transportation volume. As you see as an indication for 2020, we see out of those macro-economic indicators not so much support, and based on that we think as well, and we see that already and we see that and hear that as the announcements, and we see that with the customers that the net orders of heavy-duty trucks will go down in the major regions next year.

Again, we are living in a cyclical business, and if you look to the upper part of that chart, you see very clearly that we have enjoyed a decade of more or less growth in the major regions. And if you look to the perspective that we are seeing for truck production rate, maybe I guide your attention to the lower part of that chart, and if you look to 2020 for North America, we see here a range between -15% and -27%, at the moment that is the actual picture. If you would ask me where we are seeing that development, we see that more in the middle of this area at the moment. In Europe the indicators coming out of the market, you see the sources on the lower part of the chart, are between somewhere -3% and -9%, we see that more on the lower side of this range. And in Asia Pacific as well, a downswing, but as I mentioned before, we do not so much depend on the TPRs in Asia because of our strong opportunities of market-share growth.

We as a company are used to those cyclical business behaviors. Truck business has been cyclical for many decades and it will not change in the future, so it is all about being fast if you have the first indicators that the business, the TPR is going down. And the fact that we are able to do that, we want to show that example a little bit. So, there was a down swing in North America of TPR from 2015 to 2016 by minus 22%. Based on our business model we were able to keep our sales only reduced by -16% and we kept the margin on a relatively high level of stability, only reduced by -30 basis points. How did we manage to do that? For sure we have a strong market position and we used our market position and our strong customer relationships in this kind of a situation. Our product portfolio met the market demand and we were able to grow via content per vehicle. We continued this localization and for sure and to show the full picture, we also had a bit of favorable FX that year. But the major important topic is the last bullet point. We have a set of actions that we are executing pretty fast from rigorous management of our overhead structures to management of the flexible costs in our plants, consequent supplier management, we do special campaigns in profitable channels as well as for sure the premium freights are going down. So, we have proven, and we have our plans ready again for every market to execute if the downswing comes, and e.g. looking to the European market where we already see a reduction of orders, we have already introduced our first action plan scenario since the end of July to keep our margin under control.

So, as I mentioned, we are looking to drivers for growth in the future. On the one hand there is clearly truck production rate, but there is content per vehicle in market share growth. For the near-term future, the truck production rate will not so much support growth as the opposite will be the case. But content per vehicle and market share growth are still areas where we will be able to grow and compensate the downswings which we are expecting from TPR to a certain extent. And besides organic growth, those three pillars, we are continuously working on M&A, and with the track record we have proven in the last few years that we are able to constantly grow via that channel. The last acquisition that we did e.g. Hitachi steering in Japan, which is for sure a sales growth, but it is much more important from a strategic point of view. We are having a strong player in the steering business taken on board. Just to prove a little bit more those growth opportunities beside TPR, that is a charge which is based on a Roland Berger study investigating the content per vehicle growth in all regions, and what we see here is principally that all regions are showing opportunities and content per vehicle growth in the foreseeable future. My personal opinion is that in Asia there even may be more opportunities than shown on that chart, but in the end, I don't think it is important to stick to the final percentage figure here. The clear message is in every region there is growth in content per vehicle and if we look a bit more where this content per vehicle comes from, we see on the one side that it is coming from new regulations, on the safety side as well as on the emission side, and exactly those products are about to come as regulations specifically in regions outside of Europe we have in our portfolio since a long time we are strong in, and that is giving us opportunities of growth, in Asia, in Northern America specifically. Driver assistance functions, it is for sure again functions like emergency braking, but as well a discussion about the first framework for automated driving functionalities and new general safety regulations about to come. And in emission we see clearly that based on the increasing discussions about CO2 emission globally and the awareness about that, that a lot of countries outside of Europe are fast stepping now in Euro-6 comparable emission regulations. And as we all know, for the European Union, there is a new strict regulation for the truck industry, which is a reduction of -15% in 2025 and a reduction of -30% in 2030, so a lot of new technology to come to achieve that. And that is exactly again an opportunity of growth for us.

Some case studies now in the deck which you have in front of you, I don't want to go into detail too much of that, but here just an example, driver assistances, where we are market leader in North America, is still one of those content per vehicle drivers with new functionalities to come, next to come is e.g. a lane-keeping function in North American markets, followed by further functions. Why is that coming? It is partly coming by regulation, but it is also coming by TCO, total cost of ownership for the fleet. The fleets are introducing this because of reduced accidents, uptime coming out of that and the safety of the driver. So we expect here for the upcoming years a CAGR between 16.5 and 18.5%, a significant growth opportunity. Another example for content per vehicle growth are AMTs, automatic manual transmissions. They already have a high level of introduction rate in Europe with about 87% and in North America about 40%, with a new generation of drivers AMTs are a very important topic to attract them. We see them based on that and based on fuel efficiency gains getting further introduced. So North America here as a market that will grow, but even more growth opportunities in Asia, specifically in China, and that is the reason why we acquired some time ago in April 2016 the related transmission control business from Bosch in Japan to be prepared for that growth in Asia and serve that from there. Another topic of growth, and Ralph Heuwing already talked about it briefly, is air disk brakes. Air disk brakes are well accepted in Europe with over 90% market introduction rate, and there is a clear reason for that. It is increasing safety, and it is easier in maintenance and that is why the introduction is going forward fast in North America now. Actually, we are in 2018 on level of about 26% market take rate and we are expecting that to grow in the foreseeable future to about 50%. In Asia Pacific we are still on the start with about 10% take rate right now, but that shows only which kind of grade opportunities are in that product group to grow for us, and as I mentioned, we are the market leader for that type of product, and we will participate over-proportionately on this content per vehicle growth opportunity.

Last but not least an example of steering, I talked about the next function to come in driver assistance systems, which is lane keeping. For lane keeping a talk overlay steering is necessary with the acquisition of Hitachi, and not only with that, we have a torque-overlay steering technology in our portfolio, so that we are able to participate as well via this technology in both functions on the growth opportunity to come. We are expecting here a growth of about 8 to 9%. Besides the content per vehicle growth I talked about market share gains and have brought two examples in that regard. The first is China, what you see here on this chart, guiding your attention to the left side you see here this red line representing the development of truck production rate in the Chinese market between 2012 and 2018. You see here a fluctuation up and down of the truck production rate. If you look to the lower part, you see our sales growth. So, we permanently grew in that market, we permanently grew. We outperformed the market every year, and e.g. in the market downswing of - 8% TPR in 2018 we were able to grow our sales by 8%. How is that possible? For sure we had a high acceptance of our products in the markets, the trucks are asking for more higher technology in the market. We have exactly that portfolio to provide and to offer. We have to develop in the last years the strong customer relationships with the top performing customers in China. We have our JVs in China, here is the example of the Dong Feng joint venture, where we have increased the product arena with compressors last year. And that brought us to the position that we are now market leader in China in the brakes business arena. And not only Trucks is interesting, shown by the last bullet points, we had a major breakthrough in trailer business through a close cooperation with a trailer axle manufacturer which we started last year, which again gives us a market share increase. That over-proportional growth is also possible in markets where we are already market leader, and is shown on that chart, which shows the development of our sales in North America from 2012 to 2018, as well as fluctuating TPR. And overall CAGR of TPR of 4% while we grew nearly 7% CAGR in that market. So, again here our strong relations to the customers, to the fleets directly combined with the quality of our products and the performance brought us in that direction, technology leadership is the name of the game here. And for sure we were able as well with the aftermarkets and the installed base to grow further.

Yes, technology leadership, to talk about that. Besides improving our products this new generation to keep us competitive and a leader, we have identified four major trends of our business where we want to grow besides that. The one is still traffic safety with the increased focus on that, specifically in regions outside of Europe. But the mega trends of automated driving, emission reduction and e-mobility and connectivity are further growth opportunity. You see on the lower part of the chart products which we have already developed and introduced there, from new brake control generations to highway pilot functions, so automated driving functions or e-compressors to support electrically driven trucks, or technologies like safety direct, where we have the opportunity to improve driver training via connectivity or Pro-Fleet Connect which is a transportation optimization tool. So, we are active in all of those mega-trends and we are investing R&D efforts to develop new products which fit and support those trends. And again, we are not only in that, we want to shape that as well in the future. That is why we are investing in R&D and we will continue investing in R&D. We are investing more than the related competition and we do that on purpose. We separate clearly in R&D between R&D ratio, which we want to invest in our core business, and R&D ratio which we want to invest in new business fields. And for sure in addition we invest constantly in the VAVE, so product cost improvement measures to keep ourselves competitive. And what it means to invest constantly in R&D and think about technology and growth opportunity I would like to show with that chart, which looks back and then explain the way forward. If you are a brake supplier, you are usually focused on what a brake should do, deceleration. When you work on that, somehow the 80s of the last century, the first ideas came up for ABS anti-locking system, and then later for traction support and then for ESP. So, with that you discovered that braking is not only used for deceleration, you can use that as well for vehicle stability control, specifically if you invent a wheel individually. If you want to do an ESP, you need to develop a vehicle model. You have a vehicle model and can do vehicle stability control, the next innovation you think about is if you are an innovative company, oh well, then I can maybe do driver assistance as well. So, I can do emergency braking, I can do adopted cruise control, and things like that. If you are starting with those first driver assistance functions, why not do more? So now we are talking, as I mentioned before, about lane-keeping, traffic jam assist, and things like that. That is where we are right now and if you have the vehicle model and if you have the capability of both actuators now, which you need for that, braking and steering, the next logical step is to talk about automated driving. And that is what I mean by innovation power. You come out of a deceleration function and step by step you create a totally new world of business opportunities, and that is exactly what we are doing. But for sure, if you want to make a system that is as complex as automated driving system, we want to ensure that on the one hand we are providing the best functionality to our customers and on the other hand we also need to ensure that we are doing what we can do best. That is why we have decided on a partnership for automated driving with Continental, they are providing the sensors, they are providing on the decision level the electronics and a part of the decision. And we cooperate with them closely, creating a joint system under our leadership to provide the best system to the customer by keeping the cost under control. That is what we are offering to our partners, getting specific attention in North America as well as in Asia, just to show how something like that is developed.

Besides all those technology opportunities and the growth opportunities that will arise from that, at the moment there is a clear and strong focus on operational excellence. So, we have an operating system installed and in place to permanently focus on our bottom line performance with continued side improvement programs with best in class purchasing. And the VAVE and localization and as well to look for cash, we have an asset-like approach. Besides that, at the moment we have special programs in place. On the one hand we have margin stability programs in place to further focus on our bottom line performance, focus on structural costs on the one hand, and as well looking for further improvements in all of our processes as well as products and manufacturing. Those special margin stability programs are reviewed by me on a regular basis, and I mentioned this before, we have in addition to that our market downswing programs which we have prepared for every region, customized to the needs of the region and the character of the downswing. As I mentioned before, we have started this first step of the TPR reduction scenario for Europe and introduced it at the end of July, and we are in execution of that program.

What those continuous improvements look like. I brought along one example for you, the valve production that we had for a long period of time located in Italy and in Hungary, which we have relocated to India. This brought, as you see on the left side, a significant improvement of the cost performance but on the other hand it has also an opportunity for us to create the right economies of scale in our Indian manufacturing plant to make them more competitive for the local market as well as for export. And I want to underline that something like that is only possible if you do not only just relocate manufacturing and assembly, that is only senseful and gives you real improvement if you do a deep localization of the whole supply base. And with that I want to come to a conclusion. We at CVS confirm the mid-term guidance of 4 to 5% revenue growth over the cycle, for sure we will go now to a downswing, but for the mid-term we confirm this. We will further increase content per vehicle in all markets and for that at the moment mitigate the TPR volatility and use that for further growth, outperforming the market. We will further work on increasing our market shares, specifically in growth areas outside of Europe. We will foster and ensure our technology leadership by investing in R&D and there is more to come. We work continuously on our operational performance and have proven that we are able to keep our margins stable and get our margins under control in down swings and for that we have our cost optimization programs in place and in addition we have excellent customer relationships and further improve them on a daily base globally. With that I would like to thank you very much for your attention and I am very open, together with my colleagues, for your questions.

01:11:39 Q and A Session

01:11:47 Gupta Akash (JP Morgan)

I have three questions, please. My first question is about the investments and maybe if you can talk about what sort of flexibility do you have there and especially if we have a worst-case scenario where global production rates are down, 20-25% and do you have flexibility to scale back some of them and protect your margins? So that is question no. 1. Question no. 2 is how your truck content growth compares to the new product launches by your customers, mainly truck OEMs. Is it fair to say that when your truck OEMs, your customers are launching new products then content vehicle growth could be higher than otherwise, keeping everything else equal? And my final question is on truck aftermarket. You showed that in the U.S. when the truck production rate was down 22%, aftermarket was down 2%, so in general is it fair to say that let's say when you enter into double digit truck production rate environment, then some of these customers might be cannibalizing their inventory or in order to not prove to go for aftermarket. So maybe you can talk about if you have a scenario of negative double digit truck production rate in 21, then what do you expect for aftermarkets? Thank you.

01:13:09 Ralph Heuwing

Why don't you take the second and third and I will answer the first?

01:13:13 Dr. Peter Laier

As you'd like.

01:13:15 Ralph Heuwing

So on capex. First of all, our capex rate is not particularly high reflecting - sorry? And R&D, yes. But let's start with capex. Capex rate and percent of sales is not a particularly high number, reflecting our asset-light approach. We don't have a foundry in our portfolio, we don't have any forging units, stamping unit, so it is focused on relatively small machinery and final assembly lines. Everything that matters for our quality, basically. We do care for the upkeep of our equipment and we do invest in productivity measures as well as in capacity expansion. And we talked about the ADB lines in the U.S. Of course, we are in a position to delay or postpone, on the other hand one has to ask the question if we are sitting on a 1.5 or 1.7 billion EUR capital cash amount, should we really postpone something, if it adds value and if indeed a postponement would increase the bill? So some of those investments may be under review, but it is not always clear that a postponement is a good thing. On R&D, I think Peter you will go into that when you talk about the scenarios. But there is a clear commitment to R&D and not to compromise the future for a good quarter this year.

01:15:03 Dr. Peter Laier

Ja, thanks Ralph, just to add one comment, with regards to CAPEX, for example I talked about the ADB growth in North America. Due to that fact we have decided recently to extend our manufacturing in our plant in Bowling Green, Kentucky, and that has nothing to do with the foreseeable downswing of the market. Why? Because the take rate will increase, and we are, by far, market leader, so it makes absolute sense to go in that investment. But, definitely case by case, as Ralph mentioned, we will investigate that carefully. With respect to R&D, I talked about different scenarios which we have in our desk to be introduced if the market is turning down. Usually, for the first scenarios, we are not cutting R&D. There is a clear reason. We want to be prepared for the future, we want to come out strong from the downswing and then have the new technologies and portfolios available. If the market downswing is going deeper and further, for sure that has to be decided case by case. If you just stretch the time plan a bit or if you go and further pruning that, but that is decided region by region differently, but again, the plans exist. You asked about the truck content in relation to new vehicle launches. Yes, there is a relation. Usually, if it comes to a new vehicle there is always a decision on what is standard in those vehicles and what is optional and we have the experience in different regions, that technologies which were optional before are becoming standard, either due to legislation or due to customer demand. So, yes, there is a change, and that is in, for us, a jump fix opportunity for growth. And in addition, you asked about the aftermarket in the U.S. and specifically talked about this cannibalization effect. I would like to answer that it always depends on how a crisis is developing, and every downswing is different. Usually if you have a moderate downswing, it is just happening in the aftermarket as I described in the beginning. You have a little bit of a reduction and then you see a relatively stable aftermarket. If the crisis is going into a real crisis and not only a downswing, the fleets at first start to not use a part of their trucks any longer, they just leave them standing, so there is no aftermarket for a truck that is standing around. If it goes further, there is some kind of cannibalization, we have experienced that in 2008/09, but the cannibalization stops pretty fast. So that is temporary effects, that you have quarters where you might see that, but then the aftermarket bounces back and it's about keeping your equipment running, and then the aftermarket performs on the level mentioned before.

01:18:29 Andreas Spitzauer

Okay. Coming to the next question by Philippe Lorrain.

01:18:34 Philippe Lorrain (Berenberg)

Thank you very much. A couple of questions as well from my side. The first one is, you mention always the opportunity from content per vehicle growth, from sharpening emission standards, but in total the segment exposure to fuel efficiency is about 14%, at least that is what was indicated at the time of the IPO, so on an aggregated basis, how much of the total CPV growth opportunity for the segment would them be from the emissions standards, versus traffic safety solutions and also the air disc brake. That is the first one. And then, on the air disc brake, I was just wondering, if you compare the foundation drum brake to the air disc brake, the air disc brake actually has a higher share of maintenance and service-related revenues versus the drum break, and the final one is a housekeeping one. On slide 32, when you show the numbers for NAFTA, historically, we see that in 2018 your own million-dollar sales revenues were slightly underperforming the truck production rate. So, I was wondering what is the reason behind that?

01:19:39 Dr. Peter Laier

Ja, starting to answer in the sequence of your questions: yes, you are totally right, our share of overall business related to emission reductions is significantly lower than it is in the brake and the brake stability area and related products. But we have products in that arena which are related to that, for example, EGRs or the AMT technology. In addition, with the emission reduction requests I talked about, the -15%, 2025, -30% 2030, in the EU, there will be considered the whole range of the technology which is related to chassies and power train, what kind of contribution can we get out of that for further emission reductions? So a lot of new technologies to come. In addition, we think that it is emission reduction regulation will support e-mobility, where we are preparing ourselves with the right products. So it is not only about the classical powertrain related segment, it is about all products. To contribute and have growth opportunities in that regard. You remember, when I presented to you the last time, I showed, for example, this technology that we call ACR, that is a special technology which spreads the pads of the disc brakes, that is able to reduce fuel consumption by up to 1%, so a technology in brakes, which, because of reduced friction during normal use, contributes to emission reduction as well. So a lot of opportunities. With regard to ADB maintenance, the maintenance of a disc brake and a drum brake is not very different. There are similar maintenance needs with regard to change of pads. But to change pads in a drum brake in comparison to a disk brake, is much more time necessary, so the serviceability of a disc brake is much easier. You just fold down the down holder, take the pads off, put the new pads in, and you are good to go, while on a drum brake you have to take away the whole drum, clean it, put the new pads in, put the drum back in, re-adjust and then you can go. So it is much better serviceability. That is one argument specifically that convinces the North American market in addition to safety.

01:22:12 Ralph Heuwing

Let me just clarify the math on the third one. We are comparing truck production rates with overall revenue. And within that there is of course OE and aftermarket. So, if aftermarket continues to grow at 4% we have basically grown 1%, roughly, faster in OE than in the overall market. That is to clarify. The second part is, of course, as you can see from each and every year, in that chart, that the outperformance isn't the same every single year. There is, in particular, phasing issue, so the time when we recognize this revenue and the time when a truck is being built, is not the same month, so there are always shifts between those and therefore I would urge you to also look at truck production rates versus content growth on a more longer term trend. Also changeovers in models, as Peter was explaining, don't happen every month. So, those things, I think, can clarify that question.

01:23:23 Alex Virgo (Bank of America Merrill Lynch)

Thanks very much. I was quite intrigued by the fact that you have already started making adjustments in Europe, but obviously the prospects in the U.S. look a lot worse. I appreciate that growth in production is still quite strong, or certainly has been quite strong, but perhaps you can talk about how quickly you can move in the U.S. to implement those sort of initiatives, at what point you would chose to do that in the context of the next six to twelve months, because I would see the sharp downturn that some market forecasters are expecting in Q4 would suggest that you need to get a shift on, if you will pardon the expression.

01:24:02 Dr. Peter Laier

I think that question supports what I said before: every downswing is a little bit different. In Europe we see eroding truck production rates and eroding orders and already have the need to prepare for that. In North America, we see, on the order side, you are totally right, a really concerning picture for a lot of months now, but on the truck production rate side, it's still extremely high. So, we are, in North America, in a situation where we see for the third quarter and maybe even for the fourth quarter, we see continuously high volumes and then maybe a sharper drop down. So that is why it is so important that we have the measures prepared to immediately execute that on all levels. On the manufacturing side, production side as well as on the structural side as soon as this is happening, and it is all about monitoring that and fast execution if it happens. But at the moment, it makes no sense because we are still running on extremely high levels.

01:25:40 Ben Uglow (Morgan Stanley)

So Peter, thank you for the presentation. I really want to make sure I fully understand the message on that 22% production decline and mid-teens revenue. What you are basically saying is, my interpretation is that we can limit the margin downturn here quite significantly. I mean, 30 basis points is, I don't want to say it is irrelevant, but it is minimal. If you go back in history, are there other examples of declines which have been more significant, so, you know, we have one, two percentage points down. What would be a frame of reference if we look at the last three or four cycles, not just in 2015 or in 2016?

01:26:26 Dr. Peter Laier

For sure, if you look further back in history there was this significant downswing 2008 / 2009. And you know what happened to the whole industry at that time, that was a downturn of 40 - 50%. Even in that time we were able to keep the business at least somehow around a black zero - with a downswing of that level.

01:26:53 Ralph Heuwing

On EBITDA margin level it was a drop from roughly 10% to 5%, following a global reduction in truck production of somewhere between 40 and 50%.

01:27:03 Ben Uglow (Morgan Stanley)

Understood. Another lesson of the cycles of 08/09, hopefully it never happens again, is, what would be an average, I know this is hard, but we have to do the same math.

01:27:13 Dr. Peter Laier

I understand it but, if you look back to the nearly last decade after this really deep crisis 08/09, the truck business enjoyed a constant growth. I mean I could not talk about China, where I have shown you there were years where we had a drop down in TPR on the market and we grew, and we improved our margin. That is why, I think, we have proven that we are able to react quickly and adjust. If you look much further back in history, the business would have different characteristics than now because the mix of the products is totally different. That is maybe not helping so much to foster that, but again, we are able to reduce our cost structure and adopt that so for sure we will feel a downswing, always, that is not just, we are not immune against that, but we are able mitigate that on the bottom line performance.

01:28:30 Ben Uglow (Morgan Stanley)

Have you announced headcount reductions, formally, in the United States, yet? I know you mentioned some measures have been taken, but has anything been made public at this stage?

01:28:47 Dr. Peter Laier

No, we haven't, because there is definitely, actually no need for that, as long as the TPRs are high, and I really want to underline that again, I totally understand your view on that, because you read, every month, the order intakes, and they are so low, in comparison to a year before, but on a supplier side, we still supply the demands of the customers according to their production. If you look to truck production rates, they are still high in North America. So that is why we still continue producing on a high level, by knowing that that will come to an end. And that is why I said: we know that, we have the measures ready for that, and we introduce it as soon as we need it.

01:29:33 Andreas Spitzauer

Okay. Thank you Dr. Laier. Now, coming to the third presentation, by Dr. Wilder and giving us a deep dive into the rail division.

01:29:50 Dr. Jürgen Wilder, Head of Rail Vehicle Systems division

Thank you very much. Good afternoon, ladies and gentlemen. Turn to the rail side. I just finished my first year in my new position in Knorr-Bremse, being a member of the executive board and responsible for rail and I can tell you that this year was one of the most exciting years in my 20-years career, and that is not because I am new to the rail world or the rail sector. In fact, I spent the vast majority of my career in rail, but it is really that our rail business at Knorr-Bremse has, you could summarize, a lower risk profile and a higher profitability profile than any other environment that I have worked in in the rail sector and that makes it really a sweet spot in this sector and it offers a lot of opportunities to be realized in the future and that is really an exciting thing to do, which I have been working on in the past year and also looking forward to work on in the future. As Ralph Heuwing already stated, there are some reasons for that, why this is such an interesting business and why that sweet spot is there. First of all, we are the global market leader in what we are doing. In each and every market, with very few exceptions, we are the number one in terms of our market position in those markets. And that doesn't come by itself. It is because we have a strong technology leadership. We are innovators. Peter just said that we do not compromise on our R&D spending, we don't do that in rail either. We want to stay that way in the future. And I think we have shown, based on our past results, that with our R&D spend we were outperforming our peers regarding the results of the R&D, and that is the very strength of Knorr-Bremse, which I very much appreciate. The rail sector is also special. It has high barriers to entry. It is not only that we are dealing with highly safety critical products, I mean that goes by itself when we talk about brakes and doors, for example, but also there are very particular standards and norms across the world, and they are very different from each other. So it is not easy to enter this market and say I am a player there as well. We are the only the supplier that actually masters those norms and regulations in every part of the world, and that is also what our success is based on. Strong growth profile, we have a long track record of outperforming the underlying markets, and first it goes generally with the OE business, also when we go into markets that are starting to develop, really, and then, after some years, we also see that impact on the aftermarket business, like for example now in China, and I will come to that in a little more detail later. The rail business, rail vehicles, as you all know, they stay in operation for 30 to 40 years. Essentially, that implies a certain resilience on the part of the business. In 30 to 40 years, our customers expect from us that we are around, that everybody who supplies the rail industry is around for that long time and builds a strong partnership with those customers. So, they don't get any issues or problems later because there were some offerings and they are gone again, and we have shown that, in all parts of the world, we have entered markets to stay, actually. And profitability, we have outstanding profit margins, we have seen from Ralph's presentation that we could further increase our profit margin for good reasons that I will comment on a little later. So those are the key cornerstones of our rail business, which makes it a very resilient business and that is especially appreciated in times where markets might get a little shakier, to have that resilience in the market.

Let's talk about the market in a bit more detail. In our rail business we see continued growth with increasing profitability. And if you have followed the news, basically, also on our customers and major car builders, that many of them, you see that there is a record order entry and also a record backlog that they have and the next step that they need to do is to execute that. Execution as a car builder is also always something where risks need to be managed, where risks need to be kept low in order to turn that backlog into a profitable business at the end of the day. And what those car builders need, and I have myself been on the side of the car builders, is reliable partners that don't mess around, that don't deliver quality that is not acceptable, that deliver high quality and basically that are reliable in their systems, in order to limit that risk. And that is what Knorr-Bremse is, a partner to them, with those characteristics. And, you know, we talked about order entry and order entry in the second quarter, I mean, you can see that we were in the second quarter a little weaker with the order entry, but at the end of the day, you can see that with those big orders that the car builders get, those huge fluctuations on their sides from quarter to quarter, in order entry, and that, to a certain extent, trickles down to us as well. That doesn't mean that we have special issues there because in the following two months, July and August, again, we have seen very strong order entry, participating in what you see on this slide and actually, significantly, just by those two months, increase our book-to-bill rate for the entire year. And we are in number one in brake systems, globally. And in particular in almost each and every market and also in entrance systems, HVAC we are number one or number two, and that means, in combination with what I said, we have a strong business that grows year over year, as you can see there, with a CAGR close to 8% and also a profitability growth that we have seen from 2018, first half, to 2019 and there are essentially three reasons for that profitability growth. First, we can really expand on our aftermarket business. The business mix is more favorable. But secondly, we have been watching our costs quite a bit. We have done tough cost management, that is also there. That increases the profitability basically from 20% to 22% in the first half of 2019. So, we see a real long-term stable growth in our business and that is what we will be able to continue. If we look at the underlying market, there is an underlying market that is constantly growing. We don't see a dip there, there are constant investments into infrastructure. Of course, there are regional differences. Even within regions there are differences. But once we are strong in each and every market within those regions, we can capture the business there where it really grows, and that helps us. So the underlying market, we believe, is growing between 2% and 3% constantly on average every year.

There is another development, of course, that we are all aware of, that gives this market an additional tailwind, which is not in those market numbers, yet, really considered to the fullest extent, because we do not know exactly what it means for the future, but if only half of those things said, are discussed in the political environment - CO_2 reduction, climate change - turn into reality, with measures in the transport sector, we are the ones who will profit from that quite a bit. You can see the major mega-trends here, but one of the major mega-trends I would really underline, and that is eco-efficiency. The transport sector is one of the very few sectors that, essentially, did not fulfil so far its targets in terms of CO2 reduction. All the other sectors are much better in that. Targets that have been set, for example, in 1990, to reduce CO2 emissions by 60% by 2050 have failed so far. In fact, CO2 emissions in the transport sector, have been growing since then. Now, with the increased discussion on a political level that we have seen in the past years and few months in order to achieve those targets there, the only choice is to have a higher share in rail. As you can see from that picture. There is a vastly lower amount of CO2 emissions by rail traffic than with any other mode of transportation, whether it is air, car and bus and you can see that here, those charts, CO2 emission in passenger transport per person and per 1,000 km. If we want to achieve those targets, in the next decades, then rail is the system to go in. And there are also a lot of discussions in terms of providing incentives from the government side to shift. You can follow the news in Germany currently, where there is a lot of discussion on lowering the VAT on train tickets and therefore shifting more traffic to rail, or also lowering track access fees for different modes of transportation on rail, in order to provide that incentive. That has not been considered yet on that underlying market really, but it might contribute in the years to come, a special tailwind of that market.

Now I would like to come to some specific markets, to go into a bit more detail there.
If we look at China, for example, we have been discussing the Chinese market for good reason, because the Chinese market for our business, is the single biggest market that we have. We believe that in the next few years, the Chinese market, the OE market will be rather flat, whereas the there is still good growth to be provided in the aftermarket in China. And that is actually what we also see now in numbers, we still see growth, in our business in China, but we expect, in the next few years to come, the OE market will be rather flat. On the other side we see that there are other selected markets that see a very strong growth, also in the OE market, in the next few years. And it is not only market that are on the brink of a new development, it is also established markets because, like I said before, the rail market comes in chunks, with some bit contracts at a time, and therefore there are some countries that see that growth. In the developing market there is India, where we have a very good position and I will come to that in a bit more detail in a minute. But also in the established markets in Europe, there is, for example, France. Now you could say in France, we do not have the number one position, like in all the other markets that you can see there, in order to participate in that growth, but also we announced, just the other day, that we have won the brake systems and also the HVAC systems on the next generation of the Alstom high speed train, the TGV 2020, and I think that is a great success, to increase our share also in the French market.

Having a closer look at China. First of all, China remains the country where there is a lot of spending on rail infrastructure and that is also needed because the usage of the rail infrastructure and the efficiency of the rail infrastructure needs to increase in order to fulfil the demands out of the passenger and freight market there. But also we see on our side that our revenue is still growing. And especially between 2017 and 2019 there was an annual revenue growth of between 4% and 5%, the majority of that coming between 2018 and 2019, actually, fairly recently. There is a shift in the structure of our business in China. We used to be very, very strong in the OE market in high speed, especially in those years 2014 and 2015. That was a little bit of a special effect. In the last years we have seen that the content per vehicle is changing there a little bit, in the high-speed arena, but therefore we grew stronger in the metro business and also in the aftermarket business. The net result is that we are growing the bottom line further in China and that due to the shifted structure, more towards a higher share of aftermarket, also our profitability in China is profiting from that trend.

India. India is the next big growth market, and we have seen that also in the past years. And there are good reasons for that. There are several reasons for that. One is, that there is an ongoing electrification in India of 35,000 km of railway lines which basically increases the electric locomotive needs from 250 per year to 600 per year. That is a dramatic growth. Also in passenger coaches, we see a strong growth to 5,000 to 6,000 coaches per year, an increased demand on electrical multiple units and also a discussion that has been going on for a while but seems to become a little more concrete is those seven high speed corridors that are planned with 10,000 km of high speed lines overall. That compares to 30,000 km of high-speed lines today in China, so that is almost a third. And 140 billion investments in the next ten years. Dedicated freight corridors. We also see dedicated lines in the western and eastern freight corridors that need to be built up. And last but not least, of course, the metro business. The metro business currently covers nine major cities, with 3,500 cars. There will be, there is a potential for an additional 26 cities with 550 cars per year for the years 2018 and 2023. Those are growth drivers that are there. Undisputable. And that helps us to win over business. And how do we do that? How do we think about it? I think, at Knorr-Bremse, we know how to do that, we have practiced it in different countries, for example in China when that growth came along. We know that we need to be locally present, we need to have local factories, we need to have some local R&D, and we need to have local service in order to also gain a good share on the service business. We are doing the same thing in India and we have seen in the past years that we are growing year by year by about 25% in India, which is a good development of the business and that helps us, of course, to further grow our Asian-Pacific business.

We mentioned a couple of times the aftermarket business. I would like to spend a few more words on the aftermarket business and what is our strategy there, because that is a good chunk of our growth, that we also see in the future. First of all, aftermarket business is always a local business. For aftermarket, to be successful in aftermarket, especially in rail, you need to be local. We have around the globe, about 60 major service locations and a number of smaller service locations on top of that. That is very important because we can ensure short lead times for the repair business. We also understand much better, by being local, local regulations that we can capture through our local presence, and we have, headcount wise, about 2,000 people in those locations that do nothing other than provide service to our customers globally. So, that is a very good setup in order to quickly roll out new service products that we can generate for the market with that infrastructure that we have there.
Our service business is based, essentially, on three pillars. First of all, we are servicing the installed base. That is kind of what we have been doing in the past. There are also new products in there that we can offer, for example, obsolescence management. I mentioned that at the beginning. In the rail business it is based on long-term customer relationships - 30 to 40 years that those trains are on the tracks, and there is growing concern with obsolescence with our customers and we provide a product that we can offer them to take care of those issues, to take that away from them and ease their worries that it is not available any more. Modernization is also a very important field, to upgrade solutions or it is a good field, on top of that, to do some cross product selling, once you go into a customer situation and we can do modernization on certain sub-systems, we can bring in our other sub-systems as well, that we offer. The third one is new service models and digital solutions. Well, I mean, if you think of, just to give one example, there is a whole lot of offerings that we can think of and that we are working on. I'll give you one example: take doors. Doors, you might think what is so interesting about doors. Doors have a very special meaning in the rail system, because if they fail, you read it in the newspaper the other day, and people were not able to enter or leave the train and that is always a major issue, but doors are not just doors, doors are entrance systems. So, if we start counting the passengers going through the doors and that way, we can make some conclusions about how occupied an individual car is. What does it mean in terms of axle load, where is the free space in the car? Provide that information to the platform, so that the passengers know in advance which cars still have space and where is the space more comfortable, in which cars, then they can sort themselves out on the platform before the train arrives. And you can save the big run on the platform that you see sometimes today. You can connect those systems and also draw some conclusions about the fresh air that is needed in the cars and essentially, also steer air conditioning systems with it, at the end of the day. So, there is much more to it than just doors. That is all I am saying, and this is just one example of things that we can do. So, with that, we would like to increase our revenue share in our service business from more or less today's 40% to 45% in 2024. We see service as a major growth area that also contributes to our bottom line. And in a little more concrete numbers, the aftermarket business from today, more or less last year at about 1.4 billion, will grow to higher than 2 billion in 2024. That is clearly our target and we believe that with our offerings we can achieve that. It is also worth mentioning, and you can see that here in the chart, that the 1.4 billion still included some vehicle maintenance business which we have divested. So the annual growth rate, in total, is quite impressive.

I would also like to say a few words about innovation. How do we develop future business, defend and grow our market share? In the past year, we have pretty much restructured a little bit our R&D roadmap and focused much more on the customer needs. We have identified seven topics of R&D that we will serve in the future and that we will spend our R&D money on. I don't want to go, in the short time we have in the presentation, into all of the details of those. Just to name a few, of course there is the new product generation where we compose our brake systems and other systems that we are working on, or a big trend is also automatic train operation. That also has something to do with, and I will talk more about that later, much higher efficiencies in the use of infrastructure, that is also possible by that and getting a higher through-put. Or life cycle costs and eco-friendliness. Life cycle costs for sure, if you ask the train builder, is more and more a criteria of awarding contracts to train builders. So, if we can contribute to that, we can make our customers successful, and we have a lot of opportunities to contribute to that and that is what we are focusing on. Data driven

business, for sure that is a big field, I already mentioned a few examples just on the other slide. And then connected systems, we make our sub-systems communicate with each other and benefit from this communication and basically cross-data, that we can use to offer additional services for a train builder service on the service side or even in the field of operations. Airless train, frictionless braking, where frictionless braking is a big word. Frictionless braking is not that easy but of course there will be a tendency to reduce friction in braking. We don't see that as a short-term solution because it would not be less expensive than what it is today, but we don't want to miss any trends on that and we keep close to where that is going and not only that but define the future of that.
Maybe I would like to talk in a little bit more detail about some deep dives, where I can give you a few examples of what we are doing, before we talk to generically. And at the same time, I do not want to be too technical. Those deep dives that also fit into this theme are of course the optimized life cycle costs, standardized solutions, by the way, are also a big issue for operators and even for train builders. A big bang for the buck is the more intensive use of existing infrastructure, with the trend of urbanization, through-put, higher through-put is critical, especially in a growing urbanization world and increasing traffic between cities. I do believe we can significantly contribute to that. And also reliability and passenger comfort.

Let's start with the latter. Passenger comfort. And not to always take examples from brakes, let's take an example from doors, entrance systems, like I said. Noise in vehicles is an issue, especially for example in subway systems where people want to commute to work, maybe prepare for the first meeting, read the newspaper, whatever people do on metro systems, and it becomes a tougher and tougher requirement that is being put on the car builders for noise reduction in those systems. Doors can contribute significantly to that trend. And traditionally, the noise levels close to a train, outside a train, can be like 90 dB, which is quite a noise level. Classical door systems and previous requirements demanded a noise reduction of 20 to 24 dB in that environment in order to make the ride more comfortable. We have developed a door system that closes and opens very fast, faster than other systems in the market, and also reduces the noise level by much more than that through specific solutions, maybe up to 32 dB even, which, on the logarithmic scale of decibels, a quite remarkable noise reduction in those vehicles. We had a successful market launch with that and that provides a much higher degree of passenger comfort that is a major argument for operators to use those doors, for example, to provide that comfort level for their people and increase the ridership even further.

Turning to the brakes. Braking trains is something that is very different from braking a car on the road or even a truck on the road. I am not sure who here has had the chance to ever brake a train. It feels more like you are trying to navigate a big ship into a harbor and are trying not to damage something. It is a very different regime. And you can see here how different it is just considering brake distances. Where you have, at 80 km/h in a car, a braking distance of around 30, 31 meters, on a truck with a trailer maybe 40 meters, if you go into a light rail vehicle you are up to 85 meters already and then you go up further to regional commuter trains to 220 meters, freight trains, you go up to 600 meters already, and then high speed trains, with speeds like 330 km/h, you are higher than 3 kilometers to brake that train. Now, that is only part of the story, because now rain sets in, fall comes in, the leaves are on the tracks, and what do you see with those weather conditions today those brake distances double or triple. If that is the case then the signaling system and the system in the infrastructure needs to account for that of course, for the conceivably longest brake distance in order to have a safe operation. That means the distances between the trains in the infrastructure needs to be quite high to have a safe operation. Now, we are at the brakes again. If we, as Knorr-Bremse, can provide a system where you can more or less reproduce, under all weather conditions, a lower brake distance, it doesn't need to be the minimum, but it is guaranteed, then the system can plan for shorter train headways and infrastructure can be used much more heavily. And that is a key feature, and that is key to essentially all the railroad companies in the world, whether it is China, or other places in the world, rather than investing into expensive steel and concrete, those are concrete ideas to use existing infrastructure much better. And how do we do that? It sounds simple. Just hit the brakes. But it is not that simple. First of all, we need, that is also part of our R&D landscape, a new generation of products. Here I have the example of a new brake control system which is much more exciting than it looks, let me tell you. Because first of all, this is a standardized product that can be used on different types of trains. Why is that so important? If you go to the large operators and look into their stocks for maintenance and service, it is overwhelming the variety of products that they need, because there are so little standards on trains. We can ease that and relieve that by having a product that is applicable to any train type, that doesn't exist that way today. The other thing is, reduced life cycle costs that come with it and increased reliability. Make it more reliable, reduce life cycle costs by stretching the overall cycle, of course that is built in then, you can't just do it, and lighter and smaller installation envelopes. We have next generation brake systems that, for example, save three tons of weight on an eight-car high-speed train, and three tons, you can calculate how many more passengers that means in revenue service for those customers depending on whether it is 30 or 60 people that you can put on top into that train, and, last but not least, these new products offer solutions for, even retrospectively, after installation, remote software updates, in order to get new features on the train. And that is, of course, a whole new field of additional revenue service models and that helps us to enable automatic train operation. And again, why is that so … I will quickly jump over this slide … why is that so important? Because there is … I don't need to explain that everybody knows this … the increasing need for transport capacities. You can easily do that by putting the trains closer together on the tracks and therefore, features that are also used for automated train operation but can be used independently as well, is reproducible brake distance or environment observation, and digital communication, of course, we have very special solutions for that. And how do we do that? The reproducible brake distance, that can lead to a higher use of infrastructure, that works that way that we have new features on wheels slide protection and adhesion management, and real time calculation of applying those things, so we can, actually narrow the spread of the brake distance quite a bit. You can see that schematically here. And basically provide a reproducible brake distance. We can avoid that the brake distance is triple, or double, and lower it to a much bigger limit and that means higher use of infrastructure. By the way, maybe just as a side note, I mentioned also the Chinese market, those are features that are especially of value for China. If we are in there with our full brake systems and supply those features, that is something that everybody, including the Chinese rail world, has a special interest in. The other element of it, environment observation, that I just mentioned. We invested into a share of a company called RailVision. That is a company, an Israeli startup company that provides infrared cameras with artificial intelligent picture evaluation, and under all weather conditions can, at a very high level of detail, look two kilometers ahead of a train. And of course, obviously that can be used for automatic train operation and then use corrective action on the braking or also on the traction system, but as a side effect, you can derive many more business models out of that. You all know that when the storms and the rain come in the winter, the railway system, you can read articles, trains failed again, trains are late, because trees and green are falling onto the tracks and there is a big problem. It always sounds easy to solve but if you can do recognition of those images and identify where corrective maintenance is needed, very specifically with this technology, you can save quite a bit of money on doing that by doing it point to point and very specifically. Those are side-effects of that technology and other benefits that we can generate quite a few additional revenue models for additional services for operations out of that besides the feature that it is very necessary for automated train operations. And you also see with that, that we are not shy in investing into startup companies, that have proven to provide technology fast. We don't need to develop everything ourselves, we invest in those and make use of that for our own business.

So these are just a few things on the innovative landscape. So, in summary: the rail business is embedded in a steadily growing market, with currently a record backlog for our customers. In almost all of those markets, we have the number one market position, especially in those key growth markets for the future. We see a huge growth potential in our service business, which will then be accretive to our margin and we want to grow that to more than two billion by 2024. We have key innovations on the way. This is a conservative industry, of course, and service proven equipment is necessary, but we also need to be innovative to have the next generation of products and services that we can offer the market. That includes even software-based feature upgrades and products. And we see that the margin expansion in the future primarily comes through aftermarket growth, or also efficiency improvement. There is always something we can improve, and we have seen that, as I said at the beginning, and explained in the beginning, we have seen that in the past year. So, in summary, we confirm our mid-term guidance between 2017 and let's say, 2022, of an average of 5% to 6% revenue growth and I think we have lots of opportunities to do that, and that is what I can confirm here. So thank you very much and we are looking forward to taking your questions.

02:11:13 Vivek Midha (Deutsche Bank)

Hi. Thanks very much for taking my questions, Vivek Midha from Deutsche Bank. So, firstly, in terms of your estimates of over two billion of aftermarket revenue by 2024, what is the number for China that you have embedded in that forecast? And then, secondly, if you could perhaps talk about what you alluded to in terms of content per vehicle, shifts in high speed. I understand with metro you have performed quite well over the past year or two, what is the mid- to long-term risk that, as local competition intensifies in the high-speed segment in China, that there is some spill-over effect into metro?

02:11:51 Dr. Jürgen Wilder

I mean maybe, regarding the Chinese market, how we see that, I would like to say a few sentences, actually, based on your question. Indeed, we have seen a tremendous OE market, like I have said before, in 2014 and 15 in the high-speed arena. Based on that, if you looked at that in 2015 or at the end of the 2015 and 2016, you would have said, oh my God, yes that is good, but you also accumulated a kind of a risk that will stay and how will you deal with that in the future, because your market share is so high with the total brake system. Now for the next generation of the high-speed trains in China, the Fuxing, we are still in, let's say, 80 - 90% of those high-speed trains, but not necessarily with a full brake system like we used to be. So, the share and the content per vehicle is going down a bit, that is not a surprise at all, because that is based on the Chinese politics to become more independent. You don't only see that in the brakes market, you also see that in other markets. Now the good news is, we have seen that share coming down already and you haven't seen that in our total numbers, you see that when you go into more detail. That has been compensated by metro business. So, what was the high share in our OE business in 2014 and 15 in high speed is basically turned around. Now there is basically a higher share in metro. Without going into all the details of all those numbers but it flipped around, so, the risk and opportunity relationship going forward with those kind of innovations that we have is that if we supply those innovations into the Chinese market, as for example, as in other markets as well, but especially in the Chinese market, then that is only possible if we go back to supplying a full brake system into the train, otherwise you cannot put those features in there. So, this risk that was there at the end of 2015 has been realized, to a certain extent, and we have seen in the last year and this year that the share in the high-speed market is more or less not declining anymore, so we have reached a certain bottom. And now it turns maybe a bit more into an opportunity, saying, if we provide innovation into the market that content might go up a little bit. That on the high-speed question. I mean, that is a long way, I know that in China, we need to be realistic about that, but I think we have realized some of those risks without compromising our numbers in the past. It is all in there already. That is the good news. Now, how did we compensate that? First of all I said, a stronger share of our OE business in metros. And also, of course, the majority of the growth, also now what we have seen now between 18 and 19, in China, was coming out of the aftermarket. And that share is growing. That share is growing, as you can imagine, the share of the aftermarket was at the beginning low, like it is today lower in India because it is a developing market and it comes later, but it goes into a similar direction or at times even a little higher than on our total average business.

02:15:29 Ralph Heuwing

To your first question Vivek, I can add that the share of China in the total rail aftermarket was between 25 and 30% and is likely to grow given the relatively young fleet, that is natural. It won't grow to 40% because also the installed base in the other regions will continue to generate aftermarket revenues.

02:16:03 Xingzhou Lou (UBS)

Thanks for taking my question. Firstly, on China OE: do you see upside potential, given that recently we have seen a lot of stimulus actually continuing into 2020, possibly and also a lot of investments into infrastructure? Or does your flattish forecast account for the fact that you see increased competition from local players, and on local competition, do you actually see that coming through in recent activities and in terms of tenders, do you see actually local players increasing their share? And lastly on aftermarket: I know that on your capital market statement you mentioned the aftermarket potential over the life cycle being one and a half to two times the value of the OE, do you still see that? And I appreciate that exact timing of the major overhauls is hard to pinpoint.

02:16:50 Dr. Jürgen Wilder

First of all, those were numbers where we see a flat OE business in the next few years, that was shown in the past. Last week, I just spent a full week in China, and I had a lot of discussions on that and I believe that mid- to long-term also the OE market is growing again in China. For example, there are clear plans to add 10,000 km to the network of 30,000 km on high speed rail. Some of those are feeder lines, it is not necessarily all pure high-speed lines. But that also means that the existing infrastructure will need to be used more heavily in order to get the through-put and that also will eventually turn into an OE business curve. The other impact or the other characteristic is that those high-speed trains in China, they run much, much longer distances every year than what we are used to in Europe. And based on that the life cycle of those trains is a little shorter and they need to be replaced earlier than what we have seen in Europe and that we will also see in the years to come. What that means in market figures, we will see, but those are qualitative arguments that we should also see in the mid-term, long-term growth in the OE business in China. Then you had another piece of your question?

02:18:36 Ralph Heuwing

Maybe I can take that. Just to add, this discussion about stimulus, one needs to see, if and when this money is being spent, or released, and that would be spent on planning and then executing tunnels, bridges and all of that, before, maybe three or four years later, we see that in the vehicle demand. There is of course a time delay. And such stimulus is always a pull ahead of demands that would have come anyway, so the question is, is that really a positive game or is that, at the end of the day a zero-sum game? I think then we will go back to the fundamental demand drivers that Jürgen was explaining. We said actually in the IPO document that, on average, the accumulative aftermarket revenue, on your question, is roughly two or three times the revenue that is generated at the point of sale, in the initial OE business. Again, depending on the lifetime of the vehicle, depending on the type of the vehicle and the usage, that is roughly the experience that we have gathered.

02:19:29 Dr. Jürgen Wilder

And also, I mean, when does it come exactly. We see it coming already, because we see a good growth in the aftermarket, but it is not that it kicks in exactly on the day, I don't know, five years after the train was introduced. It is smeared out a little bit and that is what we see. But it is coming, yes.

02:20:12 Akash Gupta (JP Morgan)

Hi. It is Akash from JP Morgan and I have three questions please. My first question is on China market share. Maybe if you can help us quantify the market share in various categories. If you look at this rolling 12-month basis, then where do we stand on high speed and metro as well as these mainline trains. So that is question number one. Question number two is about your three businesses in rail, primarily brakes, HVAC and entrance systems. Maybe if you can talk about the margin profile of these three businesses, because it doesn't look to me as if they would have similar margin profiles. Also, if you could talk about aftermarket intensity of these three businesses. So that is question number two. Question number three is slightly longer term. You were previously into brakes, then you have grown into other areas through acquisitions. So, is there any fourth leg that you are considering that might involve signaling equipment or something that can also help you going into this automated self-driving trains, so if you could talk about anything there. Thank you.

02:21:36 Dr. Jürgen Wilder

First of all, on those market shares that you mentioned: we have come, from a market share point of view, in the high-speed arena, like it was also in the IPO document, from very high levels. There were in the past, especially in the boom years, 90 to 100% of market share there. It is not that we are not in all of the trains still, but the content is a little lower. So, from that perspective, we have a certain drop in market share, but our products are still in a vast majority of those high-speed trains. So that is the one impact there. On the metro side we saw a relatively high market share there. It is a little bit different from high speed, in the past and we have seen that this market share is more or less stable. And then you asked the question about brakes, HVAC, doors, and the different margins on that. Yes, or course, the profit pools are different. There is a different competitive landscape, there is different market entry barriers for those systems and that also has different impacts on the margins. What I can say is that we have looked at that intensively and have identified in each and every of those segments improvement potential. So, to say how can we become the benchmark, also in profitability in each of those segments. They are very different. There are also other segments besides doors and HVACs that might have even higher margins than in the brake systems, it varies. What we have done is, as a management tool, we have said, we define a certain band width for each of those businesses of a profitability margin in order to set targets for the businesses to improve and we also see that this year already we are seeing margin improvements on those different sub-systems and sub-businesses, and that helps us to overall improve our margins, as you could see also from the numbers we delivered in the overall business. And then, aftermarket intensity. Well you can imagine, we have a very high aftermarket intensity on the brakes, as was mentioned, two to three times of the selling price. That has something to do with constant friction, wear and tear, you need to replace. Whereas the share in the other businesses like doors and also HVACS is a little lower, it is lower, definitely, but it also offers new business models, like I explained on the door, you can think of other business models, even also on HVACs and other sub-systems that help us generate additional services in the original sense of the word, to the operators. And then expanding business portfolio. Yes, we have constantly been looking at that and first of all, of course, we are looking at adjacent businesses and we are scanning that landscape, having discussions around that, but I wouldn't raise the expectation that we are currently looking for a big acquisition or something like that coming up soon, that is also not the case, but that is something to be considered.

02:25:51 William Mackie (Kepler Cheuvreux)

One question on RVS and then if I could just jump back to CVS. So, you have demonstrated in the first half that the strength of operational gearing and the benefits of that to profitability and you have set out an attractive long-term growth path with a structural shift towards the aftermarket which we have been led to believe is significantly more profitable. So when we look at the mid-term potential for margin, you know, it is, the first half figures, probably just something of a way point on the way to where you could be over two to three years, or do you envisage step-ups in innovation or other potential costs that are going to restrain the levels of profitability as you look against the bands of each of the businesses you've discussed.

02:26:40 Dr. Jürgen Wilder

I mean, I wouldn't say we can improve the margins year over year like we did from last year to this year. Of course, we have also seen some effects from the first half year where we see some revenue contribution in the second half of the year, for example, from portions of our businesses like Kiepe that will be revenue stronger in the second half year that is from its profitability profile a little longer. That wouldn't have a major impact but maybe some. But what we still can do, and that, like I explained before, we set targets for each of our businesses to further improve and we want to stay on that track of course and continuously improve our businesses and that needs to be really discussed and that is what we are doing and doing internally and doing that myself. What is the profit pool in each and every segment of those businesses and where are we good, where can we improve and what does it mean for the overall improvement?

02:27:50 Ralph Heuwing

To answer this question on a somewhat more higher level, our mid-term guidance of expanding the margin versus 2017 of 150 basis points, plus of course the IFRS effect, that stands and it is also very clear, to everybody, that a good chunk of that will come from rail but we will provide a specific guidance on how much will come from rail and truck in every year only for the year. So, stay tuned until the early part of next year for specific statements regarding rail profitability as well as truck profitability.

02:28:45 William Mackie (Kepler Cheuvreux)

Thank you. Within CVS, when we think of autonomous driving, for trucks and the long-term future for that, it seems that the landscape has significantly changed or through consolidation steps that your competitors are making. And also, I suppose, your alliances between some of your electronics suppliers have shifted or are shifting towards Continental. How should we think about where the majority of the R&D and innovation effort is going too unfold? There seems to be a push between tier one suppliers and OEMs taking place at the moment and how will you be able to maximize the way in which you capture that value as we go forward beyond braking and steering?

02:29:31 Dr. Peter Laier

Maybe, starting to answer your question from an OEM in comparison to a supplier point of view and then answer the question how we see ourselves in that situation. We differentiate with regard to the OEM approach between Europe and other regions. In Europe most of the OEMs are developing systems for automated driving by themselves and they need to have us as a supplier for sub-systems. That leads me at first to a description of how we are positioning ourselves. As I explained before, we have a strong heritage in brakes, and we have now built a footprint as well in steering. Those both are the main actuators for an automated driving vehicle. What we did is that we put an overarching layer above those both, which we called truck motion control, where we do a joint interaction of braking and steering to keep the vehicle dynamics of the truck in every situation under control. That is something which is a little bit different in comparison to what you see in test cars. That is the further development which we are doing coming out of our historical strengths. If it comes then, to a model, how to support the customer further, if we come to the decision layer or if we come to the sensing layer, those are both layers where we are cooperation with Conti, and you are right, we have shifted here our focus to what Continental as a partner for both those activities and we are pretty happy with that partnership. And the customers are highly appreciating what we are creating as demonstration trucks right now. With regards to the questions of competition will … there is, with the rising merger of ZF WABCO, there is a competitor which has a background now out of the truck business and background out of passenger car business with ZF knowhow. So, we take that seriously, what is happening there, and for sure there will be a know-how injection, we are expecting, out of this arena of ZF and TRW into WABCO, but as I mentioned, we are the technology leader and we will definitely invest in R&D on a level that we can keep ourselves as a technology leader. But it is in these times, of creating automated driving functions, not any longer about doing everything by yourself. It is about intelligent partnerships. We started that with Conti, and we are open for discussions about further partnerships. And we are partnering with our customers. And depending on their willingness to take system responsibility, we are a sub-system supplier, we are developing different models with them, but we are quite convinced that we are here in a very good position to grow.

02:32:54 Andreas Spitzauer

Okay. Thank you very much. And thank you for your stamina, for staying with us for two and a half hours. One last request and what you could do - we will send out today, or at the latest tomorrow morning, something from Monkey Survey. If you want to give us feedback, it would be highly appreciated so that we can improve in the future. Thank you very much and have a nice afternoon.