AIXTRON SE

Analyst Earnings Conference Call

2020 and Q4/2020 Results

2021 Outlook

February 25, 2021

Prepared Remarks

Executive Board

Dr. Bernd Schulte, President

Dr. Felix Grawert, President

Finance & Administration

Charles Russell

The spoken word applies

Slide 1, 2 – Operator & Forward-Looking Statements

Operator

Good morning and good afternoon, ladies and gentlemen, and welcome to AIXTRON's full year and fourth quarter 2020 results conference call. Please note that today's call is being recorded. Let me now hand you over to Mr. Guido Pickert, VP of IR & Corporate Communications at AIXTRON, for opening remarks and introductions.

Guido Pickert

Investor Relations & Corporate Communications

Thank you, operator. Let me start by welcome you all to AIXTRON's presentation of our full year and Q4/2020 results. I'd like to welcome the members of our Executive Board, Dr. Felix Grawert, Dr. Bernd Schulte and Dr. Jochen Linck who joined us last year in October, as well as our VP of Finance and Administration, Charles Russell.

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Please take note of our Safe Harbor Statement which can be found on page 2 of our results presentation slide deck, as it applies throughout the conference call.

You may also wish to have a look at our latest IR Master Presentation with additional information on AIXTRON's markets and its technologies.

Both slide decks are available on our website.

This call is not being immediately presented via webcast or any other medium. However, we will place an audio file of the recording or a transcript on our website at some point after the call.

I would now like to hand you over to Dr. Bernd Schulte for opening remarks. Bernd?

Slide 3 – FY 2020 Highlights & Operational Performance

Dr. Bernd Schulte

Executive Board

Many thanks Guido! Let me all welcome you to our full year 2020 results presentation and I will start, as usual, with an overview of the key developments for the year, before handing over to Charles for more details on our 2020 figures and Felix giving you updates on our achievements in our business areas as well as the outlook for 2021.

Let me start by giving you an overview of the key developments in last year on **slide 3**.

In Q4 2020, orders came in at 92 million Euros which is 30% higher than the same figure in Q3/2020. As broadly expected, revenues in Q4 of 2020 were strong at 108 million Euros which was almost 70 percent higher than Q3/2020.

While our Optoelectronics business was slightly lower in terms of revenues compared to 2019, we saw increasing demand resulting in almost doubling of the orders received compared to 2019. This strength was driven by both, Lasers for Datacom as well as lasers for 3D sensing with a particular order strength in Q4. In Power electronics, revenues and orders were up significantly, driven by strong demand for GaN Power equipment. Felix will give you more details later on.

In fiscal year 2020 we fully met our 2020 guidance with a total Order Intake of 301 million Euros and Revenues of 269 million Euros. Gross Margin was at 40% and EBIT margin at 13%.

Let me now quickly give you an update on the potential impact of the spread of the COVID-19 disease.

Our increased internal safety measures have proven effective to mitigate the risk of infection within our premises. We continue to not have recorded any significant effects related to COVID-19 on our operations and business. However, we will continue to watch the development of the global pandemic very carefully and we remain to be ready, to take measures if necessary.

Before handing over to Charles, let me say a few words to our dividend proposal we have made due to the strong results achieved during fiscal year 2020.

We, the Executive Board as well as the Supervisory Board propose to pay out a dividend for FY 2020 of 11 Euro Cents per share. This will have to be approved by our shareholder on our Annual General Meeting on May 19, 2021.

This represents a pay-out-ratio of 36 percent of our group net result which was 34.5 Million Euros.

At this point; let me now hand you over to Charles for a more detailed overview on the Full Year 2020 numbers. Charles?

Slides 4-6 – FY2020 P&L, Balance Sheet, Cash Flow

Charles Russell

Finance and Administration

Thanks, Bernd, and hello to everyone.

Starting on **Slide 4**, our income statement. As expected, total revenue for the year was 269 million Euros compared with 260 million Euros in 2019. Gross margin of 40% in 2020 was 2% lower than the 42% in 2019. The difference is attributable to the USD Euro exchange rate effect between the two years.

Overall Operating Expense in the year increased from 70 million Euros in 2019 to 73 million in 2020.

G & A expense increased to 18 million Euros in 2020 from 16.5 million Euros in 2019, mainly as a consequence of increased recruitment costs and other variable expenses.

R&D expense of 58 million Euros was 3 million higher than 2019.

This is a reflection of our product development work for our MOCVD systems, including power electronics and mini and micro LED. Here we have taken the next steps and will start to ship first systems to test customers worldwide. Towards the end of the year, spending for our OLED development reduced. However, costs for the full year were similar to 2019 at 17 million Euros.

Net Other Operating Income of 13 million Euros in 2020 – compared to 12 million Euros in 2019 – mainly consisted of R&D grant income of 8 million Euros and a 3 million Euros reversal in Q1 of an impairment charge on a facility in Germany.

We generated an EBIT of 35 million Euros for the year compared with 39 million Euros in 2019.

The effective tax rate in 2020 was 2% mainly due to the recognition of additional deferred tax assets and because of the reversal of the building impairment. Without these adjustments, the effective tax rate would have been just over 12% of pre-tax profits.

The net profit for 2020 was 34 million Euros compared with 33 million Euros in 2019.

Turning to the balance sheet **on the next slide.**

As expected, the high level of sales in the quarter produced a substantial reduction in inventories between the end of Q3 and year end. At 79 million Euros inventories were similar to the previous year's level.

The high quarterly sales volume is also reflected in the increase in receivables to 41 million Euros, most of which will be collected in Q1 2021.

Advance payments received from customers of 51 million Euros was similar to the end of 2019. Advance payments are the equivalent of 34% of the backlog.

Our cash balance increased to 310 million Euros at the end of the year, including 60 million Euros shown in Other Non-current Assets on the slide.

Moving to **slide 6**, which shows our cash flow statement.

Operating cash flow of 23 million Euros was lower than 2019 because of the increase in receivables at the end of 2020.

Capex increased during 2020 to 9.3 million Euros from 7.7 million in 2019. This reflects an increase in demonstration equipment for the expanded product range and investments in facilities needed for an expanding business activity

With that, let me hand you over to Felix.

Slide 7, 8 – Development Projects and 2021 Guidance

Dr. Felix Grawert

Executive Board

Thank you, Charles.

I would like to give you some perspective on our addressed markets on **Slide 7** before concluding with the outlook for the rest of the year.

In 2020, our Optoelectronics business was slightly lower in terms of revenues compared to 2019. However, towards the end of the year we saw strongly increasing demand. With this, the orders received in this area almost doubled in comparison to 2019. This strength was driven by Lasers for Datacom, from the 5G buildout, as well as Lasers for 3D sensing. Here, we see a growing adoption of 3D Sensing applications on both sides of the smartphone and in other devices.

In the LED space, customer inquiries for tools to make ROY LEDs are strong, driven by demand from the areas of full color mini LED displays and backlighting units. For the first time, in 2020 we have received significant orders for ROY LEDS targeting the horticulture market, also called indoor farming.

In Micro LEDs we have seen the transformation of the industry from pure R&D to the manufacturing feasibility stage, making the adoption of this technology more probable than before. At this stage the order volumes for this segment are still comparably small.

In Power electronics, the 2020 revenues and orders were up significantly, mostly driven by strong demand for GaN Power equipment.

Here, we continue to receive orders from customers who address the growing end-markets of efficient GaN chargers for consumer electronics devices such as Smartphones and Notebooks as well as efficient GaN Power Management solutions for servers and data centers. In 2020, we have clearly seen the tipping point of broad GaN Power adoption, and we are now in the volume ramp phase for GaN-Power solutions that replace the incumbent silicon-based power management systems.

At the same time we see increasing momentum in the area of Gallium Nitride and Gallium Arsenide RF solutions, driven by the 5G buildout.

In Silicon Carbide, we have achieved the qualification of our fully automated high-throughput system from two customers and we continue to work hard to achieve the same with additional customers.

With regards to OLED, we have achieved the customer acceptance of our Gen2 tool in December 2020 and are now in customer discussions related to a scale-up of the system to larger size, which would be the final part of the qualification process.

Let me now come to our outlook for 2021 **on slide 8**.

For 2021, we expect order levels to once again increase year-on-year to a range between 340 and 380 million Euros. This expectation is based on many orders that we have received already at the beginning of the year and a very healthy level of customer inquiries across all applications.

Starting with a backlog of 151 million Euros, we expect revenues for 2021 in a range between 320 and 360 million Euros.

We expect our gross margin to again be around 40% despite adverse USD/EUR currency effects.

We expect an EBIT margin of around 16%. This figure includes increased R&D expenses for the completion of the development of our Next Generation products for

lasers, Micro LEDs, GaN power and RF and 8" Silicon Carbide. With this large portfolio initiative we expect to secure our leading market position in our rapidly growing core markets.

Important to note is that orders, order backlog and the other guided figures are based on our 2021 budget exchange rate of 1.25 US Dollar per Euro. In the quarters to come, revenues and profit margins will be reported based on actual exchange rates.

We have made our guidance based on the assumption that the current COVID-19 pandemic will continue not to have a significant impact on our business. Please also note that these estimates fully include the results APEVA from top to bottom line.

With that, I'll pass it back to Guido before we take questions.

Guido Pickert

Investor Relations & Corporate Communications

Thank you very much, Bernd, Felix and Charles. Operator, we will now take questions, please.

Question-and-Answer Session

Olivia Honychurch, Liberum Capital

Couple from me actually. I just wondered if, first of all, you could talk a little bit more about the OLED project that you currently have ongoing with one of your Korean customers. Have there been any more developments there over the last couple of months? And I guess, elsewhere, sort of regardless of that customer, is it possible that you might look to mirror that project work with other customers going forward as well, for example, in China? That's my first question.

Secondly, just on silicon carbide power applications. Can you talk a little bit more about what sort of applications that you're currently seeing strong demand for at the moment? And maybe give a bit more color on whether you're getting any closer to qualification with customers with your platform there as you did towards the end of last year.

Dr. Felix Grawert

Yes. Thank you very much for the two questions and let me get started with OLED first. The key development towards the end of the last year was the completion of the Gen2 project. The final acceptance has been reached together with the customer based on the specs that have been fulfilled. And with that, this qualification project is concluded. Gen2 refers to a smaller size or R&D-type size of substrate, which was

attached to the R&D line of our customer. You can say the proof-of-concept has been achieved, demonstrating that the OVPD technology, which is a new technology is working.

And now we are in discussions with customers both in Korea and outside of Korea, about a scale-up to larger substrate sizes. And larger substrate sizes are needed for a full volume production where, ultimately the technology would go. And those discussions are ongoing. These involve a lot of technical details, technical specifications. So that is something which we expect to take a couple of months. This sums up the current status of our OLED activities.

With that, I come to your second question on silicon carbide. I think you had two elements included in your question. The first was which applications we address and about the status of qualification. We expect the biggest volume to go in the market for electromobility and to the electric drivetrain and the main inverter of cars. We furthermore see silicon carbide devices to go in the onboard charger for cars which is the compact power charger converting energy into the DC voltage for the battery. Finally, we see use cases of lower volume in fast-charging infrastructure along the highways. Here we have today gas stations, and in the future it will be electric charging stations. There are discussions ongoing with respect to 100-kilowatt or even 350-kilowatt chargers, which could charge your car with 100 kilometers of driving distance within 5 minutes or so. This would clearly need silicon carbide as a power converter.

Last but not least, we see silicon carbide going into the generation of electricity, i.e. into inverters for solar power plants or for wind power plants just to name some examples. There are many, many applications around. But by far, the biggest use case is around electromobility. That's the main driver in quantity.

To your second question, we have concluded the qualification with two customers. At other customers, our systems are situated on their shop floors and qualification programs are running. Such a qualification typically takes several quarters because it not only involves that our tool produces appropriate wafers in a reliable manner, but it also means that these wafers need to be put through the production line of our customers with MOSFETs or full devices being produced. And only when these fully produced devices pass the qualification test of our customers, they then typically also accept the tool. So that is a multi-quarter ongoing effort, which will well extend into the year 2021.

Uwe Schupp, Deutsche Bank

Two questions, please. Firstly, on the gross margin and secondly, on the gallium nitride opportunity. So just firstly, on the gross margin, you guide for a relatively broad €40m revenue range. And I was just wondering how we should read the 40% absolute gross margin and why you also didn't decide here to give maybe a bit of a range. I would expect, given what we saw in the past, in 2018 or even before that, there should be

some benefits from higher volume. And I would also assume that your product mix is probably going in the right direction with silicon carbide and potentially also some VCSEL business coming back.

And then secondly, just like to get your thoughts on the gallium nitride opportunity, as in how big do you see the market this year? I guess some of the concerns would be is gallium nitride power really comparable maybe only to the 3D sensing market in 2018 when you basically had one strong year. Or do you really think the opportunity is may be a bit more structural, more longer-term and really comparable maybe even to the silicon carbide opportunity?

Dr. Felix Grawert

Thank you, Mr. Schupp, for your questions. Let me get started with the gross margin first. We have in fact decided not to give a range. With 40% we point you to an interval of a couple of percentage points below and a couple of percentage points above 40%. What are the drivers behind this? First of all, there is a number of mix effects behind it. In 2021, we expect again significant volume from the lower margin ROY LED (Red-Orange-Yellow LEDs) market. Furthermore we expect some large volume orders with customers expect a certain level of volume discount. All this is included in the 40%.

In addition to that, the U.S. dollar in the year 2021, now at about $1.25 to the Euro, is a burden on the margin as we generate a certain part of revenues in US-Dollars. If you compare that with the year 2020 during which we were at an exchange rate of about $1.10 to the Euro over large parts of the year, this is the big heavy load on the gross margin.

Our production model is not too asset heavy. It's relatively flexible due to a high level of outsourcing to third-party contract labor. So we do not have strong benefits from fix cost digression as one could imagine. Therefore, the additional volume does not give us strong benefits in gross margins. These key factors have been considered into our 40% margin guidance.

Dr. Bernd Schulte

And maybe to add, Mr. Schupp, when we say around 40%, we imply a certain range with that. It could be slightly above or slightly below 40%. It doesn't mean it will be exactly 40%.

Dr. Felix Grawert

With that, I come to your question on gallium nitride. You had asked whether we expect only one extremely strong year as we had experienced with VCSELs in 2018 or whether we expect a multiyear trend in GaN Power Electronics. I expect a multiyear trend. Around this trend, there will always be ups and downs. Today we see the first big investment, which will cover a large part of the demand for high performance

chargers of mobile devices. We expect that after this gallium nitride will penetrate multiple other sub-segments of the power market. For example, we also see GaN in the segment of IT infrastructure, e.g. in data centers, power supplies for servers or in the power supply for base stations of mobile communication which are very hungry in terms of power. Later on, we expect GaN also to expand into the markets for motor drives and integrated power circuits, which, for example, you would find in white goods, household appliances and air conditioning devices. Based on that, we expect that gallium nitride is a multiyear growth trend. However, we clearly see a first wave of this trend linked to a very particular application. We all know that consumer electronics is an area where trends can have very hefty movements because the adoption is very fast, while other more industrial applications can have a much steadier, slower momentum. So in a nutshell, yes, there is a strong wave, but it will continue as a long-term growth driver.

Uwe Schupp, Deutsche Bank

So to summarize, the growth in gallium nitride this year will be mostly, as far as you can see, for the fast-charging opportunity in mobile devices?

Dr. Felix Grawert

Yes, I think this is today the biggest driver.

Uwe Schupp, Deutsche Bank

Thanks Felix, thanks Bernd and all the best for the next chapter of your life!

Jürgen Wagner, Stifel Europe

You mentioned in your prepared remarks that Micro LED is moving to pilot production. When do you see that market developing in volume? And who would be your closest potential competitors? And a clarification on the OLED business. You said you have APEVA included from the top to the bottom-line. Does that mean that there's any OLED contribution in your revenue forecast for '21?

Dr. Bernd Schulte

For Micro LED, you're right. Our customers are now testing Micro LED production on a small scale but really testing the feasibility of mass production methods to build devices such as small displays for smartwatches or even large displays for TV. Our current view on the timeline is that you might see first small volumes of TVs in the market, starting more as a market test maybe in 2022 already, while the mobile applications will take a bit longer. I would not expect them in the shops before '23, '24.

Competition is the traditional one. We see in the area of gallium nitride, gallium arsenide systems, our old friends from the U.S., Veeco as our main competitor. And

we take that competition very serious. But we strongly also believe that we currently have a clear upper hand.

Dr. Felix Grawert

With that, let me come to the second part of your question relating to APEVA. And the question was whether we have modeled in our guidance some revenue for APEVA. Yes, we have modeled in some revenue for APEVA based on our most realistic scenario and we hope that this scenario does materialize.

Jürgen Wagner, Stifel Europe

Can you say how much?

Dr. Bernd Schulte

It's not a significant number, let me say this way.

Stephane Houri, ODDO BHF

Actually, I have 2 questions. So the first one is about 2021. And I would like to know if you can rank, by opportunity, the fastest-growing opportunities this year between power, LED and lasers. And inside power, I'm a little bit surprised that you seem to be more bullish on GaN than on SiC for the time being. So does it mean that what is driving your orders at the moment is not yet SiC and SiC is for the years to come? So that's the first long question, sorry for that.

And the second question is about the operating leverage. You have discussed about the gross margin. But EBIT margin, also, some may have expected a little bit more leverage. So why is that? That's the first question. And then what kind of long-term EBIT margin do you target?

Dr. Felix Grawert

Let us address your questions one by one. You asked is about the growth drivers for the year 2021. We see strong momentum and strong growth from all the segments across the board, both from optoelectronics as well as from power electronics. The only area we have highlighted, because it's really growing particularly strong, is gallium nitride power, which we already discussed with strong demand coming from the mobile charging segment, which addresses the second part of your first question, gallium nitride versus silicon carbide power. In both these areas, we expect a multiyear growth trend.

Nevertheless, in the year 2021, gallium nitride is clearly in a wave of several customers expanding and fully equipping their factories because now is a strong momentum in the market in which these devices are needed quite fast. That is typical for the

consumer electronics industry where an adoption of a particular technology can go very fast. Hence, 2021 is strongly dominated by the growth of gallium nitride.

In comparison to that, in silicon carbide, which addresses mostly the automotive market segment, we see a dynamic where customers step-by-step, on a more steady, continuous pace, equip their factories. And in silicon carbide, in 2021, we do not see customers adding 10 or 20 systems in one shot in a factory. We rather see expansions of customers adding 1 system, 2 systems, 3 systems here and there. However, in both segments, we expect a multiyear growth trend.

And with that, I come to your second question, which I understood, and I do not know whether this is right about the margin. EBIT margin, we have guided as around 16%. And this takes into account that for 2021, as we have mentioned before, we expect an increase in our R&D expenses to complete our portfolio renewal. And that, of course, consumes, a certain portion of the gross profits realized from the higher top line.

Stephane Houri, ODDO BHF

Okay. And long-term, you think you can reach what kind of EBIT margin if you continue to grow?

Dr. Felix Grawert

Of course, depends on many factors. Last but not least, a competitive environment, pricing, pricing power and so on and so forth. But I'd say 15% to 20% should be a reasonable range.

Andrew Gardiner, Barclays Capital

I have a longer-term one just in terms of the longer-term growth outlook. You guys have included a slide for the last few quarters in your deck looking at the growth out to 2025 for the compound semi-equipment market. Obviously, it is an industry analyst forecast. And there are some fairly big numbers in there in terms of the 20% to 35% compound annual growth through 2025. I'm just wondering on your current perspective on this outlook, you've seen orders inflect quite strongly at the end of last year. It feels like the business is quite nicely balanced at the moment between specialty LED, power and opto and with good orders coming across all of them. So what's your current perspective on those kind of long-term growth numbers, are you willing to endorse them as we look out over the next few years? And then, just sort of related to that, what are you guys thinking in terms of CapEx need? You've already highlighted, Felix, the outsourced nature of your production. But do you need further CapEx in order to support this kind of growth that you're seeing at the moment?

Dr. Bernd Schulte

I think for all to understand, I think what Andrew is referring to is the slide we have in our slide deck, which basically displays the expectations from the Yole Developpement about epitaxial equipment and its market potential. And they have basically two scenarios: One is a base case and the other one an aggressive case. One is about a CAGR of 20% and the other 35%. And the main difference between the two scenarios is how strong the rising of Micro LED is more or less.

I would generally agree to the fundamental growth concept behind that study. I would be more careful with the absolute numbers because from historical data, we think the absolute numbers do not stack up like reported there. However, the underlying momentum and the underlying applications, I would agree to. And meaning that there is a potential of 20% to 30% CAGR in this market, I would definitely agree to. And the driver for the base case is power, silicon carbide, gallium nitride and Micro LED for the aggressive case.

We at AIXTRON momentarily would benefit stronger from gallium nitride than from silicon carbide due to our market position. And then there is the laser business for optical data communications and 3D sensing as well as the LED market with the Micro LED market being is a little bit of a wild card in it. It assumes that Micro LED will make it to a volume technology, which is not 100% given as it is currently in the test and feasibility stage as mentioned before. But if that turns out positive, I definitely see the opportunity for such growth rates.

Dr. Felix Grawert

And with that, let me come to the second part of your question - on CapEx. CapEx in the last years was typically around €10 million per year, sometimes below, sometimes above. For 2021, we expect a CapEx of around €25 million. This is driven by two major consumption needs. The one area is moderate expansion on our production facilities, in particular in terms of testing facilities, test equipment and so on and so forth. And the other part where the CapEx is going this year are additional prototypes for our new generation of products, which we are just about to bring into the field.

Charlotte Friedrichs, Berenberg

The first one is related to the order intake. Can you give us an idea of the split that you saw with your order intake in the fourth quarter of 2020? And then also, what kind of quotation levels are you now seeing in the first quarter? Does it continue at this high level? And then, the second topic would be around the gross margin. Do you already have a broad feeling for where the gross margin could go in, say, 2022, 2023 when you start phasing in your new product generation?

Dr. Bernd Schulte

Yes. The order intake in Q4 was strong, as we mentioned, dominated by optoelectronics applications, laser systems for telecom/datacom and consumer electronics. Around 70% of the order intake, just came from these applications. So there was a certain Q4 effect and we should also mention there were very few, very big orders, which drove that demand.

Dr. Felix Grawert

With that, let me come to the gross margin. You mentioned that our gross margin would go and develop positively around '22, '23. On average, I would expect for our new product series, a gross margin of 45% to 50% because it offers additional differentiation potential and increased productivity. But please keep in mind, when you model that in, that the adoption of new products series could typically take quite some time. So even if we bring our new products into the market in '21, '22, it easily can take 2 to 3 years after the qualification is completed until we see a broader market adoption.

That simply comes from the dynamic that when a product is qualified in the sense of a new tool is qualified, a customer has to requalify all the existing products on this tool before they can use it broadly for their production. And this is nothing on our side, we are ready to produce. We could immediately switch our entire production from the existing series to the new series. However, our customers will convert new installations step-by-step. And therefore, we expect a transition phase from the existing product series, G4, G5, G5WW for our 3 material systems areas to the new ones in a time period from 2022 to '24 and then we will see the full rollout of the portfolio including all around '24, '25.

Dr. Bernd Schulte

I still need to answer your question about the order intake development. Right now, we're seeing a continuation of a very healthy demand in terms of discussions with customer, contract discussions, quotation levels, et cetera. So we would not be surprised if we saw order levels in Q1 even above the Q4 level.

Malte Schaumann, Warburg Research

The first question is on costs. If I look at SG&A, that has been relatively stable over the past years with stable sales. Now as we're entering kind of a new growth phase, sales up to €350 million, potentially €400 million sales in a few years, where do you see SG&A developing relative then to sales? And then in that respect, also on R&D; R&D is currently rising due to the new product innovations. With rising earnings you could afford spending for other things, so do you see areas of interest where you think, okay, in the past, you abandoned several projects, but as you're in a more better position now, do you see certain areas so that we should expect kind of an inflated or

higher R&D position going forward as well due to your capabilities and potential market opportunities?

Dr. Bernd Schulte

Let me talk on the R&D spending and what we expect going forward on longer term. In 2021, we are definitely on a quite high level. And we even expect it to grow over 2020 due to the very ambitious product initiatives we have ongoing. We will continue to drive our product initiatives in order to launch very competitive products in the course of '21 and '22. And this is the main driver of the increase in R&D cost in these 2 years. And beyond that, certainly, we have to continue to keep next-next-generation developments in mind. The market starts talking about 300-millimeter applications where we certainly have to respond to and we will respond to. But I would not personally expect a significant growth over the levels we are currently in.

Malte Schaumann, Warburg Research

So potentially stable, maybe stable at the current levels even if it's currently inflated, but owing to new opportunities going forward then the level might be sustainable.

Dr. Bernd Schulte

Right. And SG&A in terms of sales, I would also not expect a significant change. These are fixed costs. Certainly, if you have bigger and more demanding customers, you might maybe need a few more people to support customers and stay in touch with them. However, I would say this is not really significant.

Malte Schaumann, Warburg Research

Yes. Okay. Good. Then on OLEDs, if you talk to other customers, besides your lead customer, what's the potential time lag? Because your lead customer obviously has an advantage, should be theoretically be much closer to the decision because of available data. So if you look at other customers, what's the potential time lag when a customer really has to get new data you can provide, et cetera, before he might be ready to really decide on the next step? Could such a customer already order kind of a pilot tool? Or would he, firstly, might copy a system, I think, such the Gen2 project because he has not the same data available as your lead customer obviously has?

Dr. Felix Grawert

There is multiple factors that determine the speed of the customer decision. And in addition there are very different corporate cultures inside of different customers about their decision-making. Some customers are very entrepreneurial and go very fast, others want to have almost perfect data before the project starts. So there is a broad bandwidth. And for sure, it will take a couple of months until that is concluded. But we cannot determine and say, there is a certain pattern of decision-making or there is a

certain time frame because, in the end, every customer is different and every customer looks at different aspects where they put their focus on. So unfortunately, I cannot give you a very precise answer to that one.

The second part of your question about the size of the system. It's very clear the focus now to bring the system to a production scale size because the R&D type feasibility study and phase has been completed. So the discussions are focusing on upscaling to a Gen 8, Gen 6, whatever the sizes are for production equipment and that's the focus. It's not a repetition of another R&D-type system.

Malte Schaumann, Warburg Research

Okay. Good. Understood. A quick one on LED. What's the revenue share of the horticulture applications?

Dr. Bernd Schulte

For Q4, the effect was still minor. We are more talking about order intake. And in this area, we are typically selling several tools at once. Generally said, this equipment is versatile in a sense that you can produce LEDs for horticulture as well as for mini LED or Micro LED. This is very difficult to assess where the produced devices will end up. We're just giving you a flavor what drives the demand. But there is no sticker on the tool, this is for horticulture or this is for red LED, this for Mini LED. With our tool, you can produce all of them. And typically, customers are also serving all of these markets at once.

David O'Connor, Exane BNP Paribas

A couple on my side, if I may. Firstly, the clarification on the order breakdown for Q4. What was the percentage of power within that? And does the mix switch to power in the Q1 order intake or that incremental strength, is that driven by power? And I have 1 or 2 follow-ups

Dr. Felix Grawert

So order levels for power electronics in Q4 2020 were relatively small at just around a 10% level. The expectation for Q1 of 2021 is very different. Here I think we speak about power electronics at about a 50% level. And that is, by the way very typical that quarter-to-quarter the individual applications fluctuate quite strongly. This is a positive consequence of the fact that we address multiple end markets and that these fluctuations overall level out and create steady envelope.

David O'Connor, Exane BNP Paribas

Understood. That's helpful. And then maybe a follow-up on the GaN side of things. Can you help us size that market for consumers, for instance, equip the industry for

smartphone fast charging? And how many tools overall over the next 1 to 2 years do you estimate that market has?

Dr. Felix Grawert

This is a very difficult question. It I may be 30, 40, 50 tools per year in very rough terms.

David O'Connor, Exane BNP Paribas

Okay. Okay. No, that's helpful. And then maybe just for my last question on the silicon carbide side. One of your customers recently announced the move to 8-inch SiC wafers. Does that change in any way how other customers think of their silicon carbide roadmap? And can this in any way help you crack some of these other customers?

Dr. Felix Grawert

Yes. That's a very good question. 8-inch is a very interesting trend in the market. Initially, the focus of the entire industry was on silicon carbide 6-inch. Now everybody sees that especially in the last 1, 1.5 years, the plan of all the car OEMs worldwide towards electrification has significantly accelerated. It has become clear, that drive trains will become electric in the long term. It's just a question of when it becomes electric. And we have also seen in the last one-year that all the car OEMs are significantly pulling in their time line for electrification. I think that was a major change that we saw in the automotive industry in the year 2020.

And with that, now for the semiconductor industry, it also becomes very clear that very soon, there will be very significant volumes of MOSFET for the drivetrain required for all these electric vehicles. And this has pushed a faster 8-inch adoption because for such adoption to a new wafer size, the market needs to be big enough. And suddenly, throughout the year of 2020, the expectations on that market have become big enough. And with that, customers are now pulling in the conversion from 6-inch to 8-inch. It was initially planned around 2024, 2025. Now many customers are now talking about the adoption 1 to 1.5 years earlier than that.

So the adoption will take place be sometime between 2022 and 2024. That creates now a new dynamic. Everybody is now starting to make plans for an 8-inch transition. And here, AIXTRON has a unique position and it is our clear strategy, as you have indicated in your question, that we can exploit that. The reason is that in our Planetary Systems we can typically load both 6-inch wafers and 8-inch wafers. And that applies to Silicon Carbide as well as to Gallium Nitride or others. And even if you start with a 6-inch configuration, the reactor furniture can be adopted to 8-inch afterwards. It just needs little bit of a retrofit, which requires a small upgrade kit at limited costs. This is a small fraction of the total price of the tool and then the tool can be retrofitted.

Due to this, we are currently working on a revision of our SiC tools, making them both 8-inch and 6-inch capable. We had first discussions with customers on the tool, actually first customers have purchased the tool already. We plan to ship it early in 2022, it's already standing on our shop floor here. And that tool will then be both 6- and 8-inch capable. And it will give us an additional value proposition and an additional angle to approach and address more customers or to crack into those customers where we are not yet the tool of record. That's clearly part of our strategy.

Harald Schnitzer, DZ Bank.

Given the strong demand in power electronics, could you give us an indication of how your market share has improved in GaN and SiC? And with regard to SiC for the automotive industry, do you have follow-up orders after Bosch has signed? And with regards to the tax rate for '21, could you give a guidance on that as well as on the free cash flow?

Dr. Felix Grawert

With respect to our market share in gallium nitride, we estimate that the market share is somewhere between 90% and 95%. In silicon carbide, our market share is strongly driven by which customer is ordering in which year. In the year 2020, which just passed, one of our customers was placing significant amount of orders compared to other customers or other players in the market, which are not using our tools. So in the year 2020, we could register, I think, around 45%, 50% of market share in silicon carbide. But that was, again, strongly driven by the individual ordering pattern of customers.

Charles Russell

In terms of the tax rate for 2021, I think I said in the speech that the underlying tax rate in 2020 was just over 12%. And I would expect somewhere between 12% and 15% to be the tax rate for 2021, bearing in mind that is all subject to any change in recognition of the deferred tax assets or derecognition depending on what the prospects are for future years beyond that. And in terms of free cash flow, we don't usually give a guidance on free cash flow. We stopped doing that during 2020, but I would expect it to be positive and probably more positive than it was in 2020 itself.

Lee Meyer, Lord, Abbett.

My question is in regards to Micro LED, which albeit is still a bit in the future, it's a bit of a ways off. But you clearly have technological strength in the ROY market. But historically, in the blue/green market, with GaN, it's been a bit of more of a challenge from the competition, both out of China and as you mentioned, with Veeco.

As we move into these smaller, finer feature sizes, both in mini and then, more importantly, with Micro LED, do you think you can regain your competitiveness outside of ROY, specifically in green and blue?

Dr. Bernd Schulte

Yes. Lee, thank you for the question. Definitely, yes. The requirements for Micro LED are very, very different than the requirements for blue solid-state lighting LEDs. In all 3 colors, the utmost requirement is the uniformity leading to good yield levels, low defectivity and so on. And this comes together with relatively big wafers, 6-inch, 8-inch wafers. And if you want to do this with an acceptable throughput, we are very convinced and that's the feedback we're getting from all our customers, that the Planetary Reactor is the best choice. And we believe we will have all 3 colors for Micro LED.

Dr. Bernd Schulte

Ladies and Gentlemen, I would like to end this call on a personal note.

After 28 years with AIXTRON and 19 years at the Executive Board I will retire end of March. Looking back at all these years there have been good and less good ones but all times have been very exciting for me. Even after such a long time I am still amazed about the technology and the markets AIXTRON is serving, AIXTRON's people and the great perspective of the company.

I would like to thank you all for your interest and support for AIXTRON and I really wish that you will continue like this as I believe there is a bright future!

Thank you very much and Goodbye.

Guido Pickert

Thank you, Bernd. I would like to add some personal words to what you just said. Bernd, I enjoyed very much working with you and I will until the end of March, that's for sure. You have pushed and supported me at the same time. And we always discussed our ideas and views very actively, sometimes controversially. But at the end, it was always fruitful. In addition to that, we went along very well on a personal level. Therefore, I sincerely regret seeing you go. I wish you all the best for your time post AIXTRON with your family and whatever you want to do. Thank you, Bernd.

Well, thanks to all of you for attending, this concludes todays call. We will be hosting meetings on virtual roadshows in different time zones next month. Please let us know if you're interested in joining. Please note that our next earnings call will be on April 29, 2021, for our Q1 2021 quarterly results. Thank you and bye-bye.