STMicroelectronics N.V., Q1 2023 Earnings Call, Apr 27, 2023 (EditedCopy)

TEXT version of Transcript

Corporate Participants

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  STMicroelectronics N.V. - Group Vice President of Investor Relations

* Jean-Marc Chery

  STMicroelectronics N.V. - President, CEO & Member of Managing Board

* Lorenzo Grandi

  STMicroelectronics N.V. - President of Finance, Purchasing, ERM & Resilience and CFO

Conference Call Participants

* Andrew Michael Gardiner

  Citigroup Inc., Research Division - Research Analyst

* Didier Scemama

  BofA Securities, Research Division - Director in EMEA Equity Research & Head of European IT Hardware

* Lee John Simpson

  Morgan Stanley, Research Division - Equity Analyst

* Matthew D. Ramsay

  TD Cowen, Research Division - MD & Senior Research Analyst

* Sébastien Sztabowicz

  Kepler Cheuvreux, Research Division - Head of Tech - Equipment Research

* Stephane Houri

  ODDO BHF Corporate & Markets, Research Division - Research Analyst

Presentation

Operator [1]

Ladies and gentlemen, welcome to the STMicroelectronics First Quarter 2023 Earnings Release Conference Call and Live Webcast. I'm Andre, the Chorus Call operator. [Operator Instructions] The conference is being recorded. The presentation will be followed by a Q&A session. [Operator Instructions]

At this time, it's my pleasure to hand over to Celine Berthier, Group Vice President, Head of Investor Relations. Please go ahead.

Celine Berthier, STMicroelectronics N.V. - Group Vice President of Investor Relations [2]

Thank you, Andre, and good morning. Thank you, everyone, for joining our first quarter 2023 financial results conference call. Hosting the call today is Jean-Marc Chery, ST's President and Chief Executive

Officer. Joining Jean-Marc on the call today are Lorenzo Grandi, President of Finance, Purchasing, ERM and Resilience and Chief Financial Officer; and Marco Cassis, President of Analog, MEMS and Sensors Group, and Head of STMicroelectronics Strategy, System Research and Applications, Innovation office.

This live webcast and presentation materials can be accessed on ST's Investor Relations website. A replay will be available shortly after the conclusion of this call.

This call will include forward-looking statements that involve risk factors that could cause ST's results to differ materially from management's expectations and plans. We encourage you to review the safe harbor statement contained in the press release that was issued with the results this morning. And also in ST's most recent regulatory filings for a full description of these risk factors. Also to ensure all participants have an opportunity to ask questions during the Q&A session, please limit yourself to one question and a brief follow-up.

I'd now like to turn the call over to Jean-Marc, ST's President and CEO.

Jean-Marc Chery, STMicroelectronics N.V. - President, CEO & Member of Managing Board [3]

So thank you, Celine, and good morning, everyone, and thank you for joining ST for our Q1 2023 earnings conference call. So let me begin with some opening comments, starting with Q1.

So first quarter net revenues of $4.25 billion came in better than expected in automotive and industrial, partially offset by lower revenues in Personal Electronics. Gross margin of 49.7% came in 170 basis points above the midpoint of our guidance, mainly due to product mix in a price environment that remained favorable.

Looking at our year-over-year performance. Net revenues increased 19.8%. Gross margin at 49.7% was up from 46.7%. Operating margin increased to 28.3% from 24.7%. And net income grew 39.8% to $1.04 billion. On a sequential basis, net revenues decreased 4%.

On Q2 2023, at the midpoint, our second quarter business outlook is for net revenues of about $4.28 billion representing a year-over-year increase of 11.5% and a sequential increase of 0.8%. Gross margin is expected to be about 49%.

For the full year 2023, we will now drive ST based on a plan for full year 2023 net revenues in the range of $17 billion to $17.8 billion, representing a year-over-year growth range of about 5% to 10%.

Now let's move to a detailed review of the first quarter. Net revenues increased 19.8% year-over-year, driven mainly by ADG and MDG, while AMS revenues decreased slightly. Year-over-year, sales increased 17.5% to OEMs and 24% to distribution.

On a sequential basis, Q1 net revenues came in 110 basis points above the midpoint to our outlook. This performance was driven by better-than-expected results in ADG on continued strength in Automotive. And in MDG with General Purpose Microcontrollers, remaining strong in Q1. Overall, Q1 net revenues decreased 4% on a sequential basis, with ADG up 6.5%; MDG lower by 1.1%; and AMS decreasing 20.3%, reflecting lower-than-expected revenues in Personal Electronics on top of seasonality.

Gross profit was $2.11 billion, increasing 27.5% year-over-year. Gross margin increased to 49.7% compared to 46.7% in the same quarter last year. The 300 basis point expansion was driven by improved product mix, favorable pricing and positive currency effect net of hedging, partially offset by higher manufacturing costs.

Q1 operating margin was 28.3%, up from 24.7% in the year-ago period, with ADG and MDG contributing to the 360 basis point growth in operating margin.

On a year-on-year basis, net income increased 39.8% to $1.04 billion from the $747 million and diluted earnings per share increased 39.2% to $1.10 from $0.79.

Looking at our year-over-year sales performance by product group. ADG revenues increased 43.9% on a double-digit growth in both Automotive and Power Discrete. AMS revenues decreased 0.9%, with lower

revenues in Analog and MEMS, offsetting an increase in Imaging. MDG revenues increased 13.2%, with growth in both microcontrollers and RF communications.

In terms of operating margin, 2 of 3 product groups delivered year-on-year expansion: ADG operating margin increased to 32% from 18.7%; MDG operating margin increased to 36.2% from 33.7%; and AMS operating margin decreased to 20.4% from 22.9%.

Net cash from operating activities increased to 39.7% to $1.32 billion in Q1 compared to $945 million in the year-ago quarter.

First quarter CapEx was $1.09 billion versus $840 million in Q1 2022. Thanks to the strong growth in net cash from operating activities, free cash flow grew to $206 million in Q1 2023 versus $82 million in Q1 2022.

Cash dividends paid to stockholders in Q1 2023 totaled $54 million. In addition, ST executed share buybacks of $87 million as part of our current repurchase program. ST's net financial position of $1.86 billion as of April 1, 2023, reflected total liquidity of $4.52 billion and total financial debt of $2.66 billion.

Well, let's now discuss the business dynamics. During the first quarter, demand in the Automotive market and in the Power and Energy portion of the industrial market remained strong, driven by continued semiconductor pervasion and the ongoing structural transformation. Factory automation, robotics and building control grew revenues in line with our strong backlog while new orders normalized. Demand in consumer industrial, communication infrastructure and networking, including data centers and servers, softened. And demand for Personal Electronics and Computer Peripheral further weakness.

Our backlog is now about 6 quarters at the midpoint of our full year 2023 indication, still above a normal situation but with different coverage consistent with the various end-market dynamics.

In Automotive and Industrial, we are still well above the capacity we can serve on some technologies and packages. In the other end markets we serve, we are back to a more normal level of coverage.

Moving now to our Q1 review by end market. In automotive, demand in the first quarter remained strong. Against this backdrop, we continued to execute our strategy for car electrification, in particular in silicon carbide. The number of ongoing silicon carbide programs increased again during Q1. Between the automotive and the industrial markets, we now have 130 projects spread over 85 customers. About 60% of these projects are for automotive customers.

We now expect to generate about $1.2 billion of silicon carbide revenues in 2023, broadly spread among mainly different customers.

We had design wins in Q1 with both silicon and silicon carbide power discretes in automotive applications. This included an ACEPACK power module and silicon carbide MOSFETs for traction investors as well as projects with silicon MOSFETs in battery management systems.

In mid-April, we announced that we signed a multiyear supply agreement with ZF for silicon carbide devices.

Under this agreement, we will supply a volume of double-digit millions of devices that will be integrated in ZF's new modular inverter architecture going into production in 2025.

Speaking more broadly about our automotive portfolio serving car electrification, we won designs for multiple Electric Vehicle makers, including our stellar automotive, MCU, for an onboard charging application.

In car digitalization, we had a number of design wins in key areas. In next generation car architectures, our e-fuse products for zonal controller solution gained traction. In driver monitoring system, we were successful with our global shutter automotive image sensor.

Legacy automotive remains dynamic, and silicon pervasion continues to increase. Here, we had several wins for our SPC5 microcontrollers for vehicle body control as well as our latest products for a secured door zone platform. In our automotive sensor business, we won several new designs for vehicle dynamics, airbags and anti-theft applications.

Moving now to Industrial. Across the industrial market, we see 2 main trends driving a structural transformation in the market and accelerating the increase in the semiconductor content; digitalization of devices and systems and energy management and power efficiency improvement.

During the quarter, demand remained strong overall in both OEMs and distribution with different dynamics across the areas we serve. In B2B Industrial, we continued to see strong demand in power and energy. Factory automation and robotics, building control grew revenues in line with our strong backlog, but while new orders normalize. Consumer industrial such as battery-operated tools and home appliances softened.

During Q1, we continued to see an expansion of design wins across 3 areas of the industrial market we focus on: B2B, consumer and specialized. Our broad offering enables us to support our customers with full solutions combining power, analog, sensor and embedded processing products leveraging ST unique position. Wins include system solution comprised of power discrete, power management and STM32 MCUs in renewable energy applications and multiproduct solution for smart meters and smart grid applications. We also won sockets with intelligent power switches, motor drivers, industrial sensors and secure solution in applications such as industrial automation, asset tracking and server power supplies.

In the quarter, we made a number of announcements related to our STM32 product portfolio and ecosystem. These included a new highly affordable MCU series to replace 8-bit MCUs. A new high-performance MCU series with enhanced security features, a new wireless MCU and a new MPU products. We also continued to build the best developer ecosystem with 2 industry firsts. We introduced a certified MCU security platform that combines hardware and software to simplify development of secure embedded application. And we launched the world's first MCU Edge-AI Developer Cloud that includes an online benchmarking service for Edge-AI models on STM32 boards.

Moving to Personal Electronics. During the quarter, our products were selected for flagship smartphones, watches and other wearable devices. These include NFC controllers and secure element solutions, wireless charging products, MEMS sensors and time-of-flight ranging sensors.

In Communication Equipment and Computer Peripheral, new wins here included products for LEO satellites, a number of products or computer peripherals, including secure solution, time-of-flight sensor and MCUs and ASICs for communication infrastructure based on our proprietary technologies.

Now I would like to mention that we issued our annual sustainability report last week, a couple of key points.

We are on track with our program to be carbon neutral by 2027, and we further increased our global sourcing of electricity from renewable energy growing to 62% in 2022 from 51% in 2021. We were recognized by environmental nonprofit CDP to Carbon Disclosure Project as a global leader in corporate transparency and performance on water security, being one of the few companies to secure a place on its annual A list.

Now let's move to our second quarter 2023 financial outlook and our plan for the full year 2023. For Q2, we expect net revenues to be about $4.28 billion at the midpoint, representing a year-over-year growth of about 11.5% and a sequential increase of about 0.8%, both driven by solid growth in Automotive and Industrial, partially offset by the decline in Personal Electronics. Gross margin is expected to be about 49% at the midpoint.

For 2023, we confirm our plan to invest about $4 billion in CapEx with about 80% of this amount, mainly related to increase of our 300-millimeter wafer and silicon carbide manufacturing capacity including, for silicon carbide, our substrate initiative. The remaining 20% is for R&D, laboratories, manufacturing maintenance and efficiency and our corporate sustainability initiatives.

Based on our visibility, we will now drive the company based on the plan for full year 2023 revenues in the range of about $17 billion to $17.8 billion, representing a growth over 2022 of about 5% to 10%. Automotive

and Industrial will be the key growth drivers of our revenues in 2023.

To conclude, as we have discussed, we are operating in an environment with significantly different dynamics depending on the end markets we serve. But based on our leadership position, strategic approach and current visibility, we anticipate 2023 another year of revenue growth and profitability improvement toward our $20 billion-plus ambition and related financial model.

Thank you, and we are now ready to answer your questions.

Question And Answer

Operator [1]

[Operator Instructions] The first question comes from the line of Didier Scemama with Bank of America.

Didier Scemama, BofA Securities, Research Division - Director in EMEA Equity Research & Head of European IT Hardware [2]

Jean-Marc, you've got -- maybe first question, looking at the second half and the sort of changing dynamics that you highlighted. There's been a number of sort of conflicting reports when it comes to the automotive market during Q1 earnings season. So can you just give us a sense of what your orders look like for the second half of '23 and perhaps the visibility you have into 2024?

And then a question for Lorenzo. I think you mentioned previously that gross margins would be broadly flat for calendar year '23. Obviously, your first half is running quite a lot above that guidance. So any reason to change the full year guide on gross margin to raise that? Or do you have any other additional headwinds that you want to flag in the second half?

Jean-Marc Chery, STMicroelectronics N.V. - President, CEO & Member of Managing Board [3]

So I will answer about the revenue for the year in H2 versus H1, and Lorenzo will speak about gross margin. Well, let's say, in H2, at the midpoint of the indication we provided, we anticipate a growth of 4% H2 versus H1. And again, it's important that in H2, as I -- while new -- during our Q4 earnings announcement in January, we will have a specific mix change in important customer program in Personal Electronics. And this mix change is material. Here, I have spoken H2 year-over-year in Personal Electronics of an impact of $0.5 billion. And despite this impact, the company will grow in H2, driven by automotive and industrial market, 4% H2 versus H1, and will grow year-over-year H2 2023 versus H2 2022. So this is okay, the demonstration that, okay, we are really resilient in front of the Personal Electronic market.

Well, about the backlog, it is clear that the backlog coverage is following exactly the market dynamics. We are fully covered in backlog for automotive and basically industrial power energy-related and B2B automation, robotics and, let's say, building controls. But where -- okay, we have still to enter order for the second part of the year is more on consumer industrial, is more, let's say, on servers and definitively on pure consumer related, like Personal Electronics and Computer Peripheral.

So that's the reason why our confidence level to have raised the low end of our indication from $16 million to $17 million is very good. We have not raised the range because, on Power Energy and Automotive, we are still facing some capacity limitation. In key technology cluster, that 14-nanometer, silicon carbide, IGBT, all okay, which are really driven our goals. So this is H2 versus H1 dynamic and the complexity, let's say, of the environment we are facing.

Now about gross margin, okay, Lorenzo?

Lorenzo Grandi, STMicroelectronics N.V. - President of Finance, Purchasing, ERM & Resilience and CFO [4]

I take the question. Good morning, everybody. About the gross margin -- for the gross margin at midpoint of our revenue indication for the year, we do expect to have a gross margin ranging between 47% and 48%. In the year, of course, the positive product mix, we have manufacturing product improvement. Substantially, we

will see an overall price stability. This will be offset by increase in food cost in our manufacturing. And then we have not to forget that in the second part of the year, we will have the impact of the ramp-up of the 300-millimeter in the graph that there will not be their optimal capacity, and this will impact our COGS in the second half. This is the dynamic, let's say, when we look at the current year with last year.

If we go a little bit more and specific to compare, let's say, the first half with the second half of this year, of course, in H1, gross margin has benefited from a sequential positive price effect. We had also a strong positive impact on the product mix. While in the first half of the year, our gross margin has not yet been significantly impacted by the increase of the input and manufacturing costs. In H2, on the contrary, we expect to be impacted by some increased sales price pressure, even if in the year, this will be, let's say, substantially neutral. But in the second part of the year, we will see negative price pressure when looking sequentially.

Manufacturing input costs will increase. Then there will be also some less optimized production level in some specific facts, the ones that are more exposed to consumer or Personal Electronics. And as I was saying before, in the second part of the year, there is the impact of our 300-millimeter graph that really today is in the start-up, but in the second part of the year, we'll enter in our cost of goods sold. So at the end, let's say, the visibility, I repeat, that the visibility for the -- will be -- we have a gross margin that will be ranging between 47% and 48%.

Didier Scemama, BofA Securities, Research Division - Director in EMEA Equity Research & Head of European IT Hardware [5]

Got it. I just wanted to clarify, Jean-Marc, did you say that the headwind from your sort of market customers and Personal Electronics is $0.5 billion year-over-year in the second half? Is that what you said?

Jean-Marc Chery, STMicroelectronics N.V. - President, CEO & Member of Managing Board [6]

Yes.

Didier Scemama, BofA Securities, Research Division - Director in EMEA Equity Research & Head of European IT Hardware [7]

Okay. Got it. And then maybe a quick follow-up. I just wondered if you could discuss a little bit the pricing environment in the second half. In microcontrollers, there's a number of sort of reports out there in Asia that pricing is getting weaker, especially in the consumer and PC peripherals, et cetera, market. So first of all, maybe remind us where you play in those markets and whether you are tempted to follow this price action or refer to dedicate your capacity to automotive and industrial microcontrollers to protect pricing.

Jean-Marc Chery, STMicroelectronics N.V. - President, CEO & Member of Managing Board [8]

Yes. My first comment is you cannot speak about price generally across the board. As we described, okay, we are really facing complexity with really significant different market dynamics. And of course, okay, you have to manage your price. Let's say, being selected, it is clear when you face, let's say, competition on pure consumer connected device is absolutely not the same when you are competing in a power box where you are managing the power solution.

So we cannot speak about the price across the board. Yes, we do believe that in H2 in the field of consumer where you will have, let's say, lead time of production supply coming back to normal and potentially here and there in some specific location, some capacity flexibility to see price pressure. And ST, we will manage it selectively. Overall, okay, it will land on what described Lorenzo, so across the board, across the year, we should see a price, okay, basically stability...

Lorenzo Grandi, STMicroelectronics N.V. - President of Finance, Purchasing, ERM & Resilience and CFO [9]

[indiscernible]

Jean-Marc Chery, STMicroelectronics N.V. - President, CEO & Member of Managing Board [10]

And in H2, yes, okay, we will see some minus.

Operator [11]

The next question comes from the line of Matt Ramsay from TD Cowen.

Matthew D. Ramsay, TD Cowen, Research Division - MD & Senior Research Analyst [12]

My first question, I wanted to ask the silicon carbide target. You guys had talked for a while about billion dollars in 2023. And then I think in January, you had said greater than $1 billion, and now you're talking about $1.2 billion, which is great. I think all of us saw the announcement with ZF and what that could potentially mean. I guess my question on that is, for the industry ramping material supply, we get a lot of conflicting reports, some bumps with your primary material supplier, some news of potentially ramping supply at other sources. So Jean-Marc, maybe you could talk a little bit about your near-term plans for getting silicon carbide material supply to support that revenue ramp and if there's any update. I think you mentioned in the script, increasing investments on your internal substrates. If you could give us an update on the time lines there where you can guys can start to supplement your supply with internal supply, that would be helpful.

Jean-Marc Chery, STMicroelectronics N.V. - President, CEO & Member of Managing Board [13]

Well, okay, I will not comment, okay, the other competitor and supplier. Clearly, I really confirm the $1.2 billion. We know that ST, okay, according some numbers, we see that in 2022, we have about 40% of market share. And with this $1.2 billion looking like, according to market data we have, that we will increase our market share. But thanks to our capability to deliver wafer out and module and package out according customer expectation. And thanks, okay, to the multiple source we have in raw material, saying that we are really on track to be in position starting 2024 to produce raw material for our own needs and going forward, okay, to achieve 40%.

Now this will be first in 6-inch definitively. We are preparing the 8-inch conversion. So we have already produced one 8-inch ingot from our former industrial, okay, let's say, facilities. And we are qualifying the 8-inch device according our qualification protocol. So we anticipate that we will start 8-inch activities, let's say, in second half of 2024.

Well, then after, we have, let's say, other opportunity for silicon carbide, first, to qualify also the SmartSIC technology, which will be very, very instrumental for cost decrease, but for 8-inch wafer size conversion. We will qualify in the second half of 2023, our generation for silicon carbide, that we will start to ramp up in 2024. So this is what I can confirm to you.

Well, then looking at the market evolution and the number of programs and the number of customers we have, we are very confident to deliver about $2 billion in 2025, 2026. And then, okay, to have a target, okay, long term, well above $5 billion when the market will reach $15 million. So this is really the road map we execute. I don't say clock watch, but we execute every quarter and every year fully consistently with what we said since the beginning.

Matthew D. Ramsay, TD Cowen, Research Division - MD & Senior Research Analyst [14]

Thank you, Jean-Marc for the detail. I realized the sensitivity on some of the near-term stuff there. As my follow-up, Lorenzo, you had talked about some of the potential gross margin impacts in the second half of the ramp of 300-millimeter capacity. So I wanted to ask about that a little bit, maybe just to kind of follow on to Didier's question. There's certainly some angst in the system around pricing and margins. So I guess the first one is, could you maybe quantify, if you could, the gross margin impact just from the 300-millimeter ramp in the second half of the calendar year? And then I mean, really strong margins up to 49% in the guidance. I think folks are wondering if that -- is that a peak? Is that a new normal? How would you consider that? And maybe if there's some price pressure, when do you feel like the 300-millimeter capacity will be at a scale to be a positive driver of margins rather than a near-term ramp-up headwind?

Lorenzo Grandi, STMicroelectronics N.V. - President of Finance, Purchasing, ERM & Resilience and CFO [15]

Clearly, in the second part of the year, when the fab -- 300-millimeter fab in Agrate will exit from the ramp-up accounting that today is bringing, let's say, the equivalent of the saturation cost, so the excess cost in the line of other income and expenses. We will see, let's say, this impact coming directly in our COGS.

How much this will impact? Of course, this is temporary because it's due to the fact that the 300-millimeter is not at a reasonable, let's say, level that will reach in order to be substantially neutral and start to contribute positively to our gross margin in the course of 2024.

In 2023, for sure, this will not happen. We need to reach in 2023, our capacity will be still, let's say, at the level of below 1,000 wafer per week and let's say, significantly below. So at the end, this is a size for a 300-millimeter that is definitely not accretive for the gross margin will be increasing the cost.

Looking overall, let's say, the second part of the year -- as I was saying before, there are 3 components that are impacting our gross margin. On one side, there is the impact of the 300-millimeter. On the other side, there will be the impact, let's say, of the fact that we will start to see materially the increased cost in our manufacturing that today is partially, let's say, suspended in our inventory. But then it will come down in our P&L starting already partially in this quarter in Q2, but definitely with much higher level of impact during Q3 and Q4. And the other side, there will be also, let's say, some impact related to the price pressure that we were discussing before and the mix.

How this will account when we compare the first half and the second half of our gross margin? I would say that 1/3, 1/3, 1/3. More or less, let's say, we can see that this is the impact of these 3 main elements that on one side are the impact on pricing in our top line, on the other side is the impact of the increased cost in our manufacturing costs then on the other side is the 300-millimeter.

And I repeat just to clarify, this is a temporary impact, let's say -- and then, of course, in the second part of the year, as I was saying before, there are some of our fabs that are not working at optimized production level. Why? Because, of course, we are also keeping under control our inventory. And as you see, we have some of these steps, the ones that are more exposed to consumer or Personal Electronic, let's say. We needed to be sure that we are not inflating our inventory. So this is another impact that is fully taken into consideration in our indication of gross margin of the year between 47% to 48%, but will contribute, in any case, to add on our gross margin in the second part of the year as a de facto.

Operator [16]

The next question comes from the line of Stephane Houri from ODDO BHF.

Stephane Houri, ODDO BHF Corporate & Markets, Research Division - Research Analyst [17]

Actually, I wanted to come back on the price dynamic, notably in the Automotive segment because, in the past, you have explained that the relationships with the Automotive industry had changed a bit and that you were not expecting prices to collapse, but maybe come back to a more normal trend. So is that what you're seeing at the moment or not yet?

And the question linked to that is with the temporary impact that you're talking about for the gross margin in the second half, are you still comfortable with your target to get back to or to go to 50% gross margin within the time frame of your plan?

Jean-Marc Chery, STMicroelectronics N.V. - President, CEO & Member of Managing Board [18]

Yes. So definitively, so -- but of course, Lorenzo, with further comment. Again, we repeat what are the key driver for gross margin improvement. I think Lorenzo elaborated that we have a temporary impact of Agrate ramp-up definitively, which is not -- absolutely not a surprise. It is mitigated by the ramp-up of coal at the same time. And each time we are increasing coal ramp-up according to the plan of record we have with the liberty project, okay, for sure, we mitigate also Agrate. When Agrate it will reach the adequate scale, Agrate will contribute to the gross margin of ST. So the 300-millimeter is one of the main elements.

I repeat, the second element is the silicon carbide moving forward to 200 millimeter. And thanks to the SmartSIC technology, which is really key to make the 200-millimeter successful, okay, we will have

important leverage to decrease our costs and, of course, okay, to contribute to the gross margin improvement. It is clearly the 2 important, let's say, contributor.

Well, then after the loading of our fab, temporarily in H2, some fab, okay, will face, let's say, not fully optimized loading, but it is mainly related to Personal Electronics. But just to give you an order of magnitude, okay, in 2023 at the midpoint, Personal Electronics, okay, will decrease 25%. And half of the decrease is not silicon impact because it is an optical module product mix change with no impact on the loading, but has had an impact on the loading. So of course, okay, in H2, we have this temporary non-loading that we will compensate moving forward because the demand on advanced BCD technology, advanced lower technology for automotive, industrial is more and more increasing. So then, okay, we will come back to a full loading of our fab starting 2024 definitively. So that is the reason why we confirm to you that the $20 million-plus ambition, we will deliver the 50% gross margin.

Well, about the pricing on automotive. Now, okay, we position this business and the demand of the customer on technology cluster that radically changed compared 2 years ago. Now, okay, we are at 40-nanometer technology, 28. Maybe tomorrow, we will be at 18 technology, silicon carbide, GaN, IGBT modules. So it's a complete different mix compared to the past. And on this technology, there is no more excess of capacity. And the investments are cautious. There are no excess of investment worldwide on all this kind of technology, let's say, clusters because, first, it is either on 300-millimeter or it is on [indiscernible]. And this is calling for CapEx that companies are spending cautiously. And that in this field of activity, the foundry business is quite tight, okay? There is no, let's say, excess of foundry competition in competing in the field of automotive.

So that's the reason why. Yes, we will go back a normalized price discussion with the customers. More and more, we will have straight discussion with the carmakers. Clearly, it is a trend we are seeing. So the model, okay, moving forward, okay, is not the model we had 5 years ago or 10 years ago. Well, saying that, okay, Lorenzo, you can comment.

Lorenzo Grandi, STMicroelectronics N.V. - President of Finance, Purchasing, ERM & Resilience and CFO [19]

Yes, maybe just a clarification. When we were talking about the impact of pricing in the second part of this year, it's not actually in automotive. Automotive has been rediscussed. The pricing, as I was saying, is increasing. Indeed, there is some decline in price on a sequential basis on different areas than automotive that the one -- that are most exposed to the difficulties of the market. We are talking here about a big consumer portion of the industry. And indeed, at the end, between automotive increasing pricing, maintaining pricing and, let's say, some other areas in which there is a normal dynamic price decline, at the end, the price will be substantially flattish in the year.

In respect to the gross margin, I'll just confirm what Jean-Marc said. And of course, also, let's say, we need to consider that reaching our target, let's say, of the 50% gross margin, a $20 billion-plus is not linear. It means that we may have some quarter like you have seen in which we are very close already to the target like in Q1. Some other in which we will be a little bit, let's say, down, one of the reasons we discussed before, let's say, when we introduce our 300-millimeter, not yet at the full size. So -- but at the end, the trend will be that one when the one that will bring the company to gross margin at 50%, let's say, when the size of our top line will be in the range of the $20 billion.

Operator [20]

The next question comes from the line of Andrew Gardiner from Citi.

Andrew Michael Gardiner, Citigroup Inc., Research Division - Research Analyst [21]

Two follow-ups to questions that have been asked, if I could. First, Lorenzo, you mentioned inventories and making sure that you are sort of continuing to manage inventories pretty tightly given the end-market dynamics that you're seeing. Inventories rose quite a bit on your books in the quarter, yet, of course, it doesn't seem as though you weren't short of demand per se in the quarter at a group level. Clearly, you beat your guidance and you didn't pump the brakes on -- you need to pump the brakes on the fabs in the first quarter at a high level that's still delivering gross margins well in excess of your guidance. So can you just sort of

describe what was driving the inventory increase in first quarter? Did that come as a bit of a surprise perhaps towards the end of the quarter? Or is it -- it's really there in preparation for what you're seeing across the different end markets in the second half? And then I have a follow-up on silicon carbide.

Lorenzo Grandi, STMicroelectronics N.V. - President of Finance, Purchasing, ERM & Resilience and CFO [22]

Yes. For sure, I take this question. Our Q1 came better than expected in terms of revenues, let's say, mainly impacted by 2 elements. The first one was better mix in respect to what was expected. And on the other side, let's say, a better price environment. It Means that at the end, let's say, we were modeling pricing, already started to decline in some areas, while instead this did not happen. This and a positive impact on the 2 sides. And I would say, on one side, on the revenues. On the other side, of course, on the gross margin.

Anyway, our Q1, let's say, inventory, as you rightly said, came above the expectation. They are higher because we were 100 -- we are at 122 days compared the starting point at the end of Q4 that was in the range of 100 days. This level is mainly associated to excess of inventory that has been done in Personal Electronics and in consumer, where the market were weaker than what we were expecting. So we were, let's say, producing, the revenues came a little bit in a different way, let's say, with better mix, better pricing but lower quantities in some product lines. And this, of course, bring an increase in our inventory that was not forecasted, let's say, at the beginning of the quarter.

We will correct, during the year, such excess where we will land, let's say, at the end of the year. Also considering that we will enter, let's say, the allotted 300-millimeter of the week that we will have in Agrate 300-millimeter. At the end, we do think that at the end of the year, let's say, how -- the number of days of our inventory, let's say, will be slightly above the number of days that we have, let's say, at the end of 2022. So it will be something in the range of 105, 110 days of inventory at the end of 2023.

Andrew Michael Gardiner, Citigroup Inc., Research Division - Research Analyst [23]

And then just quickly on silicon carbide. I mean, Jean-Marc to the comments you made in your prepared opening, now at $1.2 billion for 2023, let's say, maybe 20% uplift relative to what you were explaining to us in the second half of last year. It's a 60% to 70% year-on-year growth rate relative to 2022, and that's coming at a time when some of your peers seem to be struggling in terms of their silicon carbide ramp. So where are you able to get this extra capacity out? You also mentioned during your prepared comments that SIC remains pretty constrained, although maybe that was a high-level comment. Where are you able to eke out an extra 20% of wafer or module supply in silicon carbide?

Jean-Marc Chery, STMicroelectronics N.V. - President, CEO & Member of Managing Board [24]

Marc here. First of all, internally, now we have really our 4 manufacturing location. So 2, 4 fabs, so Singapore and Catania and 2 for assembly, so Shenzhen and Bouskoura in Morocco running altogether in full mass production. And thanks to the CapEx we spent in H2 2022 to increase the capacity. Well, then we have diversified our raw material source because also we anticipated some difficulties of one wonders in the sum of amount for last year. So we secure ourselves in terms of success.

Well, and last, okay, I think it's important I mentioned that now the demand we have is really well diversified. Our main customer is representing below 65% of the total revenue we expect. And we have the program we won during the past 2, 3 years that are starting to generate significant revenue for ST.

So all in all, I would like simply to confirm that we invested last year, and we have executed the capacity implementation properly. Now with 4 locations running full speed, we have our demand well diversified and new program ramping up on top of the main customer we have. And we have secured worldwide with different sources located in different places in the world to secure our ramp up, waiting for our internal stocks to be ready and to sustain our ambition to grow above $2 billion and towards $5 billion.

Operator [25]

The next question comes from the line of Sztabowicz, Sébastien with Kepler Cheuvreux.

Sébastien Sztabowicz, Kepler Cheuvreux, Research Division - Head of Tech - Equipment Research [26]

On silicon carbide, could you please make an update on your technology road map there? And you mentioned that the Gen 4 is like strong, if I'm right, by H2 this year. Could you provide a little bit of timing for the ramp of Gen 4, but also Gen 5? And what kind of improvement are you expecting from Gen 4 and Gen 5 versus your third generation of silicon carbide technology?

And the follow-up is on the inventory level on your 2 main markets, automotive and industrial. Where are the inventories standing versus the normative level?

Jean-Marc Chery, STMicroelectronics N.V. - President, CEO & Member of Managing Board [27]

So the Generation 4 will be maturity, what we classify maturity mass production in the second half of 2023, so -- and ready for production in 2024. And the timing will be, let's say, consistent with the qualification time we need to do on the automotive, let's say, market. So we will ramp up smoothly in 2024, okay, according to the timing of qualification. But internally, this technology will be qualified by the second half of this year.

The Generation 5 will follow basically 18 months later. Generation 4 and Generation 5 are still planar technology, where we significantly improved the performance and with absolutely, okay, no gap versus the best-in-class technology we can assess. Well, then we will move to Generation 6, okay, where we will make a disruption. But okay, I will comment in due time definitively. So again, Generation 4 and 5, let's say, will improve the performance of -- on the device that is enabled by the technology.

In parallel, do not forget that we will implement 2 important, let's say, process change. The 200-millimeter, that is not a piece of cake for silicon carbide. I don't want to be technical, but it is not a piece of cake. You have many mechanical effects, which are not so easy to control when you increase the wafer size of silicon carbide is point number one. And for us, still the point number two, we will implement the SmartSIC technology, which will be really an important add-on that will enable better performance on the device, lower cost of the solution at substrate level and will make easier the conversion to the 200 millimeter.

So 2 technology in the next 3 years implementation and 2 major process change, 200-millimeter and SmartSIC introduction. And then, okay, later on, we will introduce the Generation 6, which will be a discussion in terms of architecture of the transistor.

Sébastien Sztabowicz, Kepler Cheuvreux, Research Division - Head of Tech - Equipment Research [28]

And on the inventory question on auto industrial, where are we standing right now?

Lorenzo Grandi, STMicroelectronics N.V. - President of Finance, Purchasing, ERM & Resilience and CFO [29]

Inventory, you mean in the channel, I suppose the...

Sébastien Sztabowicz, Kepler Cheuvreux, Research Division - Head of Tech - Equipment Research [30]

Yes, definitely in the channel.

Jean-Marc Chery, STMicroelectronics N.V. - President, CEO & Member of Managing Board [31]

Well, you know that we monitor pretty well the inventory and the distribution channel. Well, here, okay, it's clearly following the market dynamic, okay. When you are through distribution addressing mainly, okay, for us, the industrial market, we are coming back now to a normal coverage in terms of inventory. So it means we have inventory turn between term of 3 to 4, whatever are the devices, microcontrollers, analog, power overall. Of course -- and of course, we have some inventory which are, let's say, as upper limit that we access generally like MEMS. Why? Because they have been impacted by the Personal Electronic market dynamics.

So that's the reason why, okay, we will control in our, let's say, revenue target of inventory at distribution level. Again, except the inventory in front of consumer market, we do not detect any excess of inventory. Inventory, our distribution, are just at the level for distributors to manage term business, to manage the situation, which is a normalized situation.

Well, then about our Tier 1 and, let's say, the supply chain, supplying the carmaker. At this stage, especially, of course, on all the technology driven by smart mobility and electrification, digitalization, we do not detect absolutely any inventory in excess. On legacy automotive, it's difficult to say because, for us, we are supplying 40-nanometer, we are supplying the BCD9, BCD8. And the demand is still very, very strong. So we do believe that on this kind of technology cluster, there are no inventory in excess across the supply chain.

Operator [32]

The next question comes from the line of Lee Simpson with Morgan Stanley.

Lee John Simpson, Morgan Stanley, Research Division - Equity Analyst [33]

Just trying to sort of tease out a little bit more the pricing headwinds you're talking about going into second half of the year. So I think as others have suggested, we are seeing some signs of slowing demand in MOSFET, lack of tightness being seen in various areas in power semis. And at the same time, the foundries are talking about slowing order book for autos. I'm just trying to understand which side of the fence or both perhaps are impacting in the second half and what that means for order book momentum, particularly Q3 of this year?

And maybe if I could just come back to the overall backlog. I mean, you've been very good in previous quarters to talk about their relative size of the backlog to the outgoing business over the next few quarters. Could you maybe just update us and give us some relative size of backlog?

Jean-Marc Chery, STMicroelectronics N.V. - President, CEO & Member of Managing Board [34]

Well, so I will start with the backlog. So today, the total backlog we have in our hand requested by customers represents about 6 quarters of revenue. I would like to say that it is pretty on balance versus the end market we address. Again, on automotive overall, on power energy and professional B2B industrial, the backlog coverage we have are well above these 6 quarters. And the order entry we are seeing now are loading smoothly year 2024. Why? Because the lead time we can provide to this customer are still well above 1 year. So moving forward, quarter-after-quarter, they are loading our backlog consistently with the end demand, which is very strong, and the lead time we can offer.

Then you have another dynamic where the demand is solid, growing with existing backlog, but where clearly we are reducing our lead time. And clearly, when we are reducing our lead time, the customer order, they take into account. So they are temporarily reducing their order in order to have a backlog coverage, which is consistent with our lead time. And here, the coverage, okay, will be between 3 to 4 quarter total backlog.

And on the consumer industrial on servers, okay, on this kind of activity, we are going in this direction. But then you have some markets where, clearly, there is a weak end demand. There is clearly inventory correction. And then, okay, the backlog we have is reducing and the order we have are low. It is typically the Computer Peripheral, computer-related and the Personal Electronics. And here, we are going back to a normal situation where we have, for some customers which are, let's say, well in control with their supply chain, they give us a rolling 2-year visibility. And there is some customers that are giving usual 3- to 4-quarter visibility.

So we -- I have to say if I would like to classify overall our backlog, we are 6 quarters. We do believe we will finish the year 2023 with the coverage will be between 4 to 5 quarters, which is still above a normal situation. Normal situation is 3 to 4 quarters. So this is dynamic, okay, I can tell you. And this is totally consistent, okay, with the indication we have provided to the year to reach at the midpoint, $17.4 billion, but still with the possibility to go to the upper range.

Celine Berthier, STMicroelectronics N.V. - Group Vice President of Investor Relations [35]

Does this answer your question?

Lee John Simpson, Morgan Stanley, Research Division - Equity Analyst [36]

Yes. Just wanted to circle back on perhaps the evidence or perhaps the product categories where you're seeing those pricing headwinds, in particular, as it relates to autos. I mean are we vectoring more on power semis? Or do we see this starting to happen as perhaps a peak pricing dynamic around control?

Jean-Marc Chery, STMicroelectronics N.V. - President, CEO & Member of Managing Board [37]

To come back to your MOSFET point. MOSFET is part of the power supply or power management of some application in the field of servers and computers. Of course, okay, here, as this market is softening or is weakening clearly, okay, the demand for this specific MOSFET is weakening. But MOSFET is very large, okay. You have high voltage. You have low-voltage MOSFET. Then you have IGBT. You have the silicon carbide. Again, and the MOSFET are going everywhere and -- are going everywhere in all the applications.

And I can confirm to you that on MOSFET, overall, as they're seeing all the automotive application and importantly, energy storage, energy conversion, energy transportation, the demand is very strong and the capacity are fully loaded. And we are still struggling to support our customer at the level of what the demand on IGBT, on silicon carbide, on VI power, vertical integrated power, on BCD9 for power switches and on low voltage and high voltage MOSFET as well, everywhere it is for power management for automotive and industrial application. Yes, on computer, the demand is weak, but this is not a surprise.

Celine Berthier, STMicroelectronics N.V. - Group Vice President of Investor Relations [38]

Thank you very much. And we have exceeded the time. So I apologize, this was the last question. Thank you very much all of you. This will end our call session this time.

Lorenzo Grandi, STMicroelectronics N.V. - President of Finance, Purchasing, ERM & Resilience and CFO [39]

Thank you.

Jean-Marc Chery, STMicroelectronics N.V. - President, CEO & Member of Managing Board [40]

Thank you.

Operator [41]

Ladies and gentlemen, the conference is now over. Thank you for choosing Chorus Call, and thank you for participating in the conference. You may now disconnect your lines. Goodbye.