CORPORATE PARTICIPANTS

Martha N. Sullivan  Sensata Technologies Holding plc - CEO & Executive Director

CONFERENCE CALL PARTICIPANTS

Jonathan Edward Dorsheimer  Canaccord Genuity Corp., Research Division - MD & Analyst

Gregg A. Lowe  Cree, Inc. - President, CEO & Director

Vincent D. Mattera  II-VI Incorporated - CEO, Principal Operating Officer & Director

PRESENTATION

Jonathan Edward Dorsheimer  Canaccord Genuity Corp., Research Division - MD & Analyst

So I've called each of the speakers up so I'd like to get started. So as you grab the food, have a seat. We're lucky enough, this is one of the keynotes of the day to have the perspective from Electrification power density 3 major suppliers. So I have Gregg Lowe, who joins me first on the left, CEO of Cree; Martha Sullivan, CEO of Sensata; and I've got Chuck Mattera, CEO of II-VI Incorporated. It's interesting, I've gotten to know each of you a little bit in very different ways, Gregg and I were competitors when we first got to know each other. We met at a lighting conference, at the time he had just taken the position at Cree, and they were still largely in the lighting business and not anymore now, today. And I found his view, from a CEO perspective, quite refreshing actually. Martha, I got to know through Bain Capital, Sensata and sort of the pullout or extraction of Texas Instruments, and then spending some time on the road with you and getting to know how you're running that organization. And then Chuck, certainly, when you were at -- changing the Vitesse Semiconductor or what was Bell Labs, and talking some electrical engineering with you was fun. So with that being said, I'd like each of the panelists to kind of frame their company and how they see themselves, certainly, Gregg, with your transformation, but it's equally -- each one you is kind of framing how you see your company positioned in this trend.

Gregg A. Lowe  Cree, Inc. - President, CEO & Director

Well, thanks. Thanks, Jed. So I've been with Cree now for a little over 1.5 years, and joining the company did a very extensive kind of strategic analysis of the company and tried to determine where we were going to focus the company going forward. So coming in, our largest division was our lighting business, we made lighting fixtures for commercial buildings and our smallest division was Wolfspeed. Going through the strategy analysis, we determined that really Wolfspeed was going to be the real key driver of the company going forward. So we focused our energies on that Wolfspeed as our silicon carbide and gallium nitride technology used in electric vehicles and 5G base stations and so forth. We subsequently sold off our lighting business. That transaction occurred a couple of months ago. And now we are a focused semiconductor company, focused on silicon carbide, gallium nitride technologies.

Jonathan Edward Dorsheimer  Canaccord Genuity Corp., Research Division - MD & Analyst

Great. Martha?

Martha N. Sullivan  Sensata Technologies Holding plc - CEO & Executive Director

Yes. Thanks, Jed. We think about Sensata Technologies as an industrial technology business, our foundation of the business is primarily sensors, and we've been in that space for quite a while. Our focus is on mission-critical sensors, so you'll find us on the flight controls of an aircraft, in braking systems and things that are very, very difficult to do, often mandated.

Increasingly though, we are building our portfolio in augmenting those sensors with subsystems, embedded softwares and also more digital solutions. And it's a really exciting time at Sensata. As a result, we're actually intercepting more of the mega trends that we've been talking about, things like Electrification, Smart & Connected and the industrial space. One example, we recently announced our first market win with a vehicle...
area network or think of it as a wireless hub that you'll find in commercial fleets, and what we're doing there is we're taking our #1 position as a wireless sensor supplier in industrial and bringing that into the vehicle area network and then into the cloud, just one example. What comes out of that is a business that is I think even more technical than we've been in the past and we have a strong legacy of technology and more diversified. So we're down from about 70% auto exposure to about 58%, and yet, our auto business grows really well and are really in a strong fashion, so a little bit about how we're positioned.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Great. Chuck. Okay, II-VI.

Vincent D. Mattera - II-VI Incorporated - CEO, Principal Operating Officer & Director

Yes, good afternoon, everyone. Jed, thanks for inviting us, it's a pleasure to be on this panel with Martha and also with Gregg. II-VI was founded in '71, I joined the company when it had $70 million in sales, we're about $1.3 billion company. We are at the core, an engineered materials company. We have diversified through a number of organic and acquisition-based investments, we've done over 20 of them in the last 15 years, we're on a run rate to do about $1.3 billion in our fiscal year, ending in June 30. Silicon carbide was an example of the kind of long-term thinking and patient investments that an engineered materials company would think about making. We started investing in 1998, probably about 10 or 15 years after Cree was founded. And that business, when I joined the company as an executive in 2004, had about $0.5 million in sales. And it's about -- represents about 6% of our consolidated sales today. It's been a significant driver for us. It set the foundation for us for serving a number of the mega trends that we have in front of us, electric vehicles and Electrification is one and then the fifth generational wireless communications infrastructure is a second one. I'm really excited to be here.

QUESTIONS AND ANSWERS

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Great. Thank you. And -- so Martha, maybe for you if -- maybe if you would start, I'm curious -- I see Sensata as a bit of a hybrid because you serve the traditional ICE-based auto industry. And where -- and I'm sure, Gregg, you're in hybrids, but large -- to a large extent, silicon carbide is a value proposition for battery-electric vehicles. So the path to market and the channel, sort of lessons learned, if you will, from TI to Sensata in terms of serving that market and your thoughts of how that transition will morph as we look at the Electrification through battery-electric vehicles?

Martha N. Sullivan - Sensata Technologies Holding plc - CEO & Executive Director

Yes. It's such an interesting time in the business right now. If I think back to Texas Instruments to Sensata, a lot of great things coming out of TI. We're very much a technology-focused business, we have a technical ladder, a lot of wonderful cultures and practice that came out of that. But looking at the evolution of the market, it is quite different now. And when I think about the automotive landscape in particular, for decades, we've seen that industry really act like a classic industry where you could use market foresights, you build scale, scale is really, really important and a lot of the wealth creating going to where you saw that scale being built. And that worked really well for us from a sensor perspective. We've got a very strong, very large scale, high margin foundation in the business. When we look at what's happening with the disruptive forces across the market, it is a time for agility in -- and a much broader range of technology, then we positioned ourselves very, very well over the past 4 or 5 years with Electrification in mind. When we look at the portfolio today, roughly 90% of our auto portfolio aligns to these mega trends, whether it's Electrification, whether it's autonomous, a lot of that is actually outside the powertrain of the vehicle. So the -- what we see is the need to be agile and broad in our technology base.
Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Gregg, maybe for you. I mean, we're already seeing the transformation out of Cree, you've divested of lighting, you're kind of seem to be very focused, background in semiconductors, growing the Wolfspeed and the massive investment that you've announced. But maybe talk about how a new supplier into a traditional industry -- how you're going to go about that path to market and path to money?

Gigg A. Lowe - Cree, Inc. - President, CEO & Director

I have personally a lot of experience in the auto industry, fun little factoid as Martha and I both worked for Texas Instruments. We both worked in the Detroit field sales office and I think you sat about 12 feet away from me. So we both kind of came from that auto heritage of -- so it's something that I'm personally very comfortable with. My 30 years in semiconductor were largely focused in automotive. And I think the automotive supply -- the automotive customers are interested in several important themes.

One is, do you have a long-term perspective? When you get designed into a car company, this is a 10-year marriage. It's 5 years of developing or 4 years of developing and then production for a number of years and then after production service and so forth. So they're really looking for somebody who is thinking long term. So as we invest in our own technologies, they want to see us investing for that long term, hence the $1 billion capacity expansion that we announced a month or 2 ago. So that's important. The second is reliability, quality and reliability, and do you have a fundamental infrastructure that allows you to get AEC-qualified in these various different automotive certifications. Super important, the quality defect rates that most companies measure themselves on is a spec called parts per million, how many defects per million, the auto companies have moved to parts per billion, and so very small amount of defects and so forth. And the good news is silicon carbide as a material is fundamentally more reliable than silicon. So I think both of our interests are really aligned there, I think in that regard.

And then finally, what I think is really interesting about the move to Electrification from an automobile manufacturer perspective is that it is changing something that's been very fundamental to their companies and that is the engine in the car was sort of the thing they built the car around, and if you think about the naming convention of BMWs, a S20 is a 2 liter. S25 is 2.5 liter, they even named their cars after the engine in some regard. So this transition to Electrification, which I think they all see is happening, is a tremendous transformation in their own companies. And what's that done is it's got them very interested in what we're doing from a silicon carbide perspective, what the module and the inverter manufacturers are doing and how do they get their hands around the supply chain that is basically going to replace a pretty important identity for them.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Chuck, I guess, one, would you agree disagree and then also -- agree and disagree on the marriage component in terms of the relationship built, as Gregg just alluded to? And do you see that as a potential challenge if you're marrying up to one that's possibly going to be disrupted in the industry?

Vincent D. Mattera - II-VI Incorporated - CEO, Principal Operating Officer & Director

Okay. Well, let me say that for an engineering materials company we have grown substantially by thinking about the world through a vertically integrated value-added business model. And we are addressing 7 markets, all of which are -- have the ability to enable our growth at the rates that we have done historically and that we aspire to do. And it's clear to us from the time that we got started in this that the supply chains would ultimately be reordered. And as I think you maybe said it earlier this morning, there's disruptions happening and we understand that we will either disrupt or be disrupted. And we've been at the business with our organic investments and our acquisitions to disrupt everywhere we can. And we've taken our time, we've been strategic about our choices. We think about this automotive market that Gregg and Martha just described, not only through the eyes or through the lens of silicon carbide but also, we think about the car as the auto and then the autonomous driving network and the other things that you're interested in. The car we think about it as a data center on wheels, and then we think about the drones that fly over for traffic management systems and the like, and we think about the fifth generation and the sixth that will come, the wireless infrastructure and the amount of -- the specifications for latency that have to be put in place and then for machine learning, for artificial intelligence and for the ability to be able to measure with 3D sensing and with LiDAR, we think about the market as an ecosystem. And we're not just thinking about just...
silicon carbide although it’s absolutely vital both for Electrification and for wireless RF, but we’re interested in all the other pieces around it. I want to tell you that with this — idea of the marriage, 2 years ago, we had 3 customers in our company that bought more than $10 million from us. In our fiscal year ‘18, we had 26 customers bought more than $10 million. And when we think about it, we segment the market, we’ve been extremely successful at building a brand power for the company and loyalty with a customer base and our capabilities are pointing to the same for us to be able to continue going forward. Okay?

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

So I just want to keep on you and then back to Gregg for a second then Martha, I'll have a follow up. But the -- let's forget silicon carbide for a moment although I would point out commercial that I just launched a 60-page white paper today on the worldwide supply-demand of that so it is important to us as well. But that aside, Moore's Law seems to be slowing or at least the economic intensity is growing to keep Moore's Law stabilized, if you will. So as a material science company that you've mentioned several times, if you could talk about how you see the role of compounds and have -- how that is flowing into the mobility, not just limited to auto but also aerospace, et cetera? And maybe since the mic -- I'll start with you Gregg and then back to you Chuck.

Gregg A. Lowe - Cree, Inc. - President, CEO & Director

I think the Moore's Law notwithstanding, I think that -- and I know you said, forget about silicon carbide but I sort of can't do that.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Okay.

Gregg A. Lowe - Cree, Inc. - President, CEO & Director

That's sort of what we do. But I think that the transition from Moore's Law silicon-based systems, especially in power management to a new material, that material being silicon carbide, is beginning to happen and I think it's primarily due to the tremendous amount of efficiency gains that you got and the system-level cost benefits that you get. So it's a combination of efficiency and cost benefits at the system level. I think then transition is beginning to happen and I think it's accelerating. I think the automobile industry is a huge industry but it has a huge influence on that because of those facts that I talked about before. The auto industry says -- when you're in the auto industry, it says, you're long-term thinking, you're investing long term, you're high quality, you're high reliability. And that's what industrial customers, telecommunications customers, aerospace customers, they see the auto industry as kind of a stamp of approval. So I don't think it's one or the other, when you get engaged with the auto industry, it sends a signal to those other industries that require reliability and long-term thinking, et cetera, that you've got their stamp of approval. So I think it's -- I think they actually fit very nicely together.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Chuck, I'll go to you and then I want to come to Martha.

Vincent D. Mattera - II-VI Incorporated - CEO, Principal Operating Officer & Director

Okay. Jed, just repeat the question, will you?
Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Sure. So with respect to Moore’s Law, as we crossed sort of sub-10 nanometers, the capital intensity has just gone up exponentially, actually it’s an inversion of the cost benefits that we’ve had for Moore’s Law if you look at it that way. So the role of compound semiconductors certainly on the analog side are -- seem to be taking the place of what silicon used to do. I'm curious, your thoughts as a material science company of how you’re -- how you see these markets unfolding in the role for the different compounds that you’re creating?

Vincent D. Mattera - II-VI Incorporated - CEO, Principal Operating Officer & Director

Okay. It’s really a great question. It’s really an exciting fit for me, I spent the first 20 years of my career overseeing the development and deployment of 5 generations of semiconductor laser technology based on indium phosphide and gallium arsenide for communication networks at AT&T. And we made -- we've done a number of transformational acquisitions at II-VI. In 2013, we did -- before the 3D sensing, we did the second to the last transformational acquisition to acquire the capability of making a semiconductor laser from gallium arsenide. We see that being ubiquitous across every one of our markets, across every one of our businesses, and we took that to a new level as we introduced lasers for 3D sensing applications, as we are now pioneering lasers for LiDAR applications. We recently announced a partnership to be able to scale our gallium arsenide wafer fab to make GaN on silicon carbide and have devices for this marketplace. The long story short is, silicon is running out of gas, that's what you’re talking about. And then all the way down to the 7-nanometer node, I don't know what comes after that, but whatever comes after that is likely going to be -- going to require the things that we do because we are enabling the EUV lithography tools to be deployed today at 7 nanometers based on the innovations we have. So whether it's gallium arsenide, gallium nitride, silicon carbide, indium phosphide or even diamond, a vital material to be able to functionalize all the devices that we’re talking about to enhance the performance and cost and the size, weight and power of the systems they get deployed in, we think the compound semiconductor market will be about a $45 billion market in 3 years. And we think it'll grow at a rate that's double digit, and we're intending to be a -- position ourselves to sustain our leadership in that market.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Martha, curious, you -- I think of you as almost a potential buyer of some of the underlying components to put as -- into your product that you’re selling into the industrial, HVOR and auto markets. From that perspective, the context of how important the underlying technology is, and maybe if you could also provide as a packaged product that’s going into that market. What the qualification periods might look like and how strict for that stamp of approval, just some perspective on it?

Martha N. Sullivan - Sensata Technologies Holding plc - CEO & Executive Director

Yes, I'm going to pivot that conversation just a tad.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Sure, please.

Martha N. Sullivan - Sensata Technologies Holding plc - CEO & Executive Director

Because the one we're having is an inside/out discussion and we all care a lot about wanting to see us driving Electrification market. At Sensata, we care about it in the automotive business, we care about it in the industrial landscape and we're highly invested in things like commercial trucks and so forth. When I think about the underlying technology, it really starts with what does the market need, who are we thinking about on the other side of those decisions? And right now, we all have a ways to go to make sure that this is a consumer product, all right? I think it's a -- we've made a ton of progress over the past couple of years. But charging times have to come down, we heard about that in the previous discussion, affordability, economics have to get better, range has to get better and the overall salability of some of the vehicles have to get better. That's where our focus starts. And so when we do technology selection, it's really with those attributes in mind and in some cases, that means the very best from
AUGUST 06, 2019 / 4:00PM, ST.N - Sensata Technologies Holding PLC, Cree Inc and II-VI Inc Panel Discussion at Canaccord Genuity Future of Transport Conference

a performance level, in some cases, it means good enough for a period of time. Our choice is around how packaged is the solution and how much we vertically integrate goes back to what really -- you heard Gregg talk about and that is what's the best long-term thing to do for our customers. And we are not a silicon producer. We design our own chips, we love working with great partners and so I can see a place for silicon carbide in our portfolio as well. But ultimately, we're looking at, does it get to the market when it needs to? Does it have the reliability that it has to have? And is it going to help us solve some of those issues that we see are really important challenges in EV market today.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

So let's keep -- I like the pivot in sort of the top-down, if you will, one of the biggest challenges that I foresee and I'm curious your thoughts on this is the lead designer for BMW said, "Electric vehicles don't work. It's not ready." When you look at the pricing mechanism for GM, they've artificially priced the Volt and Bolt materially higher than the market. So from a cultural perspective, it seems like those guys are being dragged, kicking and screaming. VW on the other hand is -- with the Dieselgate is a classic where -- they might have just gotten lucky and -- in kind of falling into this opportunity.

So maybe if you could just opine on the cultural malaise that exists within the incumbent ICE-based market and how as a supplier you can help accelerate that change to battery electric and hybrid vehicles?

Martha N. Sullivan - Sensata Technologies Holding plc - CEO & Executive Director

Sure. Look, it's a little challenging because everybody you mentioned and many that you don't are existing customers for us. I need to be a little bit careful on that front. I think when we look at best of breed, who is really managing that transition well, they're somewhat segmenting their organization. And so if you've got somebody who is a combustion engineer, you want them to be passionate about combustion, okay? There is still plenty of that out there, it's got to get cleaner, it's got to get more efficient and in many cases, it's going to be the thing that bridges us with plug-in hybrids and so forth till the infrastructure gets in place and the economics get in place. So we see best of breed actually segmenting that effort in recognizing that there is a dynamic that needs to be in place on the Electrification side, where safety is still really important, long-term reliability what you heard Gregg talk about, really, really important but the ability to move fast and get offerings out there that are important and pleasant to consumers is really important. And that's kind of how we segment our customer base.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Great. So Gregg, history would suggest that transitions are never, whether personal or organizationally speaking, never comfortable. And although I've been in many boardrooms and given many -- written many white papers and given talks where we all have that perfect hockey stick ramp, that you have that handoff of the baton that seamless. The reality as we look back in time, it seems to be that disruption is very uncomfortable. So how do you -- how are you managing Cree with the -- that potential transition? And how do you see that playing out?

Gregg A. Lowe - Cree, Inc. - President, CEO & Director

Well, let me start at the broadest level and then maybe dive down. I believe that great technology companies have to have great products, they have to have the great technology, they have to have great engineers, they have to have great innovation, great customers, et cetera. And I think those things are necessary for greatness. But I think you don't achieve those unless you as a company have a great culture. A culture of engagement, enthusiasm, excitement, openness, transparency, question the boss, challenge everybody and have a very, very transparent open kind of culture because that's what engages technical folks, that's what engages your best marketing teams, your best sales teams and so forth. So I personally spend an enormous amount of energy making sure the culture at our company matches those attributes that I just talked about. You talked about earlier in your presentation, earlier about impedance match, kind of a technical term but basically having the culture of the leadership matching the culture of the employee base, I think is super important. And so we spent a lot of time, a lot of energy on that. And frankly, I get asked a lot about leadership style and what's the best leadership style and my viewpoint on that is player/coach. And what I mean by that is you are obviously the coach in terms of setting a direction and a vision, et cetera, but you're also a player and a part of this team and the role great leaders have, if
you're going to do a football analogy, is you're on the offensive line. You're blocking stuff, you're getting things out of your way, out of the way so that your team can make a bunch of touchdowns. And I think when we have an attitude like that, when we have a leadership style that is like that, it generates that engagement, enthusiasm and passion about the products that eventually then translates into top line revenue growth and gross margin. So spent enormous amount of time on that topic that you had touched on and that is the cultural aspect of that.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

What about you Chuck? What are your thoughts -- so one I guess, since we're talking about culture, maybe if you could touch on that and the culture -- what are you trying to create with II-VI?

Vincent D. Mattera - II-VI Incorporated - CEO, Principal Operating Officer & Director

Okay. So I'm the third CEO of II-VI, I became the CEO 3 years ago. I'm the third CEO in 46 years. And I served and worked with the first 2. II-VI will turn 50 years old in 2021. And I maintain that will be the end of the beginning for II-VI. So I think that when I think back at the transformation of II-VI, it's underway, we were told by our Board when we first got started that we ought to think about reinventing the company just about every 4 or 5 years, and we've been on that pace. When I joined the company we were 1,000 employees in the company and $70 million in sales, we're at 12,000 people today, over $1 billion in sales. China, which was one of transformational acquisitions, changed everything. But when you look at it what we've done, a lot of what Gregg said -- almost everything what Gregg said I could totally agree with that, that's been our experience. We have 5 things after profitability -- every single employee in the company shares, in the profitability of the company, everyone. Even those people who don't own the stock, everybody's pay, it depends to some measure on the profitability. So we're highly competitive, for profit, long-term thinking, short-term acting, and we move at a speed that's mind-bending. And very difficult for people even to imagine from the outside or even to keep up with from time to time. But 5 things drive us: integrity, collaboration, accountability, respect and enthusiasm.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

So Simon Sinek has talked a lot about, sort of why statements that people will be attracted to, not what you do or how you do it but why do it. Apple is a great example, We think differently, right? So Martha, what is it for Sensata that when you really boil it down, as Chuck just alluded to with II-VI, what is it that's the essence of Sensata?

Martha N. Sullivan - Sensata Technologies Holding plc - CEO & Executive Director

Yes. We're purpose driven. Our purpose is to help our customers safely electrify, make their equipment cleaner and more efficient and ultimately more autonomous. And so the focus is very much customer. We strive to be an employer and a partner and a neighbor of choice. So those guiding principles drive a lot of what we do, drive the culture. Sometimes the football metaphors are overused, but we're in New England. And so I would go right to Belichick in describing our organization where the lines look more like a pregame playbook than they do a hard hierarchical structure. The notion of speed is really important to us. The pride in leadership, really important to us. We were $900 million business coming out of TI. We're $3.5 billion high margin fast growing business today. And it takes that agility and it takes that kind of culture and structure. At the end of the day, we boil it down to One Sensata. That we're all playing to achieve the same overall objective and it's humbling and great to be part of that organization.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Great. Same question for you Gregg.
Gregg A. Lowe - Cree, Inc. - President, CEO & Director

Well, first off I've got to say as a Cleveland native, it's a little daunting sitting next to a New England and Pittsburgh here. So I think the -- what we're trying to do is very simple. We are trying to convert the power electronics industry from silicon to silicon carbide. And it's very rare that you see in the semiconductor industry an opportunity for such a dramatic transformation. Really the last time that happened was in the early '80s when everything went from bipolar to CMOS. And then once CMOS happened the only thing then was, probably 70 nanometers, 60, 50, et cetera. We're now at a point where our vision is to convert the power electronics industry from silicon to silicon carbide. And people who join Cree share that passion and share that vision and share that opportunity to be a part of something -- I just watched the Apollo 11 documentary actually on the flight here, kind of like that, where you're going to be able to look back in 10 years and say I was there when they used to use this crummy technology called silicon and now look at this, everything is silicon carbide. So a lot of people very, very passionate about that at Cree.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

So it's interesting in 2002, I was a associate at Adams, Harkness & Hill and had a similar conversation with then Henry Nicholas of Broadcom. And he, in not so great words, made me feel really small about the -- my hypothesis on gallium arsenide. He was wrong, there's more gallium arsenide -- he has basically said silicon is going to dominate and move from the baseband all the way to the RF and the IF. And so there is today more gallium arsenide in a handset than there was in 2002 when we had that conversation. So I know, Martha, you don't -- I'm going to go back to the pivot to the inside. But I guess, Chuck, the question would be for you, as we look at this and we hear Gregg talk about the move to silicon carbide and revolutionizing silicon. Do you see the ethos where materials are able to all kind of play together but for different purposes? Or do you see it as a more binary type disruption in the markets?

Vincent D. Mattera - II-VI Incorporated - CEO, Principal Operating Officer & Director

No. This is -- these materials that matter underpin everything. This transformation that Gregg is a part of and is talking about happened only -- not because people didn't know how to make MOSFETs, JFETs, IGBTs. It wasn't because of that. It was because the materials weren't ready. This is a business which is underpinned by materials that matter. And every one of them is designed ultimately to enable some functional performance, some reliability, some quality that's uniquely differentiated. That's what they're there for. You need to know how to use them. And it takes time and it takes expertise and I can guarantee that the expertise for the kind of things that we're doing, especially that Gregg and I are overseeing is limited in a very small number of people on the whole planet. It's exciting.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Great. So Martha, just the move to battery electric for Sensata is incredibly accretive from a content -- and your story is largely about content growth as I understand it. And -- so I'm curious your thoughts on that transition. Do you think we need -- do you -- well, simply put, do you think that it can be seamless? That we can have the existing suppliers go through a seamless transition like we have evolved in the iSpace, largely from diesel coming in and different variations of the same technology? Or do you think it's going to be like Apollo, more disruptive?

Martha N. Sullivan - Sensata Technologies Holding plc - CEO & Executive Director

I think it's definitely going to be more disruptive. However, I think it's really important to sit back and say what are the fan of outcomes that we could be dealing with? And so when we do our work and we make our decisions, we look at a range of scenarios, all of which are pretty viable. So the difference is -- the incrementalism that you saw in auto, for decades really allowed you -- allowed OEMs and others to sort of see what is the next logical step and to get there quickly and to invest heavily. Right now we're still dealing with a very subsidized market. We're still dealing with -- I heard somebody say it on the earlier panel, early adopters. And so there are a lot of swings on which way that could actually develop. What we think is really important then is to have a portfolio and an agility that allows you to watch closely, scale fast where the market doesn't pan out and scale up where you place bets and you can see those pulling away. And we're already seeing the benefits of that particular approach and you're starting to see momentum now around design-ins and you can start to look at the models that will be out there in the 2022 to 2025 timeframe and say there should a consumer market here that's very interesting. And we're starting to pull away with some of those programs. Having said
that, I think there will be real changes to the supply chain. I think there will be changes to the OEM business model that not everybody is prepared for. We’re watching that very carefully. And then I will tell you it’s not just automotive. I think the industrial landscape is going to be transformed by many of these same changes and we’re placing those bets outside of automotive as well.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

It’s interesting, GE talks about -- I think their mantra was that they really knew things that turned, turbines for locomotives, et cetera. And it almost seems that, from an electrification perspective everything that moves is kind of part of this ecosystem that’s changing. Gregg I’d be curious your thoughts on the disruption in the market and how you -- you’ve been through a couple of these, so you talked about the silicon back in the ‘80s. Maybe you could just talk about how you see this playing out?

Gregg A. Lowe - Cree, Inc. - President, CEO & Director

Well, let me hit it from a couple of different angles. So first off from a automotive OEM, the BMWs, the Volkswagens, the Fords, et cetera. This is a pretty big change, the engine goes away, an inverter comes in, transmissions basically go away as well, their whole supply chain is going to change pretty dramatically. And so what that’s done is it’s made them very, very interested in understanding what does that future supply chain look like. And hence engaging with companies like us that wouldn’t be a normal thing for a car company to do, but they’re doing that now increasingly. The other thing that I would say is if you look at the electrification of the powertrain, I think there are 3 important elements that are kind of coming together at the same time, and it’s all kind of in the context of Dieselgate. First off, is a significant higher intensity around humans on this planet about doing something about emissions. There are people that -- just more and more important, especially to the younger generation. So you’ve got a desire to want to “go green.” The second thing you have is governments adding regulation to help facilitate that as well. The European emission standards right now, it’s 126 grams of CO2 per kilometer driven today. In 2021, the regulation is 98 grams of CO2 per kilometer driven. And in 2025 that number goes to 75. That’s a 40% drop in emissions per kilometer driven that the car companies in Europe have to get to. And if they don’t, there’s billions of dollars of fines associated with that. So there is -- the -- there are going to be improvements on the combustion engine, they’re not going to drive those kind of numbers at all. So it’s almost a math equation with a variety of different outcomes that says there is going to be a sizable change in the Electrification. So you’ve got a much stronger awareness of the environment. You have governments acting as well. And then I think the third thing is for anybody that’s driven one of these cars, they’re high-performance things. They go really fast, they accelerate, they’re quiet, they’re comfortable. It’s a pretty nice experience. And I think when you combine these 3 different things, it says that the opportunity is really pretty big.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

You know it’s funny, on LinkedIn I saw this post that Josh Wolfe, if you don’t know him, he’s over at Lux Capital, one of the founders there. And it was a picture of the Chevy Corvette, the new one, which is beautiful. So I mean it’s a mid-engine, first time for the mid-engine Corvette, beats all the metrics. And his post was like, I don’t know why everybody is so excited. It misses Tesla’s Model S on every single metric other than making noise. But he’s right. I mean it’s -- and part of that is -- brought up the question for me in my mind in terms of -- like how wed are we to the actual metrics? And how wed are to we -- to the comfortable behavior and the buying patterns that we’ve just been locked into? And so I’ll pass that to Chuck to maybe just talk about your thoughts on that.

Vincent D. Mattera - II-VI Incorporated - CEO, Principal Operating Officer & Director

Okay. I’m not an expert in these large transitions happening in the automotive market. But I can observe the following, that we went to China. In 2010 we acquired a business, had $66 million in sales then. It will do more than $600 million in our last year. China changes a lot of things. And then I think the third thing is for anybody that’s driven one of these cars, they’re high-performance things. They go really fast, they accelerate, they’re quiet, they’re comfortable. It’s a pretty nice experience. And I think when you combine these 3 different things, it says that the opportunity is really pretty big.
number of electric vehicles in the next 10 years that get deployed, the largest number is going to be where the largest population is, in China. So if we think about the world only through the lenses of our experience in the U.S. and in Europe, where we're likely to -- we'll be successful, but were likely to miss other shifts. Because I think things are going to happen fast and faster in China.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Before I turn to Martha, I just want to ask is -- are there any questions in the audience? We have about 10 minutes left. Yes, you.

Unidentified Analyst

[Okay. This one is around construction and there's -- later [in the slide] about Tesla and [in front of me] is a chart [corporate to legal] cash flow [when he started] How do you think about the [creditors' school] we're dealing with companies locked out [it's the proven that leaders get the] supply and for (inaudible) [on top of us.] Picture...]

Martha N. Sullivan - Sensata Technologies Holding plc - CEO & Executive Director

The question I think was when you look at Tesla who's -- you said the leader. I'd say a leader. The leader is actually in China, to the point that was previously made. And there are sort of questions about their overall balance sheet and obviously not making money. And how do you think about, as a provider to someone like Tesla. And we are a provider to Tesla. How do we think about that? And we've been in China for over 30 years. We've been in the automotive business for over 50 years. We've seen plenty of cycles and we know what to watch for when you have to worry about overall credit worthiness. So I don't think that that challenge in of itself is an OEM making money or not making money. It's an interesting industry where you don't see periods of huge profitability and yet we sit here as a high margin, high-growth supplier. And so I think you sit back and say how you choose your customers? What's -- do they have a differentiated offering? I think there's lots of debate about where will Tesla end up long term. I don't question at all whether or not those product offerings will have a long-term life, whether it's under Elon Musk or whether it's under somebody else. They really are terrific products. What we pay attention to is are they evolving what they bring to market? And right now that's a really important test to look at. And are they're working in a cooperative way to make sure that regulation is where we all need it to be? Are they looking at their business models? Because we're moving probably from a world of simply private ownership of vehicles into asset sharing. And so I think you see the best-in-breed dealing with those challenges in a way that makes sure that they're going to be around. And then I think the third thing is there are practices that have been in place in the automotive market for a long time. If you've been there for a while, they are uber-procurement people. But you can't have it all. You can't ask for innovation and then ask for 10% down in your pricing every year. And so it behooves us to make sure that we're getting the value that we should be getting as we bring new technology and new innovation to that market. We're very focused on that.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

I'd like to take a slightly different angle on the question. One of the major changes with the advent of Microsoft in the '90s with this shared economy, and I don't mean from an Uber or Lyft, but a shared -- like [parade au laux] where 20% of the suppliers have 80%, and in the auto industry that's spread amongst a dozen or so. But what Microsoft told -- showed us, and now Apple, Google, is it's really moved to a winner take all model, where investors, and I would say that pushed back a little bit because if you look at in how meaningful for a growth company earnings actually are, it seems like to the winner, the spoils -- we're in a got economy, Game of Thrones, where the winner tends to have all that market share. Do you think about that in terms of the supplier base? Or do you -- as the previous questioner asked, look at it from a metric perspective?

Martha N. Sullivan - Sensata Technologies Holding plc - CEO & Executive Director

We certainly do. We sit back and say where are we entitled to win? And where are we entitled to leave -- lead. And look very carefully at -- not just today what the competitive dynamic is, but what will that competitive dynamic be over the next 10 years. And so that has us making choices on [verts] in terms of vertical integration where we play. So Sensata great position in auto. By way of example, we recently acquired a small business
in high-voltage contactors. And within months we had a $300 million pipeline because our name is well-known in auto. But if you sit back there and say okay, do we want to be a Tier 1 integrated system supplier to the automotive market? No, we made the choice years ago. And as the big get bigger, there are lots of niches below where they're going to need help from folks like Sensata and others because they can't do it all. If you're going to be a platform player you are focused on that platform, if you're Azure. But you need lots of people contributing to that platform to be successful and that's the way we think about it.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Great. So we're just about out of -- actually we're over time. But I do want to ask each of you one last question. I'd be curious that you're willing to share -- is there a personal interest that you have? I think I know what Gregg's is, but I'd be curious in terms of what your hobby is or -- I'll start with Chuck?

Vincent D. Mattera - II-VI Incorporated - CEO, Principal Operating Officer & Director

Okay. Thanks a lot. So I've been working in this industry of compound semiconductor devices for 35 years after 10 years of college. So that's 45 years of this. I have a -- I worked for the world's largest industrial company for 20 years, had a 1 million employees when I started working at AT&T in 1984. Changes of landscape for the 20th century, set the foundation in order for the 21st century based on all the innovation. Then I came to a real small company and I came to help make it into a big company. And I've learned a lot and might have only one objective in my retirement and that is to give back to the world everything that it gave to me. And I have a plan to write 3 books and I need time to do that. And it will all be reflective over this industry over the last 50 years.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Nice. Thank you.

Martha N. Sullivan - Sensata Technologies Holding plc - CEO & Executive Director

As for me it involves a disruptive force that we haven't talked about today and that is the nature of our workforce. So when we look at the level of the global cultures we need, the diversified workplace that we need and when you have to start on that, that's a personal passion for me. I'm very involved in an independent all-girls school for economically disadvantaged girls for those of you that our local, it's actually in New Bedford. And here's a shameless plug, it's called Our Sisters' School. And it's a nondenominational, independent tuition-free school. And my focus there is on STEM education and it's one of the most fulfilling things I do. So thanks for the opportunity.

Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Thank you.

Gregg A. Lowe - Cree, Inc. - President, CEO & Director

I'm going to read your 3 books. That was actually quite specific, only 3. I'm very -- my wife and I are both very engaged in education, STEM, especially for underserved kids. And what I find most remarkable about it is -- the resiliency of these kids is astounding. I saw a kid graduating from high school who would have never graduated from high school, then going on to MIT I believe next. And he was asked a question, what was the hardest thing about high school? And he said, "Doing homework when I didn't have a home." So that was like, wow. So we get a lot of personal satisfaction out of it. From a hobby perspective, when Freescale was sold to NXP about 2 years ago, I decided to take a year off. It ended up being 1.5 years off. And during that time my bucket list item was learning how to play guitar, I have accomplished that. I'll do any shows for you if you want. I'm actually pretty horrible at it but I have a lot of fun.
Jonathan Edward Dorsheimer - Canaccord Genuity Corp., Research Division - MD & Analyst

Thank you. Let's give them all a round of applause.