Q3 2020 Earnings Call

Company Participants

- Andrew D. Baglino, Senior Vice President of Powertrain & Energy Engineering
- Elon Musk, Co-Founder and Chief Executive Officer
- Martin Viecha, Senior Director for Investor Relations
- RJ Johnson, Global Head of Commercial Energy
- Unidentified Speaker
- Zachary Kirkhorn, Chief Financial Officer

Other Participants

- Adam Jonas, Analyst
- Ben Kallo, Analyst
- Colin Rusch, Analyst
- Dan Levy, Analyst
- Gene Munster, Analyst
- Philippe Houchois, Analyst
- Pierre Ferragu, Analyst
- Rod Lache, Analyst

Presentation

Operator

Ladies and gentlemen, thank you for standing by and welcome to the Tesla Q3 2020 Financial Results and Q&A Webcast. At this time, all participants are in a listen-only mode. After the speaker presentation, there will be a question-and-answer session (Operator Instructions).

I would now like to hand the conference over to your speaker, Mr. Martin Viecha, Senior Director of Investor Relations. Please go ahead, sir.

Martin Viecha {BIO 17153377 <GO>}

Thank you Sherry and good afternoon everyone, and welcome to Tesla's third quarter 2020 Q&A webcast. I'm joined today by Elon Musk, Zachary Kirkhorn and a number of other executives. Our Q3 results were announced at about 1 PM Pacific time in the update deck we published at the same link as this webcast.

During this call, we will discuss our business outlook and make forward-looking statements. These comments are based on our predictions and expectations as of today. Actual events or results could differ materially due to a number of risks and uncertainties, including those mentioned in our most recent filings with the SEC.

During the question-and-answer portion of today's call, please limit yourself to one question and one follow up (Operator Instructions).

But before we jump into the Q&A, Elon has some opening remarks. Elon?

Elon Musk {BIO 1954518 <GO>}

Thanks, Martin. All right. So Q3 was our best quarter in history. We achieved the record production deliveries, record revenue, record net income, both GAAP and non-GAAP and record free cash flow of $1.4 billion. This is really due to the amazing execution by the Tesla team. I could not be more proud to work with such a great group of people. Just really kickass performance across -- throughout the world.

Of course, we had our Battery Day. So we hosted -- showed our plans for how we can expand in the future and improve core battery technology, core cell technology at the form factor level, chemistry level and I think more significantly at the manufacturing technology level. There's only -- a comment I made in the past is that I think Tesla's long-term competitive strength will be primarily manufacturing. This is counterintuitive, but I'm quite confident this will be what happens.

All right. So we presented what the team has been working on for a long time with batteries. We wanted to step back and really rethink batteries from scratch. First (inaudible) thinking, just look at it from the fundamental physics and say what -- rather than compared to other products in the market, just say from a physics standpoint, if you -- what's the limit of physics? What's the photonic [ph] idea of a perfect cell and how close can we get there? And that was our aspiration. And I think we've got a pretty good approach to it, which will only get better over time. And we went through all of the interesting solutions for every important part of that design and production. And we'll continue to iterate on that and just recursively improve the core cell and battery technology.

The result, we think, in a few years, will be batteries that cost half as much and where the capital expenditures required are a third or less of what they are today. And we expect Giga Berlin will see our first battery cell production line at scale.

Regarding the Full Self-Driving beta release, the auto power team, again, just a really all-star team -- I spent a lot of time with the auto power team. And there's a lot of really talented people in that team who've worked incredibly hard to make the -- to get the beta release out. So, I'd just really like to thank them for their hard work and it's just a very smart group of people. So, I think we're starting very slow and very cautiously because the world is a complex and messy place. And so we're -- we put it out there last night, and then we'll see how it goes and then probably release it to more people this weekend or early next

week. And then just gradually step it up until we have, hopefully, a wide release by the end of this year.

And of course, as the system collects more data, and -- it becomes more robust. So it's sort of like how does Google as a search engine get better? It's because everyone is programming it by asking questions all the time and clicking on particular links. So, it's got this great feedback -- we've -- and that makes it an extremely effective search engine. It's the same thing for autonomy. Having on the order of 1 million cars that are providing feedback and specifically feedback on strange corner case situations that you just can't even come up with in simulation. This is the thing that is really valuable. It's not like the obvious stuff. Obvious stuff you can do in simulation. But weird corner cases, only a reality can give you that. So that's -- but we're able to say, okay, we need to train the system on this corner case situation. And look for examples so we can then try it against those examples and improve some very esoteric corner case.

And it's also important to emphasize that this is a generalized neural net-based approach. There is no need for high-definition maps or a cellphone connection. So the car -- the system is designed such that even if you have no connectivity whatsoever and you're in a place that you have never been to before and no Tesla has ever been there, the car should still be able to drive, just like a person. That is the system that we are developing and aiming to release this year.

Then in terms of capacity build out, we're making progress on the three major factories. We're continuing to expand Shanghai significantly, which is going incredibly well. The Tesla China team is just, I mean, incredibly good, super smart, work hard. It's like I'm always amazed by how much progress the Tesla China team makes, it's beyond all reasonable expectations.

And then we're under construction in Berlin and Austin. So we're also making good progress there. Yeah, good. It's overall going well. I should make a point that for Berlin and Austin, we do expect to start delivering cars from those factories next year. But because of the exponential nature of the spool up of a manufacturing plant, especially one with new technology, it will start off very slow at first and then become very -- the upward will become very large.

Just in general, manufacturing follows the S curve. And I think sometimes people got to spend a lot of time manufacturing kind of think that once you have a factory, you can just sort of turn it on and it's at capacity. But it will typically take about 12 to 18 months to reach capacity. And that is a very fast period of time, especially for new technology. So yes, I'd say, 12 to 24 months even. So, generally, what I see is the manufacturing capacity is under-estimated in the beginning for quite some time. Then it's sometimes overestimated because this is an S curve. It goes exponential to linear to logarithmic. And it's actually an incredibly hard thing, just bringing a production plant up to volume technology.

If you -- because you guys think of it like you've got to first order approximation, 10,000 unique parts of processes, all of which operate on an S-curve and with a bunch of uncertainty, and you can just slide 10,000 S-curves on an X-axis, and that's what's bringing

up a large automotive plant is like. And which one's the laggard, which one is the leader, it's very difficult to tell, and it's constantly changing. So it's really one of the most difficult challenges I've ever seen.

So let's see. In conclusion, thank you. What we would achieve would not be possible without the incredible hard work of tens of thousands of Tesla employees and all people at our suppliers as well. I'd like to thank our suppliers. We continue to grow as fast as we can, while focusing on cost control and improving quality. And ultimately, the best company will be that which makes great products at an affordable price, and that is our goal. I think I've never felt more optimistic about the future of Tesla than I do today. I'd also like to thank investors who have stuck with us through thick and thin. This is -- I think there's a lot more good stuff to come.

All right. With that, we can move to questions.

Martin Viecha {BIO 17153377 <GO>}

Thank you, Elon. I think our CFO, Zachary Kirkhorn, has some opening remarks as well.

Elon Musk {BIO 1954518 <GO>}

Okay, sure.

Zachary Kirkhorn {BIO 20940148 <GO>}

Yeah. Thanks, Martin. Overall, our financial health continues to rapidly improve with Q3 being another great quarter on nearly all dimensions, as Elon has mentioned. On net income, we achieved our fifth sequential quarter of profitability, our best net income, and nearly double-digit operating margins.

Two things that are important to note is that context for Q3 profitability. First, the regulatory credits business was stronger than our expectations and we are tracking to more than double this year compared to last. Second, as a result in the rise of the market cap of the Company, the second and third tranche of the CEO grant vested during the quarter. Additionally, we have begun expensing one more tranche, resulting in roughly $300 million of combined period expense. I think it's reasonable to view the quarter excluding both these items to get a true sense of the health of the core business.

On automotive gross margin, including regulatory credits, it increased materially from 18.7% to 23.7%, with some of our programs achieving greater than 25% gross margin. Keep in mind that inefficiencies related to factory shutdowns affected our margins in Q2. We continue to reduce our manufacturing and operational costs. We are also seeing benefits from the ongoing upward trend of locally built and delivered cars, which has increased from under 50% at the beginning of last year to over 70% most recently, which is a core component of our cost reduction strategy. We are also seeing financial benefits from improved vehicle reliability across the feet -- across the fleet.

Services and other margin approved yet again, driven by our used vehicle business and efficiencies in our service operations. In the energy business, we achieved record storage deployment, aided by the positive reception of the Megapack and PowerWall products as production and deployments grow. Additionally, our filler deployments doubled, and we're continuing to make progress on that front.

On cash flows, our cash balance increased to $14.5 billion, which includes free cash flows of $1.4 billion, our highest yet. Our operating cash flows were $2.4 billion. Including a $600 million benefit from working capital as we've made progress on days of receivables and inventory despite a reduction in days of payables. Note that the majority of our operating cash flows are driven by the strengthening of our core operations.

Capital expenses grew to $1 billion, driven by Model Y (Technical Difficulty) in Shanghai, Berlin and Austin. As for previous investments in Model 3 Shanghai and Model Y in Fremont, we're expecting these programs to have already fully paid for their respective investments by the end of this year.

Looking forward to 2021 and 2022, we have revised up our expectations for capital spending by $2 billion to $2.5 billion, which we have ample liquidity and expected cash flows to fund. This is driven by an increase in in-source scope for certain factories, including battery cell manufacturing as well as investments to enable greater capacity expansion in the future. While we expect the return on our investments to remain very strong, keep in mind that with additional scope and location-specific costs, payback of these investments may be slightly longer than what we saw in Model 3 in Shanghai and Model Y in Fremont.

Financing cash flows were $4.5 billion as we reduced use of our working capital lines, offset by a $5 billion equity raise in September. Note that we're currently expecting over $1 billion in early convert paydowns in Q4, primarily associated with the 2021 conversions, but also our 2022 and 2024.

Looking forward, we remain focused on strengthening the core fundamentals of the business. We are increasing production to meet demand, reducing costs, including localization, driving higher efficiency across the business and tightening our cash conversion cycle. We've made tremendous progress on this front over the last year and a half. We're also aiming to achieve our original 2020 guidance of 500,000 deliveries despite the operational interruptions earlier in the year. While this goal remains a genuine challenge, we believe it's possible the tight execution across the Company.

So congratulations again to the Tesla team for a great quarter and a great year.

I'll hand it over to RJ Johnson, who joined Tesla early on the year and is leading our energy business for a few comments.

RJ Johnson {BIO 16763825 <GO>}

Thank you, Zach. First, I'd like to also thank and congratulate the team on a job well done. Q3 was a strong quarter for the energy business and we're poised for continued strong growth in energy storage and solar. Megapack is going to be a large growth segment for the business and deployments will continue to expand rapidly as the product reaches full capacity. We have more demand than supply through 2021 and we continue to ramp the product to match unprecedented demand across the globe through 2023 and beyond.

Our order book is rapidly filling up through 2023 in a multiple gigawatt hour scale. Large-scale solar plus storage is now more cost effective than traditional fossil fuel generation in many locations across the globe. This trend will continue as we remove cost, which will further displace existing and new fossil fuel generation. This is true for standalone storage as well. Many customers are utilizing Autobidder to maximize returns as we optimize our hardware and software with advanced real-time bidding strategies. They continue to outperform the market where deployed.

For Powerwall, we see continued strong demand for residential storage as customers seek increased reliability and backup home generation. We have a very large backlog of Powerwall orders and we continue to invest to increase capacity to fulfill customer orders. We're just now capturing the full power of customer sited solar plus storage as customers in some jurisdictions are providing services back to the grid when they don't need to consume energy or have backup power. This has massive potential to reduce system costs and make the grid more efficient globally.

In the United States, we lowered our residential solar retrofit price to $1.49 a watt after tax incentives, which is the lowest in the industry. We're able to do this by leveraging our online vehicle ordering infrastructure, which substantially reduced the soft cost associated with sales and marketing. As a result, our fixed costs remain relatively flat as our volume and efficiency increase, leading to increased profitability in the retrofit business. We're using the same methodology across the entire energy business, including service to capitalize on the technology backbone of the Company.

Solar Roof is especially exciting as we've gained significant experience over the last year in the installation process, which is a key enabler to scale the business. We've recently demonstrated our ability to complete Solar Roof installation in just one day. Please note, it still requires one to two days to remove the existing roof and prepare it for the Solar Roof installation. Clearly there will be a range of installation times based on size, complexity, weather and other factors.

Overall, our reduced installation time provides a better customer experience and will enable the business to grow exponentially as scale effects allow for increased efficiency.

In closing, we believe the energy segment is poised for strong growth as we continue to focus on increasing scale, while reducing cost to maximize profitability. I want to thank the team again for their hard work and I look forward to another strong quarter ahead of us.

Questions And Answers

A - Martin Viecha {BIO 17153377 <GO>}

Thank you very much, everyone. And let's begin with questions from say.com. The first question from retail shareholders is, is Tesla planning to start 4680 cell production at Giga Berlin at the same time as vehicle production? Can Tesla share more information on what products you'll use the battery cells from the pilot line in Fremont?

A - Elon Musk {BIO 1954518 <GO>}

Yes. Drew, do you want to take that?

A - Andrew D. Baglino {BIO 21161872 <GO>}

Sure. Yes, we will incorporate 4680 design solutions into many applications in time across both energy and vehicle. And we can use our pilot production facility in Fremont to support the new factory in Berlin as it ramps.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you very much. Let's go to the next question, which is question number two from retail shareholders. Does Tesla's tablet cell design allow for significantly higher peak charging rates? Does it improve the required taper curve?

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yeah. The fundamental limitation on charge rate in lithium-ion batteries is avoiding lithium plating on the anode. And while the tablet's architecture helps avoid overheating because it's a more power dense architecture at high continuous charge rates, it doesn't change the anode plating story. Electro design and anode material choice more directly determines the maximum charge rate and how to avoid that lithium plating problem.

A - Martin Viecha {BIO 17153377 <GO>}

Okay. Thank you very much. The third question from retail is, would FSD be able to be transferred to our next vehicle or pay a transfer fee? It would add a broad -- it would add to a brand loyalty. In the same way, gaming companies and cellphone companies keep you in their ecosystem by letting new transfer purchases to upgraded hardware.

A - Elon Musk {BIO 1954518 <GO>}

Yeah I think, we'll give it to both.

A - Martin Viecha {BIO 17153377 <GO>}

Okay. The fourth question is, what are the remaining constraints to be sold for solar installations to ramp significantly? Carl?

A - Unidentified Speaker

Yes. (inaudible) I'm on the Solar Roof Engineering and Installation. The biggest constraint right now in Solar Roof ramp is getting enough installers on board and trained and experienced. We've made a lot of progress on this in Q3, and we're continuing to hire.

The next opportunity is improving the material flow on the job site. We've talked about this a lot in the factory as well that setting up the right packaging, kitting so that every installer on the roof has the parts they need at their fingertips. Also, we've had great response from third-party roofing contractors as they're ramping up installations for Solar Roof on their customer homes, which is a big source of future growth.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you Carl.

A - Elon Musk {BIO 1954518 <GO>}

I mean, here's the way to think about a product, in my opinion. You have to say, I think what do you want the world to look like? When you look around the neighborhood in future, a decade from now, what do you want? What products are going to make your life better? What future do you want? And I think a future where we've got beautiful roofs with generating energy that are tough and resilient and better in every way than a regular roof and a lab with energy. That's the future we want. The Solar Roof is a killer product. This will become obvious next year.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. And the last question from retail shareholders is, you recently referred to Tesla as a conglomerate of start-ups. Other than manufacturing electric cars, what do you suppose will be the most valuable business units within Tesla over the next five to seven years? Could you envision any of them ever spinning out from Tesla?

A - Elon Musk {BIO 1954518 <GO>}

Well, yeah, I think about this today. Tesla has probably -- there's probably in excess of a dozen startups effectively in Tesla. Every major product line is a start-up. Every big new plant is a start-up. And sometimes, frankly, we have to learn a lesson a few times before since then [ph]. But even things like service and sales are startups. Other car companies, OEMs, they don't own their sales and service. So we have to create our service network. We have to create our sales and delivery network. We have to do this in, I don't know, 40 countries, multiple languages. So many people don't really even know much about it. Our internal applications team that writes the core technology that runs the Company.

We are not dependent on enterprise software. Like for those who understand what this means, this is a very big deal. And my hat is well to the great work of the internal applications team. They are like the nervous system, the operating system of the Company, the Tesla operating system, extremely fundamental. Obviously, insurance is substantial. So insurance could very well be 30%, 40% of the value of the car business, frankly. And as we've talked about before, with a much better feedback group, instead of being statistical, it can be specific. And obviously, somebody does not have to choose our insurance. But I think a lot of people will. It's going to cost less and be better. So why would you?

And the whole autonomy thing is a start-up. The computer chip was -- designing our computer chips was a start-up. Obviously cells are a start up. Designing and making our own power electronics for the drive unit, design, manufacturing our own motors, chargers,

the Supercharger network is a start up. I think that people just don't really understand about Tesla is that it's a whole chain of startups. And they like, well, you didn't do that before. Yeah, but we're doing it now. I mean, I think so far, we have not -- we've maybe been a bit slow with some of the start-ups, but I don't think we've had any of them fail. So, so far so good. No plans to spin anything out. That just sounds like added complexity.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you very much. Let's go to institutional investor questions. The question number one is as a bridge to the ride-hailing network, could you leverage the insurance product to give customers the ability to rent out their vehicles via the app, thereby enabling the car to make money for them? So, basically proprietary version of Turo.

A - Elon Musk {BIO 1954518 <GO>}

I think we're focused on enabling the robotaxi system. So you can just basically -- like that's really quite a small subset of the overall robotaxi or robocar thing where you can have the car be autonomous for you. You've can have the car be -- you have to share with friends and family. You can add or remove it from the network. You can have it be entirely in the network. I mean, if you're an Uber or Lyft driver, you could be managing a fleet of 10 cars. This sort of seems like a shepherd tending the flock type of thing. It's like you just get more -- way more leverage. So, I think that's sort of -- we could do that. It wouldn't be very difficult, but we're going to just be focused on just having an autonomous network. That has sort of elements of Uber, Lyft and Airbnb, yeah.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. And the second question from institutionals is, residential energy use accounts for roughly the same magnitude of carbon emissions as road transport. Today's boilers and aircom units are profoundly unsexy. Could you elaborate on handstrip HVAC advances with the Y [ph] that could also find use in a domestic system?

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yeah.

A - Elon Musk {BIO 1954518 <GO>}

Yeah, go ahead Drew.

A - Andrew D. Baglino {BIO 21161872 <GO>}

I was just going to say, I mean, I think one of the things we focused on with the Model Y and now Model 3 pump system was learning how to build a tightly integrated system, capable of moving heat to and from anywhere really, powertrain battery, cabin, the environment, outside, ambient temperatures, all the way down to like negative 20 C, so 30 C. And that's definitely applicable to the home needs of heating and cooling the home and the water in your house. So certainly applicable. Elon?

A - Elon Musk {BIO 1954518 <GO>}

Yeah, absolutely. I think like the heat -- for a heat pump in the car, being able to use the batteries, both a thermal and an electric energy reservoir is very significant. Same thing could be applied to a home with the water heater. So -- and the back of pack itself, of course. So I think there's potential for an integrated home system that Canada's power generation storage, heating, cooling, air filtration, water purification in a really tight package. We don't actually have like a prototype or anything, but I think conceptually, that is something that would be probably good to have.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. The third question from institutionals is, is meeting your long-term volume targets requires price reductions that preclude you from achieving your low double-digit stated margin targets for the autos business, will you still reduce prices accordingly?

A - Elon Musk {BIO 1954518 <GO>}

Well, we want to make our cars more affordable, and it's real important to separate out affordability from value for money. If the car is too expensive or any given product is too expensive, then people don't have enough money in the bank account, they simply can't buy it no matter what the value proposition is. So it is important to lower the prices in order to such that people can literally just have enough money to buy it.

I do not think we lack for a desire for our product, but we do lack for affordability. And so we have to improve the affordability of our products so they are not out of reach of people. We want to bring them more in reach over time, but also improve our cost of production. Obviously, we get, hopefully, a little bit better every year. Sometimes a lot better. And in terms of margins, all of these margins are going to look pretty comically small when you factor in autonomy.

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yeah, two things I'll add to that. Without a doubt, I mean, we're moving forward to push as much volume as we reasonably can. So, Elon talked to earlier kind of how the S-curve and the time line of incremental factories looks like. And so we're moving full speed ahead with as much volume as we can reasonably move forward with.

The second comment I'd make is, if you just look at the journey of the Company over the last year and a half, we have grown volumes and grown gross margins despite a number of price reductions over that period of time, and we have cut OpEx fairly stable during that period of time as well. And so the key is what Elon mentioned here. I mean, we have to improve the affordability of the vehicle. We have to also continue to make progress improving the cost structure of not only COGS, but of OpEx, which we've demonstrated over the last year and a half, I think, quite successfully, and improve the value of the vehicles at the same time. So in addition to reducing the cost of the car, we're making the cars better. And that's the formula to sell the volume. That's what we're focused on.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you very much. The fourth question from institutionals is, at what point do you expect to have enough internal or external battery capacity to start ramping up stationary storage deployments again?

A - Elon Musk {BIO 1954518 <GO>}

Yeah. We're ramping up stationary storage a lot. So I mean, it's approximately doubling as we expect, it's approximately double next year. So, that's pretty good. And hopefully, we can accelerate that in years to come.

A - Andrew D. Baglino {BIO 21161872 <GO>}

And approximately doubling it this year, too. So the growth --

A - Elon Musk {BIO 1954518 <GO>}

Yeah, yeah, I mean, if you just keep doubling things, pretty soon you hit the Mars [ph] of the universe, and we'll need to start turning Jupiter into cells.

A - Martin Viecha {BIO 17153377 <GO>}

And the last question from institutionals is, manufacturing is hard. Delays happen. What contingencies do you have in place to ensure that bottlenecks that you might encounter, while renting internal cell production will not preclude you from your ability to hit your Model Y production volume targets in Berlin and Texas?

A - Elon Musk {BIO 1954518 <GO>}

Yeah. So I think it's -- we're trying to de-risk to 2021 so that there's almost no dependency on our internal cell production. It's very, very small. The internal cell production will help us ramp in '22, but we're not dependent on it for '21.

A - Andrew D. Baglino {BIO 21161872 <GO>}

And to derisk the manufacturing system itself, that was one of the reasons why we located our pilot production facility here in Fremont, so we can rapidly iterate on manufacturing scale-up challenges, provide rapid feedback to the design of both the product and the equipment.

A - Elon Musk {BIO 1954518 <GO>}

Yes. Our pilot line is pretty big as pilot [ph] lines go. It's -- it will be in the top 10 cell factories on Earth, I believe.

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yeah. That's true.

A - Elon Musk {BIO 1954518 <GO>}

I'll subscale 1. So --

A - Martin Viecha {BIO 17153377 <GO>}

Thank you very much. And now we can go to questions from analysts offline. Sherry?

Operator

(Operator Instructions) Our first question will come from Rod Lache with Wolfe Research. Please go ahead.

Q - Rod Lache {BIO 1528384 <GO>}

Hi, everybody. Just wanted to ask about the targets from your Battery Day. Looks like you could be approaching something like 20 million vehicles by 2030, if you hit those goals. Could you maybe share with us a little bit more of a midterm target? Like where would you be by 2025, and maybe give us a little bit more insight into the investment required to get there, just to put that extra $2 billion to $2.5 billion per year into context?

A - Elon Musk {BIO 1954518 <GO>}

Yeah, I mean I think the tricky thing with trying to predict things midway through an exponential is that if things are doubling every year or even just growing 50%, then if you shift one -- plus/minus one year, it has a huge effect on the number. So -- and it sounds like, wow, you either massively exceeded or massively undershot, but it's actually what's going on is a giant S-curve. So a whole bunch of pretty big S curves, that integrate into a gigantic S-curve. So that's why it's difficult to predict the middle.

I'm not saying for sure we'll hit 20 million vehicles. But it does seem like a good goal to have because that would mean that we're replacing 1% of the global fleet per year. And it's difficult to say that we're really changing the world, if we're not switching out 1% of the global fossil fuel vehicles. I mean, it's -- I'm not sure that we can make that argument unless we change at least 1% of the vehicles per year. So that's where the 20 million vehicle per year comes from. It's like 1% of 2 billion vehicles, which is the global fleet currently. The global fleet is growing. So, probably will grow a bit bigger in the future. It's hard to say. It's like map an S-curve to a $20 million -- 20 million vehicle target in 2030 and we will slide it around and see what that number looks like. That will give you about as much insight as we have.

Q - Rod Lache {BIO 1528384 <GO>}

Okay. And just secondly, if solid-state lithium metal were to become viable, could you just maybe just pass along your perspective on that? And would you be able to repurpose most of what you're putting into place for changes in technology?

A - Elon Musk {BIO 1954518 <GO>}

Yeah. I mean, answering the first part, the cell production system is fairly agnostic on anode, cathode, electrolyte sub-array [ph] that kind of thing. It's -- we could change, and we will change, and upgrade the -- all aspects of the cell. So -- and we could, for example, make ion phosphate or nickel manganese or something like that. It's quite adaptable. So, I wouldn't say just too much more about. But the lithium, like a pure lithium anode is -- maybe not as great as it may sound. Yeah, volumetrically, you're not gaining all that much because if you got nothing on the -- say on the anode side, you got -- and just play out lithium, it's got to go somewhere, so you could have room for it.

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yes, lithium, less volumetrically dense in the pure metal form than it is intercalated into silicon. So, it's kind of hard to understand, but that's the truth. And then as we showed in our presentation, the total anode cost that we're talking about is only $1 or $2 per kilowatt hour. So the value of removing the anode material is super high either. So yeah, I fully agree, Elon.

A - Elon Musk {BIO 1954518 <GO>}

Yeah, exactly. But if it were to announce that a pure lithium anode is the right move, that would simply -- that would be no problem.

A - Andrew D. Baglino {BIO 21161872 <GO>}

Right agreed.

Q - Rod Lache {BIO 1528384 <GO>}

All right, thank you.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you, Next question please.

Operator

Our next question will come from Colin Rusch with Oppenheimer. Please go ahead.

Q - Colin Rusch {BIO 15823117 <GO>}

Thanks so much guys. You're talking about in-sourcing a number of processes. Can you talk a little bit about which processes you're moving in-house and the equipment that you're planning to make yourself versus some equipment that you buy from other folks?

A - Elon Musk {BIO 1954518 <GO>}

Sorry, are you talking about the -- for cell manufacturing or selling or --

Q - Colin Rusch {BIO 15823117 <GO>}

(Multiple Speakers) as well as on the molds that you talked about, in terms of the CapEx budget that you mentioned earlier, talking about the -- a number of processes coming in-house and which equipment pieces you're planning to make yourself versus buying?

A - Elon Musk {BIO 1954518 <GO>}

Okay. Well, I mean, Tesla is absurdly vertically integrated compared to other auto companies or basically with any company. We have a massive amount of internal manufacturing technology that we build ourselves. We literally make the machine. In fact, we design, it's like, okay, what are the things we want to make, design a machine that will make that thing, then we make the machine. This is what -- this makes it quite difficult to

copy Tesla, which -- we're not actually all that opposed to people copying us, but it's quite difficult because you can't do catalog engineering. You can't just all pick up the supplier catalog and get one of those machine, one of that machine, then go out now in Tesla.

You have to -- there is no catalog. So we made the machine, that made the machine, that made the machine. It gets -- no, we don't want to get carried away here. But -- and quite frankly, we would like to outsource less. That would be great. Because then if we get outsourced, if we take something we're doing and outsource it, then we could take those people and we're going to have them do something else. But yeah, it's like we're just making a crazy amount of machinery internally. This is -- Tesla is not well understood. If you just walk around the factory, just get a sense for it. And yeah, I don't know if this is like a smart move, but I just know like, hey, if we're trying to make progress and nobody's got the machines that we need, we've got to make it. So we do.

Q - Colin Rusch {BIO 15823117 <GO>}

Okay. And then the second question is really around the balance sheet has really changed. You guys have run (inaudible) and you've got a lot more cushion at this point. And obviously, there's opportunities around insurance to drive out some of the cost of ownership as well as financials. How are you guys thinking about that as you move into trying to accelerate demand a little bit and your ability to leverage your access to capital and enable some of those other products? Is that changing from where you've been in the past?

A - Elon Musk {BIO 1954518 <GO>}

Yes. I mean something like insurance is a good example of a product that's basically made by our internal applications team. So we made the insurance product and connected to the car, look at the data, calculate the risk. This is all internally -- there's basically internal software application. It's pretty low capital, but has very high return. I don't know. We're trying to spend money at the fastest rate that we can possibly spend it and not waste it. That's our current plan. And so it's quite hard to spend money without wasting it, or just -- we're like really just trying to not waste too much of it, frankly. We will certainly waste some of it, but trying to waste -- not to waste too much of it, this is a very difficult. But otherwise, we just try to spend money as quickly as possible in a way that is sensible and yields more value than it costs.

Operator

Thank you. Our next question will come from Adam Jonas with Morgan Stanley. Please go ahead.

Q - Adam Jonas {BIO 3339456 <GO>}

Hey, Elon, a question on LiDAR. If LiDAR were totally free, would you want to use it in your cars near term? Would that tech significantly help Tesla on the training of your neural network for FSD?

A - Elon Musk {BIO 1954518 <GO>}

I mean totally free? Probably not. I think even if its free, we wouldn't put it on.

Q - Adam Jonas {BIO 3339456 <GO>}

Okay. Let's follow-up then. Amazon appears to be investing and building an autonomous or electric transport network of some ilk through some organic investments, but also Zuk, Aurora, Rivian, et cetera. What advice would you give Jeff Bezos in his endeavor?

A - Elon Musk {BIO 1954518 <GO>}

Well, I don't know how much he cares about this, but I guess, he sure is investing a lot of money in. I mean, I think you obviously need to vote for -- if you have to care a lot about autonomy, you need to focus on vision because the entire road system is based on pass optical. So you have to solve pass optical for to have a self-driving system that is generally a solution. And once you solve pass optical, you've solved self-driving. So why bother with anything else?

Q - Adam Jonas {BIO 3339456 <GO>}

Thanks, Elon.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you, let's go to the next question please.

Operator

Our next question will come from Pierre Ferragu with New Street Research. Please go ahead.

Q - Pierre Ferragu {BIO 15753665 <GO>}

Hey, thanks for that's for taking my question. A very simple one. You haven't talked that much about like the Cybertruck today. And I was wondering how like the ramp of that product is looking like? When we should see the product hitting the road? And how fast do you expect to ramp volumes? Then I have a quick follow up.

A - Elon Musk {BIO 1954518 <GO>}

Sure. I was in the studio actually on last Friday with Franz and the team just going over just some improvements to the Cybertruck. Generally, with -- we really aim to make the car that is delivered better than the car that is unveiled. Because it always drive me crazy, car companies would unveil these awesome looking cars, like, great, you can't wait until they make that. And then what they actual make is like much worse that it's just -- it's like what is the point? So man, we always want to make the car that we deliver be better than the car we unveil. And that's the goal with the Cybertruck. So there's like a lot small improvements compared to what was unveiled.

I think it's going to be better than what we showed. And yeah, it's cool. It's very made in Austin. So dependent on completing that factory. And there are obviously new technologies with the high hardness kind of armored exoskeleton. This is never been done before, so there'll probably be some challenges along the way. And obviously, something that has extremely high hardness and difficult to scratch or dent is also difficult

to form. So it's -- there's manufacturing challenges there. That's why it's so cleaner. Although it also looks good, I think, from a cleaner standpoint. Yes. If all goes well, we'll be able to do some Cybertruck deliveries towards the end of -- towards the end of next year, yeah. So it's difficult to predict. I would say there's probably a lot of deliveries in '22 and some deliveries towards the end of next year, if things go well.

Q - Pierre Ferragu {BIO 15753665 <GO>}

Okay. And now I'm trying to get a sense of how next year is going to look like. So if I look at your production capacity at the end of this year, it's going to be almost 850,000 units on an annualized basis. And you're going to increase capacity in Shanghai, open Berlin. You say today you would open Austin as well. So you're probably going to end the year above 1 million units. And so am I right thinking next year we should expect to deliver like somewhere like between 840,000 and 1 million cars during the year?

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yes. We'll...

A - Elon Musk {BIO 1954518 <GO>}

Go ahead (inaudible).

A - Unidentified Speaker

Yes, we'll provide guidance on 2021 after next earnings call.

A - Elon Musk {BIO 1954518 <GO>}

I mean, it's in that vicinity. Yeah. (inaudible).

Q - Pierre Ferragu {BIO 15753665 <GO>}

Thank you.

Operator

Thank you. Our next question will come from Dan Levy with Credit Suisse. Please go ahead.

Q - Dan Levy {BIO 17519730 <GO>}

Hi, good evening. Thank you. Just wanted to start with a question on the quarter. Zach, maybe you could give us a sense of where directionally Model Y and China's Model 3 gross margin was in the quarter relative to Fremont Model 3? And then just a little more color on the gross margin in the quarter. Was this just purely a function of higher volume? Or was there also FSD revenues? Just puts and takes on the gross margin in the quarter.

A - Zachary Kirkhorn {BIO 20940148 <GO>}

Sure. On your question about FSD, there was a small amount of deferred revenue release. It's not particularly material in the $10 million range for the quarter. With respect to

product margins, what we're seeing across the board is just continued reduction in cost, really across every product. Shanghai continues to make good progress there. Model Y cost is also coming down quite quickly as we ramp that. But we've guided in the past that Model Y costs should be roughly equivalent to the Model 3 built in Fremont costs.

It's not quite there, and it's also a bit of a moving target as Model 3 Fremont cost comes down, Model Y also has to come down with that. But we're generally seeing strength in Shanghai margin, strength in Model Y margins. And not too far off of this, we're seeing strength in Model 3 Fremont and S and X margins. So overall, for the quarter, I think it was quite a good story for the products.

Q - Dan Levy {BIO 17519730 <GO>}

Great. Great. Thanks. And then just as a follow-up, I wanted to ask about your strategy in Europe. And I think your strategy generally has been, you cut costs and that allows you to cut price and you can generate the extra volume. And I think that's what we're seeing in China and the use of LFP. That's a good example. So, once you ramp in Berlin, what's the reasonable expectation of what pricing might look like in Europe? And how flexible are you going to be on pricing to generate incremental reg credit? So, margins out of the gate that are a little low, but are then used for the reg credits that help to offset that.

A - Zachary Kirkhorn {BIO 20940148 <GO>}

Yeah, but what I think I would say generally to the question is, I mean, we've been in a position for some time now where we are prioritizing where in the world we send our production. And there's different factors to that depending upon when different product changes are made, what the logistics routing look like, different things going on in different markets. But we are in a position where we need to prioritize. I mean, what we're trying to do as fast as we possibly can is get production up higher so that we're not in a position of needing to prioritize again. There are -- yes, I think that gets at the sentiment of your question.

A - Martin Viecha {BIO 17153377 <GO>}

Okay. Let's go to the next question please.

Operator

Our next question will come from Gene Munster with Loup Ventures. Please go ahead.

Q - Gene Munster {BIO 2013219 <GO>}

Good evening. A question on the semi. Elon, if you could just walk us through the development of Megachargers, (inaudible) and maybe just how you think about autonomy for Tesla Semi? And what is -- how you envision it impacting the broader trucking industry beyond just EV?

A - Elon Musk {BIO 1954518 <GO>}

Well, actually, Drew, do you want to answer that?

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yes, we continue the development of the Semi. And in particular, Megachargers, we realized that 350-kilowatt or so that we might be looking for cars is not going to be enough for Semi so we're looking for something much more powerful than that, that can achieve essentially charging at first the Semi as during a break, during your driving time so that you can drive until the next break, yeah. So there is no usable or efficient time wasted for charging the Semi. That's the goal. We're working with other parties to make sure that there is a standard infrastructure that will be able to be deployed for all customers. Yeah, it's probably all I can say at this point, yeah. We're not working on --

A - Elon Musk {BIO 1954518 <GO>}

Sorry, go ahead.

A - Andrew D. Baglino {BIO 21161872 <GO>}

We're not working in isolation. Yeah, we're trying to -- we have to invent it because it doesn't exist. But we're trying to invent something that could be helpful for everybody.

A - Elon Musk {BIO 1954518 <GO>}

Yes. Just a note on the sort of Semi. The Semi does consume a lot of cells. So it's, call it 4 to 6 times more than a passenger vehicle, vehicle 5, 5-ish times. So, if we are cell-constrained, it is -- it kind of -- it's difficult to ramp up the semi because there's no cells. So, we need to solve the cell constraint before ramping Semi to significant volume. That's the only real constraint on Semi progress. And just we found over and over again, we just kept running into cell production limitations. And then we're just taking things out of one pocket and putting them in another. So, we just need more cells so that we can do more stationary storage, more vehicles, more vehicle lines (inaudible) but we need more cells.

Q - Gene Munster {BIO 2013219 <GO>}

So It makes sense. A question just, as you think about -- you've talked about robotaxi and how you think that's going to impact kind of humans moving around. How do you think about Semi impacting freight longer term? I mean, is this something that is nice to have and a complement to all of your tech in new markets? Or do you think that this could be a material business?

A - Elon Musk {BIO 1954518 <GO>}

I think it's very material for sure. Really long term, all transport will go autonomous. Yeah, horses are already autonomous. But all transport will go autonomous, yeah. So (inaudible) way. So it will be pretty significant.

A - Andrew D. Baglino {BIO 21161872 <GO>}

The technology that we're putting in Semi is identical to what we're putting in the other vehicles?

A - Elon Musk {BIO 1954518 <GO>}

Yeah. It's just bigger and more motors.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you, let's go to the next question.

Operator

Our next question will come from Ben Kallo with Baird. Please go ahead.

Q - Ben Kallo {BIO 16897436 <GO>}

Hey, thanks for taking my question. Elon, what do you think the biggest structural issue is with the, let's call it, old school OEMs or one or two of the structural issues for them by getting their act together and catching up with you? And then you mentioned what you -- we want the world to look like ahead of us. What do you envision that? Is it like just Tesla or Tesla and Rivian or what?

A - Elon Musk {BIO 1954518 <GO>}

Well, I do think there will be other car companies. I don't think we're going to be the only one. So I mean, the things that -- like what other car companies do even in the auto segment is quite a small subset of what Tesla is. So at Tesla, we design and build. We're very vertically integrated. So, we're designing and building so much more of the car than other OEMs who will largely go to the traditional supply base and like I call it, catalog engineering.

So it's not very adventurous and it basically ends up like all the products end up looking the same because they're going to the same suppliers. So I mean, to the degree that you inherit legacy components, you inherit the legacy limitations and cost structure. And so you kind of need to make new ingredients, new parts, and then you need -- then there's no machine to make those parts. So, you have to make the machine that makes the part. So Tesla is like -- we're probably -- we might be, in order of magnitude, more vertically integrated than other car companies. And which we're not now, we certainly will be.

And then we also we also have to create our sales and service and distribution system in, I don't know, something on the order of 40 countries, somewhere it will be over 100 countries. Whereas the other car companies do not own their sales and service and distribution. So they kind of assemble parts from a supply base and then hand them to a dealer base. So it's just like -- it's not just -- it's like comparing dozens of car companies like just comparing just really one facet or dimension of Tesla, we're like maybe 10% in common with other car companies.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. Let's go to the last question, please.

Operator

And our final question today will come from Philippe Houchois with Jefferies. Please go ahead.

Q - Philippe Houchois {BIO 6464462 <GO>}

Yes, thank you for taking my questions. I've got two. The first one for me is, I tried to understand your business model for stationary storage. Have your thoughts on it. I mean there are two broad directions. One is selling hardware, which is a bit of a cost-plus business. And I'm just wondering if there's an opportunity where Tesla could actually share into the savings that utilities, in particular, could be able to achieve in like grid stabilization. The information I was able to get on your business in Australia a few years ago suggest that given the savings that are achieved, your hardware could have been sold at a higher price. I'm just wondering if you have -- share views on where the business already is going?

A - Elon Musk {BIO 1954518 <GO>}

Yeah. I think you're probably right about that. I mean, RJ and Zach, what do you guys think?

A - Zachary Kirkhorn {BIO 20940148 <GO>}

Yes. I mean, we're already seeing this in Australia, where we're seeing behind-the-meter aggregation that is providing grid services back to the grid, which effectively reduces the price to the customer and reduces the prices for the grid operator. So you're seeing this trend happening across the globe. And it's going to be at the residential level as well as the wholesale level. So Megapack on one end and then PowerWall on the other side. Those two working together in tandem and the software layer on top of it, Autobidder being that, that really is going to help make the grid more efficient using the hardware platform and software together.

A - RJ Johnson {BIO 16763825 <GO>}

And just a point of clarification, like that the large power plant in -- largest battery power plant in Australia, like we continue to operate that power plant and generate revenue in the market. So whether we could have sold it from or less, like we're continuing to make money off of that power plant.

Q - Philippe Houchois {BIO 6464462 <GO>}

Okay, thank you. And the follow-up question I had was, during the Battery Day, you talked about this sales vehicle integration approach. It's very interesting. And when I look at that -- when I think about it, it looks like this means that the skateboard designed the Tesla pioneered and many of your followers are using is going to become obsolete? Or am I not thinking about it the right way?

A - Elon Musk {BIO 1954518 <GO>}

It will be obsolete long term, yeah.

Q - Philippe Houchois {BIO 6464462 <GO>}

Are you talking -- yes.

A - Elon Musk {BIO 1954518 <GO>}

I mean several years from now. Now it's not like existing cars still having value. It's just that, that if you have -- if you have -- if you have a structural pack, where the pack is contributing structural value to the car because of like the sort of like the composite honeycomb effect of shared transfer between upper and lower fleet, then anything that doesn't do that is going to have to duplicate hardware. It's going to weigh more. It's going to cost more. And then the same goes for the front and rear castings.

To be frank, we're trying to make the car like you'd make a toy. If you had a toy model car, I would -- and then it's got to be real cheap and look great, how do you make that? You'll cast it. And that's how it's done. It would be absurd to make it up of tiny little pieces of stamp metal joined in complex ways. So it's sort of a natural thing to do. And then the same goes for using the energy storage, the battery as a structure, which is done for aircraft wings and for rockets. The early rockets and aircraft, they had a separate error shelf from propellant tanks or fuel tanks, and then they realized that doesn't make sense. And you've got to integrate. You've got to have your fuel tank in wing shape and you got to have your propelling tanks in the shape of the body of the rocket, for example. You don't want to put a box on a box, basically.

So -- which over many years made it like basically uncompetitive to have an aircraft that has separate fuel tanks from the wing. The wings need to be (inaudible). I wouldn't think of this as like it's like an overnight transition. It's several years. But like I said, over time, it just would be competitive to have a different architecture, in my opinion.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you very much. Unfortunately, this is all the time we have for the Q&A today. I appreciate all your great questions, and we'll speak to you again in about three months. Thank you. Goodbye.

A - Elon Musk {BIO 1954518 <GO>}

Thank you.

Operator

Ladies and gentlemen, this concludes today's conference call. Thank you for your participation. You may now disconnect.