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## 3 Broad Reasons Why The Equity in Tesla Is Worth "Zero"

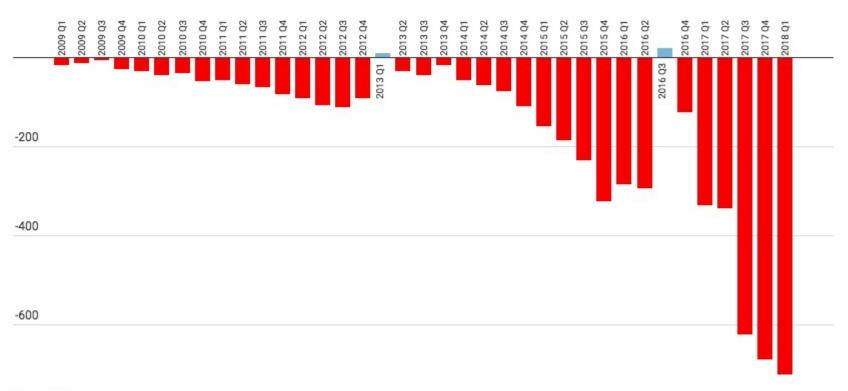
- Tesla's financials are horrible and worsening even BEFORE massive competition begins arriving later this year
- Tesla has no "moat" of any kind and in fact now possesses trailing technology in all facets of its business
- A "bet on Elon" is a bet on someone who can't be trusted- he has a long track record of making hugely misleading statements

## I know Tesla longs think it's "all about the future" so here's just a *quick* look at the *current* financials:

- Q1 2018 GAAP loss excluding ZEV credit sales was \$760 million a loss of over \$25,000 per car sold!
- This loss was NOT because Tesla is in "growth mode":
  - Porsche sells 2.5x as many cars as Tesla and is a SLOW grower and yet...
  - —If we adjust Q1 Tesla GAAP loss to Porsche's level of R&D (9.9% of revenue), Tesla *still* would've lost >\$24,000/car ex-ZEV sales
- Q1 2018 Model S&X sales were down double-digit percentages year-over-year and sequentially even *before* much nicer luxury EVs from Jaguar, Audi, Mercedes & Porsche enter showrooms later this year and in 2019.
- What about the Model 3? We'll cover that later...

#### Tesla is now 15 years old... How's that "scale" coming along?

#### Tesla's quarterly net income and loss



Source: Tesla

- Tesla Has \$2.3 billion in negative net working capital.
- Q1 free cash flow was negative \$1 billion+
- Tesla could declare bankruptcy this afternoon before cocktail hour!

But Teslemmings say Tesla is worth its \$60 billion enterprise value because "it's all about the future!"

Okay, let's look at that future...

A *massive* number of long-range electric cars will soon be on the market, often at prices subsidized by profits from their makers' conventional vehicles, an option Tesla doesn't have. Additionally, here in the U.S. Tesla's \$7500 tax credits will expire in late 2018 while competitors will just be *starting* to use theirs, so pricing pressure on Tesla will be *intense*. Here's the competition Tesla faces in electric cars...





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BEIJING N

# 2019 Jaguar XJ to be reborn as high-tech electric flagship

Luxury flagship will use cutting-edge tech to steal a march on S-Class and 7 Series









# Audi E-Tron Quattro Electric SUV Available Late 2018



Audi e-tron quattro concept: Electric driving pleasure with no compromises

## Audi E-Tron Sportback to Enter Production in 2019 in Brussels

BY CALEB JACOBS JUNE 21, 2017

SHEET/METAL

E-TRON

ELECTRIC CARS

EV NEWS

SUPERCARS



# New 2019 Porsche Mission E: all-electric saloon shaping up



20 Apr, 2018 10:00am | Jonathan Burn

## **Automotive News Europe**

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EUROPE GENEVA AUTO SHOW

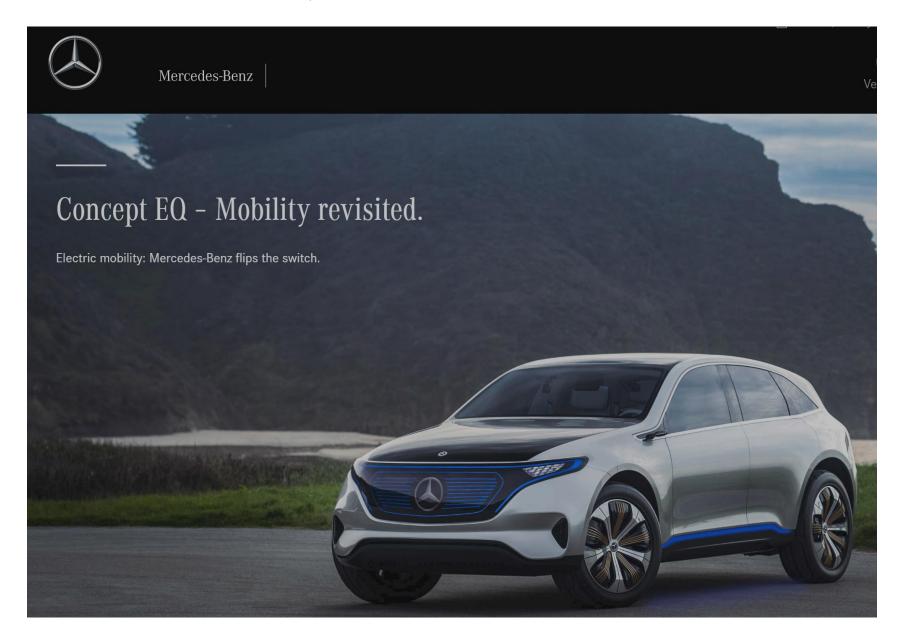
2018 GENEVA AUTO SHOW

## Porsche Mission E Cross likely to be brand's second EV



The Mission E Cross Turismo is a mix of a shooting brake and an SUV.

## Mercedes EQC Electric SUV Available 2019





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## Mercedes-Benz to launch ultraluxurious EQ S electric saloon in 2020

Large-cars project boss Michael Kelz says a new model will join EQ range and rival Audi's next-generation electric A8









Home > Daimler > Mercedes Wheels Out Electric Car Roadmap, Car And Battery Factories Everywhere

INSIDEEVs

## Mercedes Wheels Out Electric Car Roadmap, Car And Battery Factories Everywhere



(b) JAN 29 2018 BY MARK KANE 39

Daimler will invest some 10 billion euros in electromobility to electrify the entire portfolio of Mercedes-Benz and introduce more than 50 electrified vehicle variants by 2022 (including more than 10 BEVs).

# 2019 Hyundai Kona Electric gets 250-mile range rating in the U.S.

Specs edge out the Chevy Bolt, Tesla Model 3









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Automobile >

Dec 13, 2017

## 14 new EV models by Hyundai-Kia by 2025

BEV FUEL CELL HYUNDAI KIA KOREA



The Korean alliance announces a serious push of its electric car lineup with 14 new all-electric models to be expected by 2025. That is two cars per year strictly speaking.

Hyundai-Kia says it wants to run 14 electric models by 2025 as it adds to the portfolio of two existing ones, Hyundai's Ioniq EV and Kia's Soul EV.

Hyundai Motor Senior Vice President Lee Ki-Sang made the announcement in a recent press briefing and also offered some detail. First up for electrification is

the Hyundai Kona with a range of over 400 kilometres on a single charge in 2018. There had been talks recently of a bigger battery option that could bring the range beyond the 500 km threshold.

Following from there, the first all-electric Genesis is due in 2021 with a range of over 500 km and Hyundai's premium brand has another two EV models lined up until 2025 reportedly. All models including the ones from Kia are likely to share a dedicated EV platform that is currently under development.



2018 Bolt EV



Overview

Specs

Accessories

#### Forward thinking that takes you farther

Bolt EV is the first affordable all-electric car to offer an EPA-estimated 238 miles of range on a single <u>charge</u>.<sup>†</sup> It's on point with some of the most technologically advanced features, picture-perfect styling and airy spaciousness. Bolt EV is here today and ready to revolutionize the way you drive electric.

STARTING AT: \$37,495\*\*

\$29,995 AFTER FEDERAL TAX CREDIT $^{\pm}$  AS SHOWN: \$42,760\*\*

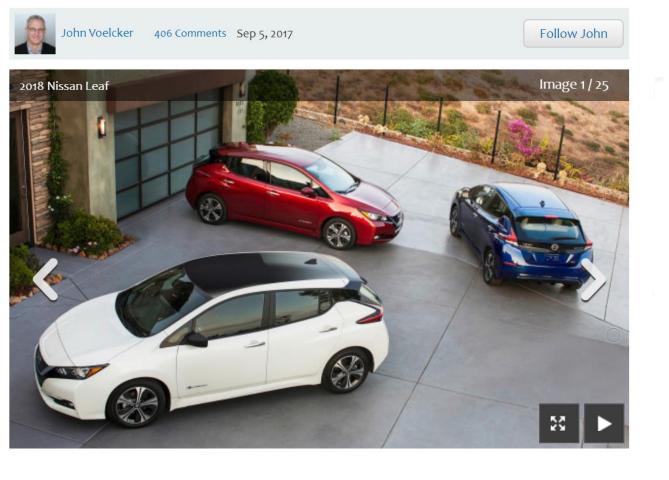


# GM elaborates on electric vehicle plans: 5 crossovers, 2 minivans, 7 SUVs, and more

Fred Lambert - Nov. 15th 2017 1:19 pm ET 💆 @FredericLambert



## 2018 Nissan Leaf debuts: 150 miles for \$30,875, 200-plus miles in 2019



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## Nissan Leaf SUV will be 'breakthrough model' that cracks the mainstream

Design Europe boss Mamoru Aoki told Autocar that the SUV will stay true to the striking IMx concept











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## First electric Volvo to be an all-new hatchback due in 2019

Battery-electric Volvo will be based on 40.2 concept and arrive as a standalone model









Volkswagen I.D. Crozz 311-Mile Electric CUV For \$30,000-ish Before Incentives!



Volkswagen promises to price its new electric vehicles (MEB architecture) competitively to assure success.



GENEVA MOTOR SHOW

## VW'S ALL-ELECTRIC I.D. VIZZION COMING 'BY 2022' WITH 400 MILES OF RANGE

So we're getting a version with a steering wheel after all...

### VW will build EVs in 16 factories in zeroemissions push

















#### Staff and wire reports **Automotive News Europe**

March 13, 2018 12:03 CET

BERLIN -- Volkswagen Group said it will expand production of electric cars to 16 factories worldwide through the end of 2022.

The automaker also said it has selected partners to provide battery cells and related technology worth around 20 billion euros (\$25 billion) for EV projects in Europe and China, its two biggest markets. A deal for North America will follow shortly, VW said.

VW plans to produce as many as 3 million EVs a year by 2025 across its 12 brands, which include the VW marque, as well as Audi, Porsche, Skoda and Seat.



VW previewed an EV flagship with the Vizzion concept at the Geneva auto show on March 6.

#### Related Stories

VW will lean on battery suppliers to power electrification blitz

Starting next year, the group will roll out a new EV "virtually every month," CEO Matthias Mueller said at the company's annual press conference here on Tuesday. "This is how we intend to offer the largest fleet of electric vehicles in the world."

VW aims to launch 80 new EVs across the group by 2025 and offer an electric version of each of its 300 group models by 2030.

## BMW will export iX3 electric SUV to Europe, U.S. from China

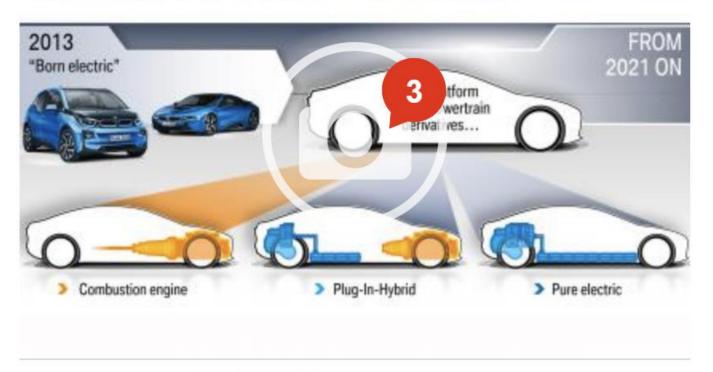


The iX3 concept, shown, previews an SUV that will compete with Jaguar's I-Pace crossover and Audi's Q6 E-Tron.



# BMW's electric car future mapped out: 25 pure EVs and hybrids by 2025

BMW i. FROM "BORN ELECTRIC" TO "ONE PLATFORM SERVES ALL".





Myanmar

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North Korea

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BUSINESS NEWS JANUARY 14, 2018 / 5:32 PM / 3 MONTHS AGO

# Ford plans \$11 billion investment, 40 electrified vehicles by 2022

## New Land Rover Defender to go electric

December 21, 2017



Land's Rover's all-new Defender to appear within a year; will be available with all-electric power

# Toyota to market over 10 battery EV models in early 2020s

Naomi Tajitsu

3 MIN READ



TOKYO (Reuters) - Toyota Motor Corp (7203.T) said it would market more than 10 allelectric vehicle (EV) models globally in the early 2020s, a target which could require the firm to look beyond a partnership with Panasonic Corp (6752.T) to co-develop and supply batteries.

# Toyota, Mazda, Denso creating company to hasten electric car development

Japanese automakers eager to begin rolling out models in 2019

September 28, 2017 15:58 JST



## Infiniti will go mostly electric by 2021, Nissan CEO says

January 16, 2018 @ 6:50 pm

## PSA will launch EV versions of Peugeot 208, 2008 and DS 3 Crossback





#### Peter Sigal Automotive News Europe

September 21, 2017 16:21 CET

PARIS -- PSA Group will launch full-electric versions of its Peugeot 208 and upcoming DS 3 Crossback cars in 2019, executives told investors. The Peugeot 2008 will get a battery-powered option in 2020.



Mini plans to debut an electric version of the three-door Cooper in a relatively short period of time, to add to gas, diesel and hybrid flavors. (Current generation gas model shown).

PHOTO BY AUTOWEEK

### **ALL-ELECTRIC MINI COOPER COMING IN 2019**

Parent company BMW confirms electric three-door along with wide U.S. availability

Home > Daimler > Smart Will Become Electric-Only In Europe By 2020

#### Smart Will Become Electric-Only In Europe By 2020



( 55 M BY MARK KANE

Daimler's smart brand is going all-electric not only in North America, but also in Europe and globally!

## SEAT confirms launch of 311-mile EV in 2020, could take on 'SEAT Born' name



22 Mar, 2018 10:00am | John McIlroy



Spanish brand to go all-electric early next decade with new model using Volkswagen's MEB platform

### Opel will launch full-electric Corsa in 2020



The Corsa is Opel's best-selling model. The current car is shown.



















Staff report **Automotive News Europe** 

February 14, 2018 12:44 CET

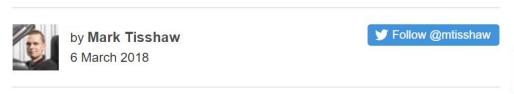
## 2019 Skoda e-Citigo confirmed as brand's first all-electric model

Czech brand's take on the VW e-Up and Seat e-Mii will follow a hybrid Superb as its second electrified model





Skoda will launch its first EV on the Citigo base



Skoda's first electric car will be an electric version of its Citigo city car, the firm's R&D boss has confirmed.



# MG E-Motion confirms new EV sports car on the way by 2020



19 Apr, 2017 2:00pm | Jonathan Burn

### Aston Martin to create all-electric car brand

by Peter Valdes-Dapena @peterdrives

(L) March 9, 2018: 1:28 PM ET



#### RENAULT: PRESS RELEASE - STRATEGIC PLAN PRESENTATION



#### PRESS RELEASE

#DriveTheFuture

DRIVE THE FUTURE 2017-2022

NEW STRATEGIC PLAN BUILDS ON RECORD RESULTS, TARGETS SUSTAINABLE, PROFITABLE GROWTH

Groupe Renault Strategic Plan targets by the end of the plan:

- Revenues over €70 billion<sup>[1]</sup>
- Operating margin over 7%, representing a 50% increase in value, with a floor at 5% throughout the plan
- Positive free cash flow each year
- €4.2 billion Monozukuri savings over the plan
- €18 billion invested in Research & Development
- Over 5 million vehicles sold, doubling sales outside of Europe
- EV Leadership: 8 pure electric vehicles, 12 electrified models



OCT 12, 2017 at 06:16

BY: JON QUIRK, Editor-in-chief, Motor1.com UK

Home, James, and don't spare the kilowatts.

FIND A VEHICLE

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# Citroen preparing EV push with 80 per cent electrified range by 2023

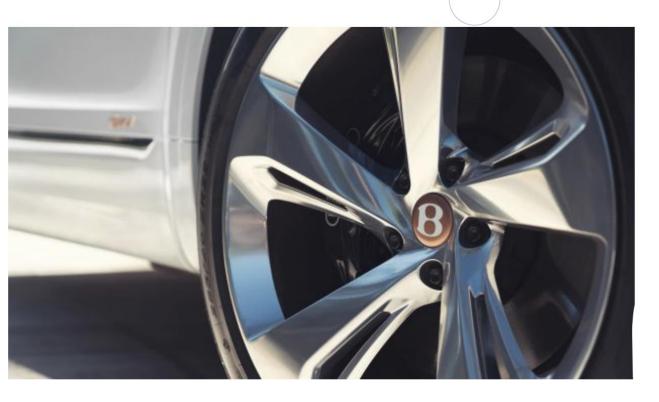


# Honda will offer full-EV or hybrid tech on every European model by 2025



## New all-electric Bentley four-door coupe to use EV tech from Porsche Mission E

by JORDAN KATSIANIS | 23 MAR 2018



Bentley will adopt EV tech sourced from Porsche in the development of a new all-electric flagship coupe



Subaru Corp. will introduce a series of all-electric cars in Japan as early as 2021, according to sources. | BLOOMBERG

**BUSINESS / CORPORATE** 

#### Subaru to introduce all-electric vehicles in Japan by 2021

KYODO

### Plus At Least 8 Significant Start-Ups

- Dyson
- Lucid
- Borgward
- Detroit Electric
- SF Motors
- NEVS/Saab
- Evelozcity
- Faraday Future

### And what about China?

#### Daimler launches new DENZA electric vehicle for the Chinese market





#### Press Contact for this Press Release (3)



- Daimler and its Chinese partner BYD continuously invest in DENZA product development for China's New Energy Vehicle (NEV) market
- New DENZA electric vehicle brings a refreshed exterior design and extended range of around 500 kilometers
- Locally sourced and produced, DENZA brand combines Daimler's vehicle architecture expertise with BYD's leading battery technology

## BAIC and Daimler to Build \$1.9 Billion China Plant

By Eric Lam

February 25, 2018, 6:28 AM EST

### Volkswagen Plans \$12 Billion Electric-Car Blitz in China

Car maker and its local joint-venture partners intend to release five models a year through 2025



The Volkswagen logo against a Beijing sky; the company plans to roll out 40 electric-car models in China by 2025. PHOTO: FRED DUFOUR/AGENCE FRANCE-PRESSE/GETTY IMAGES



### XINHUANET

## Audi to launch 7 new energy vehicle models in China by 2020

Source: Xinhua | 2018-02-11 14:19:11 | Editor: Yurou

## Toyota to Introduce 10 New Electrified Vehicles in China by 2020

PHEV Versions of Corolla and Levin Unveiled at Beijing Motor Show

News Release, Innovation, Environmental Technology, Events, Motor Show, Region, China











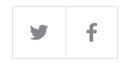
Beijing, China, April 25, 2018—Toyota Motor Corporation (Toyota) announced today that it plans to introduce to the Chinese market plug-in hybrid electric vehicle (PHEV) versions of its "Corolla" and "Levin" passenger cars in 2019 and a battery electric vehicle (BEV) model based on its "C-HR" / "IZOA"\* compact SUV in 2020. Including these, Toyota plans to introduce 10 new electrified vehicles in China by the end of 2020. And, by further promoting its local production of electric motors (powertrain components), batteries, inverters, and other electrified-vehicle core technologies, Toyota aims to further accelerate its China-based vehicle electrification efforts.

BUSINESS NEWS JANUARY 17, 2018 / 7:44 PM / 3 MONTHS AGO

## Big portion of future GM electric vehicles for China market: executive

Paul Lienert, Nick Carey

3 MIN READ



DETROIT (Reuters) - General Motors Co's China unit will sell a "substantial portion" of the automaker's future electric vehicles, GM China President Matt Tsien said on Wednesday.

## Nissan to invest \$9.5bn in China to boost electric vehicles

Joint venture aims for 30% of auto sales to be electrics by 2022

SHUNSUKE TABETA, Nikkei staff writer

February 05, 2018 13:33 JST



Jun Seki, head of Nissan's China business, announces the automaker's medium-term business plan in China with its local partner Dongfeng Group on Feb. 5.



News

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Apr 19, 2018

### Infiniti bringing EVs to China's luxury car market

CONCEPT CHINA HEV INFINITI



Infiniti is planning to increase their sales in China in the next five years to about 150,000 vehicles per year, which is triple their current rate. Electrification plays a central role in this endeavor for Nissans premium brand.

In China's growing e-mobility market Infiniti sees a chance to score big in the premium vehicle area, which has mostly been dominated by Audi, BMW and Mercedes for the past two decades.

Last year, the company produced two vehicle models in China and sold 48,000 vehicles. In the next five years, Infiniti is planning to add another four cars to their lineup and to triple their sales, according to Infiniti CEO Roland Krüger.

The company had also previously announced their plan to electrify all vehicle models as of 2021, either with a purely electric transmission, or the e-Power Technology made by Nissan, which allows a small combustion engine to help charge batteries, it becomes clear that the strategy in China will be centrally built around electrified vehicles.

### BMW will develop and produce electric Mini in China

**PHOTO GALLERY: Mini Electric Concept** 











PHOTO GALLERY >>

















#### **Edward Taylor** Reuters

March 7, 2018 08:10 CET

GENEVA -- Research and development of the new electric Mini will take place in China, BMW board member Peter Schwarzenbauer said, as the British brand awaits a new alliance with China's Great Wall Motor.

BMW announced last month that it had signed a letter of intent with Great Wall, potentially giving the Chinese company its first foreign manufacturing partner and BMW the first Mini assembly site outside Europe.



Mini unveiled a concept for its first EV at last year's Frankfurt auto show.

## Ford ramps up electric vehicle push in China amid slowing sales

Reuters Staff 3 MIN READ



SHANGHAI (Reuters) - Ford Motor Co (F.N) will launch 50 new vehicles in China by 2025, including 15 electrified vehicles, the U.S. firm said at an event in Shanghai on Tuesday, as it looks to rev up sales growth in the market and shift towards cleaner electric cars.

## China's BYD tops global electric-car production for third year in a row



BYD Yuan. Photo by Indian Autos Blog.



The plug-in version of SAIC's Reowe RX5 crossover

## SAIC to spend 15 billion yuan on EVs, connectivity, aftersales services

Automotive News China | 2017/1/27

SAIC Motor Corp. plans to invest 15 billion yuan (\$2.2 billion) to develop electric vehicles, design connected cars and upgrade and enhance aftersales services.

SAIC said that 7.2 billion yuan of the outlays will be spent on engineering EVs and plug-in hybrids.

The state-owned automaker expects to boost annual sales of EVs and plug-in hybrids to 322,000 vehicles in 2020. Of that total, 300,000 will be passenger vehicles and the rest will be commercial trucks.

#### Electric Honda HR-V set to be launched in China

In Cars, Honda, International News / By Gerard Lye / 8 January 2018 11:32 am / 6 comments

Share 161 people like this. Sign Up to see what your friends like.



Honda will reportedly introduce three electric vehicles in China this year, and one of them is said to be based on the HR-V. The model is currently being offered with petrol, diesel and hybrid powertrains, but is without a battery electric option.

## Mazda Motor and Changan Auto join hands on electric vehicles

SUV planned for 2019 under alliance forged to meet Chinese regulations

MASAHISA YUZAWA, Nikkei staff writer January 23, 2018 19:16 JST



In order to participate in China's EV market and comply with planned new regulations, Mazda has formed an alliance with local player Changan Auto. © Getty Images

### Weltmeister EX5 Electric SUV Launched On The Chinese Car Market



Joey Wang

April 23, 2018

China Electric Car, New Cars in China, WM Motors (Weltmeister)

China Car News, China Electric Car, Weltmeister EX5



Weltmeister EX5

The <u>Weltmeister</u> EX5 has been launched on the Chinese car market. The EX5 is a new mid-size <u>full electric</u> SUV. Price, including clean-car subsidies, starts at 149.000 yuan and ends at 216.300 yuan.



## NIOS ES8 Electric Crossover debuts with half the Tesla Model X's price tag

BY FAZEEN ABDEEN. MARCH 18, 2018.

## Geely to build NEV production base in E China

Xinhua | Updated: 2018-02-12 14:56





Lynk & Co, Geely Auto Group's new car brand, launches in China on Nov 29, 2017. [Photo provided to chinadaily.com.cn]

HANGZHOU - Zhejiang Geely Holding Group will set up a complex for new energy vehicles (NEV) at a cost of more than \$5 billion in East China's Zhejiang province.

## **Great Wall Starts New EV Brand In China**



Tycho de Feijter

January 16, 2018

China Electric Car, Great Wall Motors

China Car News, China Electric Car, ORA



### China carmaker FAW to roll out 17 models by 2025

Source: Xinhua | 2018-01-09 21:04:27 | Editor: Mengjie













CHANGCHUN, Jan. 9 (Xinhua) -- Chinese automaker FAW Group said it will introduce 17 car models, mostly electric, by 2025.

At a press conference held in Beijing Monday, FAW Group chairman Xu Liuping said that with the new Hongqi (Red Flag) models, the state-owned carmaker will make strides in new energy vehicles and intelligent connectivity.

The Honggi subsidiary will roll out its first electric car model this year and in the years leading up to 2025, it will introduce another 14 electric car models, Xu said.

## This Electric Car From China Has A Range Of 500 Kilometers



W.E. Ning

February 27, 2018

China Electric Car, Jianghuai Auto (JAC)

China Car News, China Electric Car, JAC iEVA50



This is the new <u>JAC</u> iEVA50, a super sleek <u>electric</u> sedan from China with a claimed range of 500 kilometers. The JAC iEVA50 will be launched on the Chinese car market in March.

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#### **BUSINESS TRENDS**

### Tesla has over 300 Chinese startups hot on its tail

Beijing's drive to clear the air spawns wave of electric car ventures

KEIICHI FURUKAWA and DAISHI CHIBA, Nikkei staff writers

April 26, 2018 14:00 JST



The eS8 SUV from Chinese brand NIO appears to be aimed squarely at Tesla's Model X.

## Here Are Some of the Better Known Chinese Start-Ups

- Xiaopeng Motors
- Leap Motor
- Byton
- GAC Trumpchi
- Singulato
- ICONIQ
- Quiantu
- Youxia Motors
- Wanxiang
- Qoros
- Thunder Power
- JMC (Jiangling Motor Corp)

## But what about electric car batteries? Tesla's a "battery company," right? And what about the "Gigafactory"?

- Tesla's battery cells are made by Panasonic
- Panasonic's so-called "investment" in the Gigafactory is really a capital lease of its equipment to Tesla
- Tesla uses a small cylindrical cell that- because it's expensive to assemble into packs- has been obsoleted by new, larger format cells; no other major auto maker even wants to use them
- Panasonic happily sells those larger cells to Tesla's competitors
- Because of Tesla's locked-in purchase commitments to Panasonic, it may now be paying significantly *more* for batteries than its competitors

## So here's where Tesla's electric car competition will get batteries...



Company

**Product** 

Recruit



product

**Energy Solutions** 

**Automotive Battery** 

## **Automotive Battery**

### World's No. 1 automotive battery supplier

The rechargeable battery for automobile is a mid- to large-sized lithium ion battery used to provide power to an electric vehicle. Lithium ions move between the (+)/(-) electrodes to produce electricity. Based on its cutting-edge technologies, LG Chem has lead the global market by supplying batteries for electric vehicles to the global automobile manufacturers.





## **Product**

## Our technology is the power behind electromobility

Using our technical process as a base, we are dedicated to developing more efficient, high capacity energy solutions for leading automakers.



## **Product**





Company

Business

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Sitemap \*

### Taking the lead in future energy development



## Partnerships with Major Global Automakers

SK innovation has successfully applied high energy density ternary materials to lithium-ion batteries for the first time in the electric vehicle battery industry for mass production. Based on such technological capabilities, SK innovation signed supply contracts with major global automakers, Hyundai Motor Group, BAIC Group and including Daimler AG has been expanding the electric vehicle battery business.











## **Applications**

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Toshiba's Rechargeable Battery offers outstanding features that suit a wide range of applications including:

- ▶ HEV, PHEV, & EV
- Solar Power Generation, Wind Power Generation, & Grid Storage
- Forklifts/Automated Guide Vehicles
- ▶ Mobile Medical Equipment
- Uninterruptible Power Systems
- ▶ Electric Bicycles, Motorcycles, & Scooters
- Forklifts/AGV(automated guided vehicles)



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## **Batteries & Energy Products: Automotive Battery**



The Automotive Battery Business Division is developing, manufacturing and selling battery cells as well as customized modules and high voltage battery systems for use in Hybrid-Electric, Plug In-Hybrid-Electric and Pure-Electric vehicles. The team is in close contact with all leading car manufacturing companies in Europe, in order to develop efficient and environmental friendly applications for a clean, sustainable future. Drawing on several decades of battery expertise, the Automotive Battery business division is specializing in battery cells, based on both NiMH and Li-lon technology.



News

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Battery & Fuel Cell >

Feb 25, 2018

## **European Battery Alliance (EBA) is taking shape**

European Battery Alliance (EBA) issues action plan for "green" batteries made in Europe

**EU COMMISSION** EUROPE | EUROPEAN BATTERY ALLIANCE | MAROŠ ŠEFČOVIČ NORTHVOLT **TERRAE** 



The European Battery Alliance (EBA) has been conjured up by the EU Commission. Their latest action plan outlines a schedule until 2023 and names various players along the entire value chain. The aim is to set up a European cell production in order to break the dependency on Asian suppliers.

When making noise for the now released draft, EU head of Energy Union, Maroš Šefčovič had called for no less than "ten Gigafactories" to feed the growing need for battery infrastructure in Europe.

## VW's Scania backs Northvolt's \$5 billion Swedish battery plant

Reuters Staff 3 N

3 MIN READ



STOCKHOLM (Reuters) - Volkswagen-owned (VOWG\_p.DE) truckmaker Scania is to invest 10 million euros in a 4 billion euro (\$5 billion) project to build Europe's biggest battery cell plant in northern Sweden.



Exclusives & Originals

Transport

Electricity

Electric

# Chinese Battery Giant CATL To Become #1 EV Battery Producer By 2020?



clos greeng reantity) rivi. J. Leane

Home / News / Electric Cars / China to build many gigafactories' worth of electric-car battery plants

## China to build many gigafactories' worth of electriccar battery plants



46 Comments Sep 25, 2017

Take Us With You!

Plus many carmakers & suppliers are investing in solid-state batteries that by the mid-2020s will completely obsolete lithium-ions & Tesla's Gigafactory

- Toyota
- BMW
- Hyundai
- Honda
- Continental
- Multiple others

Okay, but what about battery *storage*? THAT'S the REAL Tesla opportunity, right?

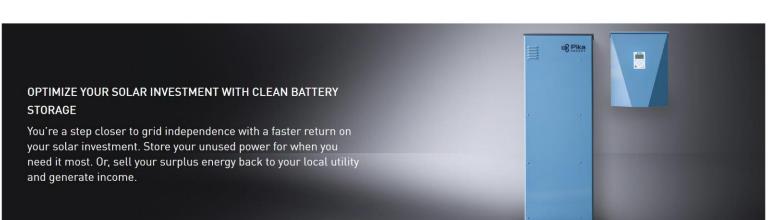
Battery storage is at *least* as competitive as electric cars. In Q3 2017, the last quarter for which Tesla broke out storage financials, that division had a *negative 32% gross margin*.

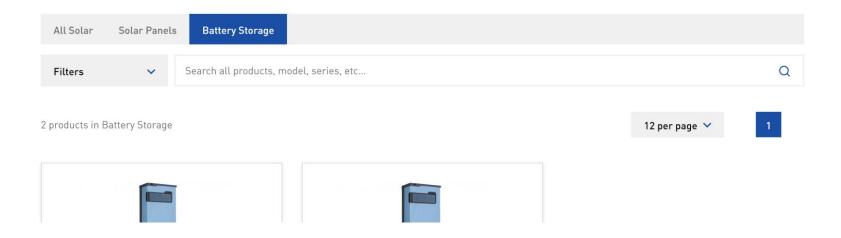
Here's what Tesla's up against in storage:

Panasonic Integrated Solutions Industries Products & Services Sales & Support Trends Q

Home / Home & Living Solutions / Solar / Battery Storage

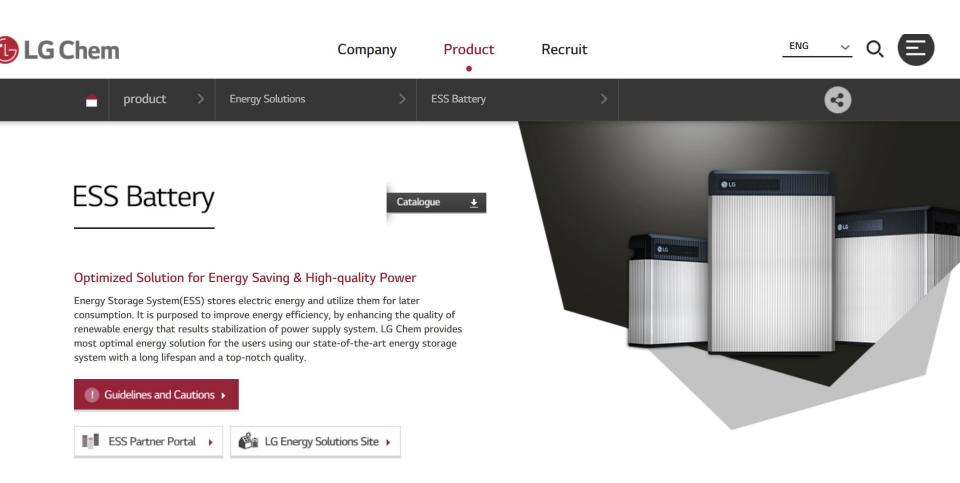
## **Battery Storage**





KR. EN. CN. SAMSUNG SDI **BUSINESS** COLUMN PR CENTER SAMSUNG SDI SAMSUNG Energy Storage System From KWh to MWh, Samsung has a solutions

Eco-friendly energy solutions for our future. Samsung SDI is leading the world market with Lithium-ion energy storage.





**Build Your Dreams®** 







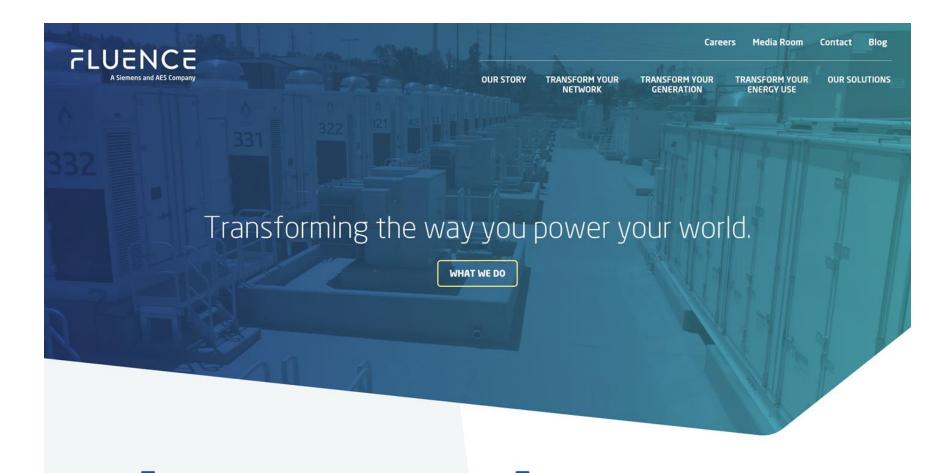








## Siemens + AES = Fluence



## Energy Storage Technology

Not all energy storage is created equal. Our technology platforms are the base from which great energy storage solutions are built. Our platforms are designed for the most demanding industrial applications and have stood the test of time. Discover the Fluence technology platform that's right for you.

## Services

Get fully equipped with our comprehensive services suite. From early stage feasibility and cost-benefit analyses to ensuring optimal performance of your storage assets, we provide the expert advice and services to propel you forward.









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HOME . HYBRID . BATTERY ENERGY STORAGE SOLUTIONS

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## **Bosch Energy Storage Solutions**



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> Power Storage

> Energy Management System

## **Power Storage Solution**



## Our Power Storage Solution opens up new opportunities for renewable integration and grid stabilization.

Our Power solution is designed for utilities, renewable operators or industrial customers seeking a flawless integration of renewable in the power grid. Wind and solar energy are by nature intermittent. Their fluctuating behavior stresses the stability of the power grid leading in many cases to curtailment of renewables. Clean energy is frequently wasted. Our Power Storage Solution solves these challenges, providing significant benefits:



## Mitsubishi Hitachi Creates New Low-Carbon and Energy Storage Division

03/29/2018





## **Products**

## About Hitachi Chemical

Home > Products > Energy Storage Devices and Systems

## Energy Storage Devices and Systems















## **E1000 Series Energy Management System**

### **Related Information**

Resource Library

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25 kW or 50 kW Hybrid Power Inverter

Photovoltaic (PV) Inverter + Battery Storage

The E1000 Series EMS allows users to manage their energy and power needs through peak-shaving, and time-shifting to quickly adapt to changing utility pricing. The first-of-its-kind EMS builds on the decades of in-house PV expertise at Toshiba and features a PV power inverter to capture and convert clean solar power.



- Battery Energy Storage: 18 kWH & Up
- ▶ Compact Footprint
- Frequency Regulation
- Long-Lasting, Fast-Charging, SCiB™ Rechargeable Battery



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## **Energy storage solutions**

The advent of volatile and decentralized power generation from renewable sources and unpredictable consumers like electric vehicles, as well as obstacles for reinforcing the grid infrastructure, accentuate the unbalance between production and consumption of electrical energy in the power system.

This results in grid instabilities, i.e., voltage and frequency deviations affecting consumers. Energy storage solutions can make a major contribution in alleviating these effects.

ABB offers turnkey energy storage systems that are ready for connection to medium- or high-voltage grids and cover a power range of hundreds of kilowatts to tens of megawatts. The optimized systems enable fast response times to variations in demand and supply, helping to maintain grid stability and ensuring reliable and high-quality energy supplies through a range of applications.

By choosing ABB as a system provider, the customer gains a reliable partner for the overall system. Our experience in implementing energy storage systems for more than a decade enables us to provide optimized solutions that are ready for grid connection. For turnkey systems, our project team acts as a single point of responsibility, thus minimizing project risk and complexity for the customer.



Are you looking for support or purchase information?

↓ Contact us

### Our offering





EssPro Grid

EssPro PCS

### **Applications**

















**SAFT 100** 

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## Off-Grid

In the coming years, demand for electric power from the world's 1.2 billion off-grid population will explode – and with it the need for systems that can store the photovoltaic, wind and hybrid energy generated to meet it.

Contact our Saft specialist

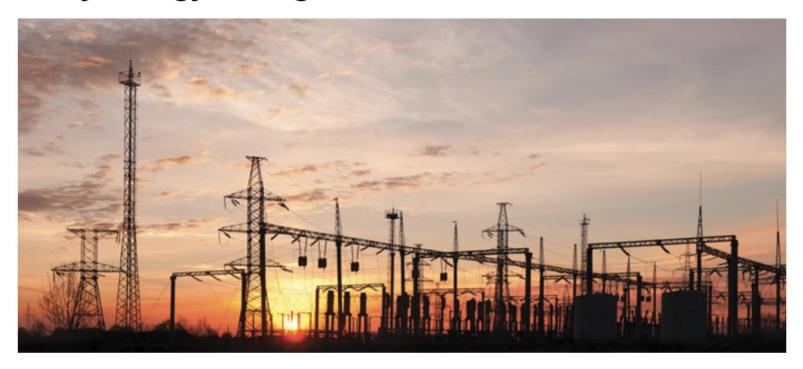




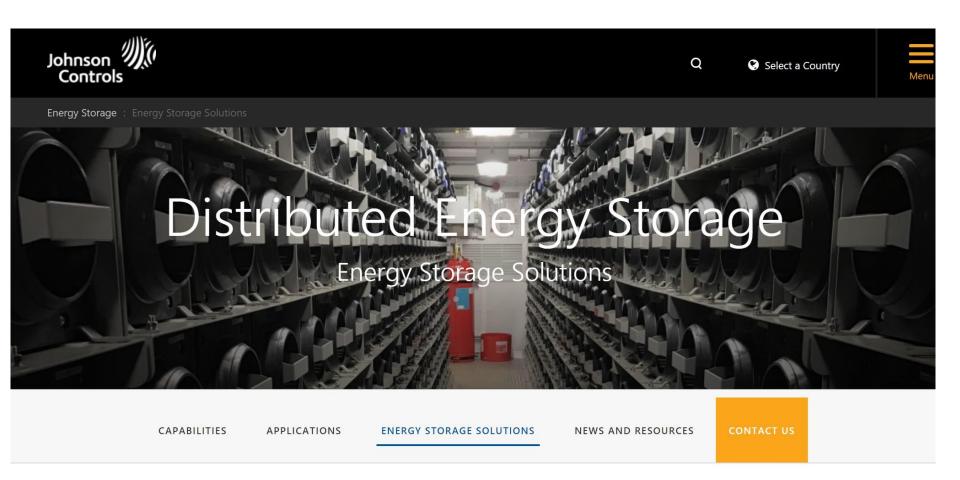


Home / Utility Energy Storage

## **Utility/Energy Storage**



Power disturbances are a major concern for today's utilities and industries. Growing demand, aging infrastructures and blackouts are just a few of the challenges. EnerSys can help you stabilize your power grid and improve power quality and efficiency.



## Flexible, intelligent, integrated

Johnson Controls offers two types of energy storage solutions – in-building and containerized. We combine our world-class battery expertise, facilities knowledge and intelligent controls to handle multiple, concurrent applications and deliver the most economic benefit. All Johnson Controls Distributed Energy Storage systems are built to integrate into building systems providing unmatched customer value.

**ABOUT US** 

> Homepage > Components > New MyReserve battery

### **NEW MYRESERVE BATTERY**

## **Unlimited Opportunities**

### **Available Spring 2018**

SOLARWATT presents the first fully modular power storage device in the world: the MyReserve Matrix. Thanks to its extendable design, it is virtually unlimited in terms of capacity and performance. The range of suitable applications now spans from a single-family home, to a craftsman's workshop, all the way up to industrial purposes.

The system is built as a matrix consisting of just two components: the MyReserve Pack battery module and the MyReserve Command, which contains all the power electronics. The more storage capacity or performance required, the more MyReserve Packs and Commands can be combined to meet that need.

## MyReserve - the latest generation in battery storage



Makes your PV system more cost effective

Customizing the exact capacity of our storage system to suit your needs





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## Cleaner, Longer-Duration Storage Changes Everything

Sustainable, scalable and easily transportable energy storage is here. Using food-grade, earth-abundant elements like iron, salt, and water for the electrolyte, our innovative iron flow battery system is changing how the industry deploys energy storage. Now, companies can choose a long-duration battery solution that is not only a viable alternative to lithium-ion batteries – but also comes at a lower cost. Healthy bottom line, healthy environment. That's what ESS is all about.

**Download ESS Corporate One-Pager €** 

## Our Technology: We've Cracked the Code for Clean, Resilient, Low-Cost Storage

Our long-duration batteries utilize a non-toxic, non-hazardous, and completely recyclable iron-based electrolyte that provides over 20,000 cycles of power with little or no maintenance. A flow battery offers significantly more storage capacity than shorter-duration solutions, so users have the flexibility to shift both their energy flow and rate of storage as needed for more efficient energy management. Welcome to the future of energy storage.

How It Works. A Simple Transfer of Flectrons Changed Everything



## **ENERGY STORAGE**

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**EXPERIENCE NISSAN** 

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**EVENTS** 

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## **XSTORAGE**

WHAT IS THE XSTORAGE SOLUTION?

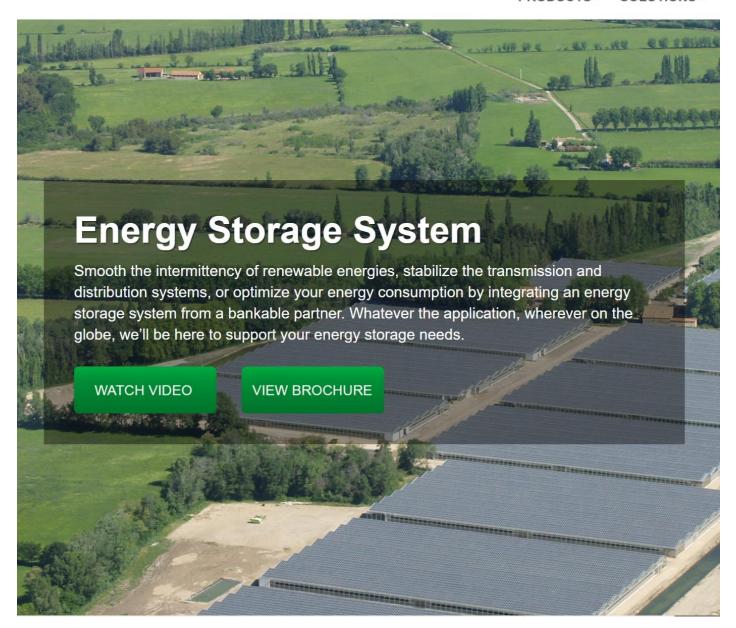
XSTORAGE AT HOME

HOW DOES XSTORAGE WORK?

XSTORAGE FOR BUSINESS







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**Events** 



## The task of stabilizing the power grid and the efficient use of energy has become a global concern

Kokam develops and provides all the major components of energy storage systems, which are used to create the most innovative and environment friendly solutions for a sustainable and clean future. Kokam offers a wide range of energy storage solutions (ESS Solutions) which can be integrated with all areas of the power grid and used in various applications.

Various energy related associations are striving for viable solution to minimize the potential risk of black out events, as well as to stabilize the grid.

**Applications** 

Importance of ESS Solutions

Benefits of ESS Solutions



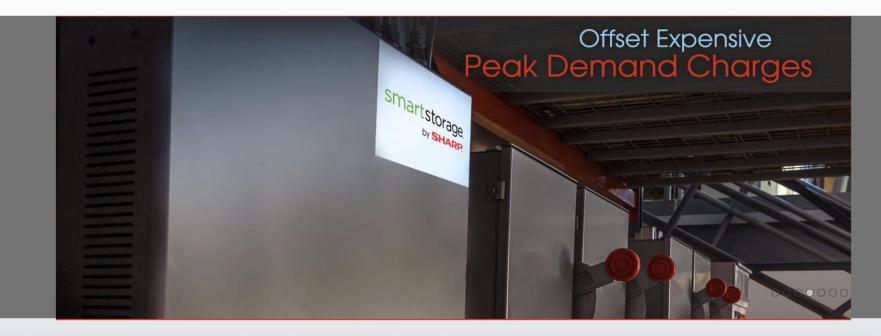
Kokan





## Kokam ESS Solutions have been used for various purposes to enhance energy efficiency

- FR (Frequency Regulation)
- Renewable Value Enhancement,
- Transmission and Distribution Deferral
- Demand Response
- Peak Load Shaving



Year Performance Guarantee

Industry-first 10-year demand reduction performance guarantee included with Sharp's 10-Year Asset



Designed to reduce peak demand charges for commercial and industrial buildings.

### **SHARP**

**100 YEARS OF EXCELLENCE** 

Backed by Sharp's history of more than 100 years of product innovation and excellence.









Welcome on TESVOLT Products Technology Service & Support News / I



Lithium Battery Storage Container

Ready Lithium - Battery Systems (EES) for a secure and long-term operation at low-voltage grid (On and Off Grid).

### Plus At Least 35 Others...

- <u>Tesvolt</u>
- Kreisel
- <u>Leclanche</u>
- EOS Energy Storage
- **ESS**
- UniEnergy Technologies
- electrIQ Power
- Belectric
- Sunverge
- Stem
- **ENGIE**
- Exergonix
- Redflow
- Renault
- Fluidic Energy
- Primus Power
- Simpliphi Power

- redT Energy Storage
- Murata
- <u>Bluestorage</u>
- Adara
- Blue Planet
- Clean Energy Storage Inc.
- Swell Energy
- Tabuchi Electric
- Younicos
- Orison
- Moixa
- Powin Energy
- Nidec
- Powervault
- Schmid
- 24M
- Terra E
- <u>Eelpower</u>

### But Tesla has 120kw *SuperChargers*... What about *THOSE*???

Multiple networks are now rolling out chargers of 150 to 350kw, all faster and, collectively, *far* more numerous than Tesla's...



#### **Our Plan**

Over a ten year period ending in 2027, Electrify America will invest \$2 billion in Zero Emission Vehicle (ZEV) infrastructure and education programs in the United States. Of this \$2 billion, \$1.2 billion will be invested nationwide (in states other than California), while \$800 million will be invested in California, the largest single ZEV market in the world. This investment represents the largest of its kind ever made, and it will provide long-overdue solutions to ZEV stakeholders

Electrify America, based in Reston, Virginia, is currently implementing the Cycle 1 National ZEV Investment plan, the Cycle 1 California ZEV Investment Plan, and the Supplement to the California ZEV Investment Plan. Over the first investment cycle, Electrify America will invest in ZEV infrastructure and awareness to support increased adoption and use of ZEV technology and to

© 2018 Electrify America, LLC Info@electrifyamerica.com Privacy Policy Terms of Use

### Porsche plans network of 500 fast chargers for U.S.

April 16, 2018 @ 12:01 am

Amy Wilson 💟 🔊



















The production version of the Mission E concept, above, is due in 2019, followed by an EV based on the Mission E Cross Turismo concept, right, in 2020. Photo credit: AUTOMOTIVE NEWS ILLUSTRATION

#### Send us a Letter

Have an opinion about this story? Click here to submit a Letter to the Editor, and we may publish it in print.

Porsche Cars North America plans to have at least 500 fast chargers available at dealership and highway locations across the U.S. by the end of 2019.





#### **Automotive News Email Newsletters**

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- PM Newscast (Weekdays)
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INSIDEEVs

### EVgo Installing First 350 kW Ultra Fast Public Charging Station In The US





Home > Charging > Tritium's First 350-kW DC Fast Chargers Coming To U.S. In April

#### Tritium's First 350-kW DC Fast Chargers Coming To U.S. In April





### Who we are

IONITY is the joint venture of BMW Group, Daimler AG, Ford Motor Company and the Volkswagen Group with Audi and Porsche. We are here to build a network of reliable and powerful charging stations along major routes across Europe. These stations are comfortable to use and they allow fast charging times due to their capacity of up to 350 kW. As a result, IONITY makes long-distance travel with electric vehicles an enjoyable experience.



### Shell and carmakers aim to go the distance with highway charging

Ron Bousso 5 MIN READ 9 f

 $LONDON \ (Reuters) \ - \ Royal \ Dutch \ Shell \ (\underline{RDSa.L}) \ has \ partnered \ with \ top \ carmakers \ to \ deploy \ ultra-fast \ chargers \ on \ Europe's \ highways, stealing \ a \ march \ on \ rivals \ in \ the \ race \ to \ remove \ one \ of \ the \ biggest \ obstacles \ facing \ the \ electric \ car \ sector.$ 



FILE PHOTO: Shell's company logo is pictured at a gas station in Zurich April 8, 2015. REUTERS/Arnd Wiegmann/File Photo

Shell's agreement with IONITY - a joint venture between BMW ( $\underline{BMWG.DE}$ ), Daimler ( $\underline{DAIGn.DE}$ ), Ford ( $\underline{F.N}$ ) and Volkswagen ( $\underline{VOWG\_p.DE}$ ) - will initially bring high-powered docks to 80 highway sites in 2019, it said in a statement.

### Eon to have 10,000 EV charging points across Europe by 2020

This comes shortly after BMW, Daimler, VW Group and Ford announced their plans to add just 400 ultra-fast chargers









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/ ENEL KICKS OFF THE "E-VIA FLEX-E" PROJECT FOR THE INSTALLATION OF ULTRA-FAST CHARGING STATIONS IN ITALY FRANCE AND SPAIN

# Enel kicks off the "E-VIA FLEX-E" project for the installation of ultra-fast charging stations in Italy, France and Spain

Published on Thursday, 28 December 2017

Testing begins of an extra-urban charging network for electric vehicles with a range of more than 300 km



E-driver

Companies

**Authorities** 

About





### New High Power Charging network for Europe's Metropolitan areas

Allego and Fortum Charge & Drive are starting a pan European project of interoperable charging network in metropolitan areas and along highways, based on High Power Charging architecture and smart e-charging hubs. The planned charging network will facilitate metropolitan areas in more than 20 countries until 2025.

News 22 January 2018

The project named MEGA-E is selected and advised for co-financing by the European Union. The plan covers 322 Ultra-fast chargers and 27 smart charging hubs throughout 20 European countries. Through the joint project Allego would continue to develop charging network in Central Europe and Fortum in the Nordic region. Roll-out is planned to start after financial closing which is expected in the first half of 2018. Allego and Fortum welcome additional partners to take part in this project. The project starts in Belgium, Denmark, Estonia, Finland, France, Germany, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Sweden and United Kingdom.

### Green Car Congress

Energy, technologies, issues and policies for sustainable mobility

# ChargePoint advances European expansion with new InstaVolt partnership; more than 200 rapid charge systems

09 May 2017

ChargePoint, the world's largest electric vehicle (EV) charging network, continues to advance its strategic European expansion (earlier post) with a new partnership with a major customer. InstaVolt, a brand committed to deploying the latest DC rapid charge technology and building a premium EV network across the UK, has signed a contract to purchase more than 200 ChargePoint rapid charge systems, making long distance EV travel easier for UK drivers.

### UK's first 150kW EV rapid chargers to be installed this year

Pod Point CEO says new chargers arrive on the "cusp of an EV revolution"; current rapid chargers are rated 50kW and Tesla Superchargers 120kW





Chargers have become a hot topic in Britain as plug-in sales rise





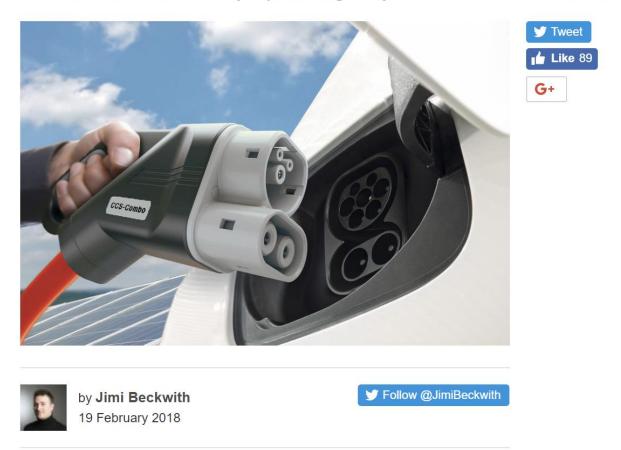






### National Grid plans 350kW EV charge point network

Chargers with up to 350kW charging capacity could be installed in 50 locations on UK motorways, providing easy access to 96% of UK citizens



The National Grid has pitched a network of 50 electric vehicle charging stations with a capacity of up to 350kW across England and Wales, along with a similar network in Scotland.

Home > Charging > Fastned Raises \$14.8 Million In 10 Days, Will Install 350 kW Chargers

#### Fastned Raises \$14.8 Million In 10 Days, Will Install 350 kW Chargers



## BP in talks with electric carmakers on service station chargers

Karolin Schaps, Ron Bousso

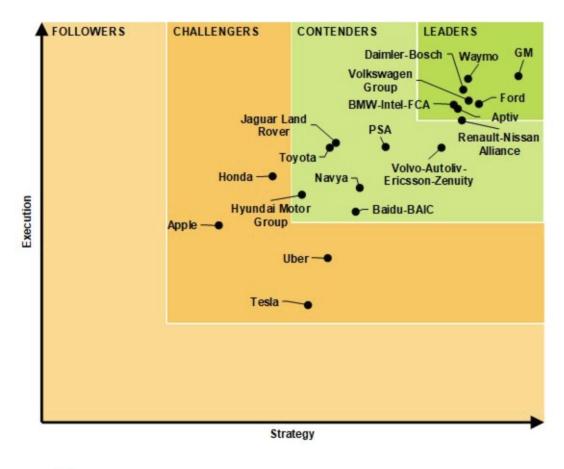
4 MIN READ



LONDON (Reuters) - BP (BP.L) is in talks with electric vehicle makers on partnering to offer battery re-charging docks at its global network of fuel service stations as it seeks to benefit from the move away from diesel and petrol cars, Chief Executive Bob Dudley told Reuters on Tuesday.

But what about autonomous driving? Isn't Tesla a leader *there*?

#### Navigant Puts Tesla In Last Place Among Autonomous Vehicles



(b) JAN 19 2018 BY ERIC LOVEDAY (c) 102

Navigant's leaderboard ranks Tesla dead last in autonomous driving technology. Leaders include General Motors, Waymo and Daimler-Bosch.

It's really no surprise to see Tesla down on the bottom of the list. Without LIDAR, Tesla vehicles aren't really capable of self-driving in most situations. However, Tesla does lead in vehicles on the road capable of at least some high-level of assistance.

DRIVER BEWARE —

# There's growing evidence Tesla's Autopilot handles lane dividers poorly

### Yeah, no kidding...

### Tesla in fatal California crash was on Autopilot

© 31 March 2018













The driver of the Tesla Model X died shortly after the crash



Home » Status Report » 2017 » Article

Status Report, Vol. 52, No. 4 | June 22, 2017

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### Tesla Model S has higher insurance losses than other large luxury cars



When it comes to insurance losses, the Tesla Model S is an outlier. The luxury sedan has higher claim frequencies and is costlier to fix than gasoline-powered large luxury cars, and it accumulates more miles on average per day than other battery-powered vehicles, a new HLDI report shows.

DJIA 23932.76 -2.34% V

Nasdaq 6915.11 -2.28% ▼

U.S. 10 Yr 15/32 Yield 2.776% A

Crude Oil 61.95 -2.50% ▼

Euro 1.2283 0.33% A

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Home News Analysis Boneyard Data Talk To Us By Bertel Schmitt and Ed Niedermeyer

You are here: Home / Analysis / Does Autosteer Actually Deserve Credit For a 40% Reduction In Tesla Crashes?

# Does Autosteer Actually Deserve Credit For a 40% Reduction In Tesla Crashes?

March 10, 2017 by Edward Niedermeyer

### No... Tesla Lied





Tesla has repeatedly cited a 2017 NHTSA report that said Autosteer reduced crash rates by 40%. The NHTSA just clarified (today!) that this was Tesla's own figure, and that the agency itself has \*not\* evaluated autosteer's effectiveness.



U.S. safety agency: prior probe did not assess 'eff...

The U.S. National Highway Traffic Safety said Wednesday that a prior investigation into Tesla Inc's semi-autonomous "Autopilot" self-driving system did not

reuters.com

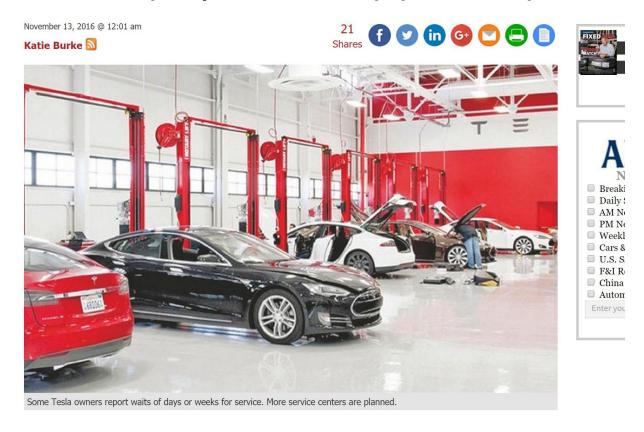
But what about the "\$35,000 mass-market" Model 3? Isn't that the REAL reason to own Tesla?

- A base Model 3 would cost Tesla *at least* mid-\$40,000s to build, so it can either sell them at a gigantic loss starting @ \$35,000 or— as it's doing now @ \$49,000— *mandate* a larger battery + other options and thus price them into a *much* smaller market segment.
- In fact, Tesla recently acknowledged that it won't make *any* \$35,000 Model 3s until at *least* late 2018/early 2019, and I predict they won't build more than a tiny handful at that price, just to claim they "did it."
- Bernstein estimates that <30% of current Tesla owners with Model 3 reservations completed their orders when invited to do so; forums indicate that the percentage among non-Tesla owners is *much lower*.
- Besides a massive number of Tesla forum posts indicating that the Model 3 is a lemon, its touchscreen-only interface means operating it is the dangerous equivalent of texting-while-driving

### And how will Tesla service a high-volume Model 3?

### Tesla owners plagued by service delays

Growth in shops may not be able to keep up with volume plans



Okay, despite all the competition and profitability issues, maybe you want to own Tesla because you believe in Elon Musk...

Really???

### Elon Musk, June, 2009:

### Elon Musk: Tesla to Become Profitable Next Month, Dispells Eberhard Lawsuit Claims



Elon Musk, February 2016: "We do not discount our cars for anyone, including me."

### Fact:

Since July 2015 Tesla has *regularly* run a discount referral program and offered four and five-figure discounts on *thousands* of brand-new inventory cars!

#### "Elon Knew": New Lawsuit Alleges Musk Knowingly Lied About Model 3 **Production**



by Tyler Durden Sat, 04/14/2018 - 20:52









A new securities class action lawsuit filed in late March 2018, which names Elon Musk as a defendant, alleges that the Tesla CEO knew that the Model 3 was not going to be able to be produced as the rates he claimed - and that the company was not going to be able to meet production goals due to - get this - the production lines not even being assembled. The lawsuit alleges that this didn't prevent Elon Musk from going out and telling the investing public otherwise, hence the allegation of securities fraud.

### Just Say 'No' To Tesla's Misleading Margin Metric

Mar. 6, 2018 9:36 AM ET | 546 comments | About: Tesla, Inc. (TSLA)

This article is now exclusive for PRO subscribers.



### Montana Skeptic Mute Bonds, long-term horizon, portfolio strategy, contrarian

**Following** 

- There's no Tesla metric more misleading than its gross margin percentage.
- How is it misleading? Let us count the ways.
- What happens when we calculate Tesla's gross margin in the same manner used, for instance, by Ford? Watch and learn.
- Yes, the Model 3 may eventually achieve a 15% gross margin. But even if it does, Tesla will still be losing \$10,000 per delivery.

### Tesla Fools The Media About Model S And Model X Demand

Feb. 27, 2018 4:30 PM ET | 269 comments | About: Tesla, Inc. (TSLA)

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(2,801 followers)

- Last week, several sources reported on the lengthening wait times for its Model S and Model X vehicles. Commentators took this to mean that demand has increased substantially.
- A closer look reveals that the delays are the product of slowed production, not increased demand.
- Demand for the Model S and Model X looks soft so far this year. This aligns with Tesla's own decision not to expand production capacity for these models.
- The confusion over wait times reveals the power Tesla wields in shaping perceptions of its performance, and demonstrates commentators' abandonment of critical analysis.

### **Tesla's Correspondence With The** SEC Shows A Pattern Of Inaccurate, Incomplete And Misleading Disclosures

Dec. 27, 2017 11:44 AM ET | 161 comments | About: Tesla, Inc. (TSLA)

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Investor Gator Mute

Alternative energy, industrials, long/short equity, special situations



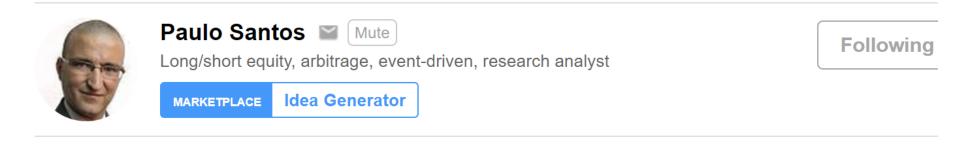
(581 followers)

- Tesla has a history of inadequate disclosures in its public filings over the last five years.
- The SEC has made repeated requests for better disclosure in vital areas such as the company's cash flow.

### Tesla: Check Your Full Self-Driving Snake Oil Expiration Date

Dec. 14, 2017 11:53 AM ET | 403 comments | About: Tesla, Inc. (TSLA)

This article is now exclusive for PRO subscribers.



- There is news on the Tesla full self-driving feature.
- The news confirms Tesla was behind, as expected.
- The news also confirms that those who bought the FSD feature likely have a valid claim against Tesla for being sold FSD snake oil.

# Musk Talked Merger With SolarCity CEO Before Sale of Stock

by David Welch

Dana Hull









STEPHEN LA

**LEMON** 

# How Tesla and Elon Musk Exaggeraged Safety Claims About Autopilot and Cars

The autonomous program isn't meant for most types of driving, and the automaker compares its new luxury vehicles to older, cheaper cars.

# Tesla Timeline Shows Musk's Morality Is Highly Convenient

Jul. 1, 2016 11:34 AM ET | 509 comments | About: Tesla Motors (TSLA), Includes: SCTY



Montana Skeptic ✓ Following (1,296 followers)

Bonds, long-term horizon, portfolio strategy, contrarian

Send Message

- Tesla has developed a nasty habit of hiding inconvenient facts from its shareholders.
- The rash of reported Autopilot misadventures meant the May 7 fatality was an accident waiting to happen.
- Musk has made absurd and inaccurate claims about "Autopilot".
- Musk likes to talk about morality. You know what's immoral? Tesla calling its software "Autopilot".

# Tesla Has Had A *Stunning* Number Of Executive Departures

Jim Chanos recently said the only companies in which he'd seen something similar were Valiant and Enron. The list with which he provided me is so long it requires three slides...

#### **TSLA Executive Departures**

Departure Date	Start Date	Term (in years)	Name	Position	Notes
Sep-09	Sep-08	1.0	Mike Donoughe	EVP Vehicle Engineering and Manufacturing	Discussed in press release
	Oct-10		Eric S. Whitaker	General Counsel and Secretary	Last referenced in 1Q12 10Q - no note of departure - Appears to have left the company by January 2013, when he became SanDisk's Chief Legal Officer. Todd Maron was Deputy General Counsel by December 2013 and General Counsel by March 2015.
Jan-12	Oct-09	2.3	Peter Rawlinson	VP and Chief Engineer	Departure mentioned on company update call 1/17/2012
Jan-12	Jan-10	2.0	Nick Sampson	Head of Vehicle and Chassis Engineering	No filing
Nov-13	Jul-10	3.3	George Blankenship	Vice President, Worldwide Retail	Determined on August 8, 2013 that George Blankenship's role no longer had SEC reporting requirements - Disclosed in 2Q13 10Q, but no 8K - Retired November 2013 - Effectively replaced by Jerome Guillen
Mar-14	Mar-13	1.0	Kingston Chang	VP / GM, China	No filing
	Jan-10		Gilbert Passin	Vice President, Manufacturing	Determined on August 8, 2013 that Gilbert Passin's role no longer had SEC reporting requirements - Disclosed in 2Q13 10Q, but no 8K - Effectively replaced by Greg Reichow
Nov-14	Apr-14	0.6	Simon Sproule	Head of communications	No filing
Dec-14	Apr-14	0.7	Peggy Yang	Chief of Communication, China	No filing
Dec-14	Mar-14	0.8	Veronica Wu Bixuan	VP / GM, China	No filing
Feb-15	Sep-14	0.4	June Jin	VP, Marketing - China	No filing
Jun-15	Jul-08	6.9	Deepak Ahuja	CFO	Retiring at age 52 - no mention in proxy published April 22, 2015 - replaced by Jason Wheele - VP Finance at Google
Aug-15	Nov-10	4.8	Jerome Guillen	Vice President, Worldwide Sales and Service	Took a leave of absence through December 31, 2015, filings do not document Mr. Guillen's return. Since taking a leave of absence, the board determined the Mr. Guillen's role no
Jan-16	Jan-12	4.0	Jay Vijayan	Chief Information Officer	longer had SEC reporting requirements  No filing
Feb-16	Oct-14	1.3	Michael Zanoni	VP of Finance and Worldwide Controller	No filing
Mar-16	Oct-14	1.4	Ricardo Reyes	VP of communications	No filing - Also worked for Tesla from 2009 to 2012
Apr-16	Aug-10	5.7	James Chen	Vice President of Regulatory Affairs and Deputy General Counsel	No filing
Apr-16	May-13	2.9	Chris Porritt	VP of Vehicle Engineering	No filing
Apr-16	Jan-14	2.3	David Deak	Senior Development Engineer	No filing and no official start / end dates - we just know David Deak joined Tesla in 2014 and started his new role in May 2016 at Lithium Americas Corp
Apr-16	Jun-14	1.8	Josh Ensign	VP of Manufacturing	No filing

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May-16	Apr-11	5.1	Greg Reichow	VP of Vehicle Production	No filing, no departure date, "Leave of Absence", will hand off responsibilities to ensure uninterrupted production
May-16	Sep-13	2.7	Chris Van Wert	Director of Product Excellence	No filing
Jul-16	Nov-13	2.7	Rich Heley	VP of Products	No filing
Aug-16	Oct-14	1.8	Bill Chen	Senior Engineering Manager Maps and Navigation	No filing
Aug-16	May-15	1.3	Gregory Ryslik	Head of Data Science, Service	No filing
Sep-16	Jan-15	1.7	Khobi Brooklyn	Head of Global Communications	No filing - Also worked for Tesla from Nov-09 to Apr-12
Dec-16	Aug-09	7.3	Mateo Jaramillo	VP of Products & Programs (Tesla Energy)	No filing
Dec-16	Dec-14	2.0	Sterling Anderson	Director of Autopilot Programs	No filing
Dec-16	Oct-14	2.2	Alexandre Haag	Senior Manager, Autopilot	No filing, went to Munich-based autonomous startup
Jan-17	Apr-16	0.8	Ardes Johnson	Sales Director of Tesla Energy	No filing
Jan-17	Oct-10	6.3	Georgios Sarakakis	Senior Manager, Reliability Engineering	No filing
Feb-17	Oct-14	2.3	Mark Lipscomb	VP of HR	No filing, but company responded to the Bloomberg story (he went to Netflix's HR)
Feb-17	Jun-10	6.7	Satish Jeyachandran	Director of hardware engineering	No filing, but company responded to the Bloomberg story; joined Waymo in June 2017
Apr-17	Nov-15	1.3	Jason Wheeler	CFO	No filing , but says he's going to go into public policy; being replaced by Deepak Ahuja, who was the prior CFO and left in June 2015
Apr-17	Apr-15	2.0	David Nister	Head of Autopilot	No filing, went to NVDA
Apr-17	Aug-15	1.7	Jennifer Kim	Director of HR, Engineering	No filing
May-17	Nov-09	7.5	Arnnon Geshuri	Head of HR	Confirmed in blog post
May-17	Dec-13	3.4	Jack West	Co-founder/CTO of Zep Solar (acquired by SCTY)	No filing
Jun-17	Jul-06	10.9	Lyndon Rive	CEO/founder of SCTY/Tesla Energy Head of Sales & Service	No filing, but company confirmed - he is joining a new startup and "spending more time wi his family"
Jun-17	Jan-16	1.4	Rene LeBlanc	Staff Process Development Engineer	No filing, tweeted by his new employer Lithium Americas, described as "world's #1 expert i lithium hydroxide use in the battery sector"

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Jun-17	Jun-16	1.0	Chester Chipperfield	Global Creative Director	No filing; establishing startup with Flickr and Jaiku founders
Jun-17	Jan-17	0.4	Chris Lattner	Head of Autopilot software team	TSLA indicated that they fired him - he had come from Apple to replace David Nister; TSLA immediately replaces him with Andrej Karpathy (landed at Google in Aug 2017)
Jul-17	Jul-06	11.0	Peter Rive	Co-founder/CTO of SCTY	Confirmed in email statement
Aug-17	Mar-06	11.4	Kurt Kelty	Senior Director of Battery Technology	No filing
Sep-17	Jul-06	11.2	Diarmuid O'Connell	Head of Business Development	Confirmed in email statement; "spending more time with his family"
Sep-17	Sep-16	1	Andrea James	IR Associate/Consultant	Confirmed in StreetInsider article
Oct-17	Jan-13	4.8	Jon Wagner	Director of Battery Engineering	Confirmed in Jalopnik article
Oct-17	Sep-13	4.1	William J. Donnelly	President of Tesla Finance, LLC	Confirmed on LinkedIn
Nov-17	Jan-11	6.8	Jeff Evanson	Head of IR	Disclosed by Aaron Chew of IR at Berenberg NDR
Dec-17	Sep-06	11.3	Ernest Villanueva	Senior Manager of Battery Module Design	Confirmed in CNBC article
Jan-18	Jan-12	6.0	Celina Mikolajczak	Senior Manager, Battery Tech, Cell Quality, and Materials Analysis	Confirmed on LinkedIn
Jan-18	Jan-11	7.0	Will McColl	Senior Manager, Equipment Engineering	Confirmed on LinkedIn
Jan-18	May-05	12.7	Jason Mendez	Senior Director, Manufacturing Engineering	Confirmed on LinkedIn
Feb-18	Nov-15	2.3	Jon McNeill	President, Global Sales & Service	Confirmed in an 8K filing
Mar-18	Oct-16	1.4	Eric Branderiz	Chief Accounting Officer & Corporate Controller	Confirmed in an 8K filing
Mar-18	Mar-13	5.0	Susan Repo	Treasurer and VP of Finance	Confirmed in Bloomberg article
Apr-18	Jan-13	5.2	Matthew Renna	Model S and X Program Manager	Confirmed in VW Press Release
Apr-18	Feb-14	4.2	Georg Ell	Director, Western Europe	Confirmed by Georg Ell via Twitter
Apr-18	Jan-16	2.2	Jim Keller	VP of Autopilot	Confirmed in Electrek article

## "Tesla does not need to ever raise another funding round" -Elon Musk, February 2012

### **Subsequent Equity & Unsecured Debt Financings:**

September 2012: \$195 million

May 2013: \$913 million

February 2014: \$2 billion

August 2015: \$652 million

May 2016: \$2 billion

March 2017: \$1.4 billion

August 2017: \$1.8 billion

Soon: Many more billions (if the SEC allows it and anyone gives it to them)