



AutoForecastSolutions

AFS Services

ePower Pack Suite

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GLOBAL AUTOMOTIVE PRODUCTION FORECASTING

- Vehicle
- Engine
- Transmission
- Alternative Propulsion
- Drivetrain
- Advisory Services



8 Year Outlook
Updated Monthly



Detailed with Attributes



Over 25 Years of Experience



Concierge-level Support

Improve Your Competitiveness

- Opportunity Identification
- Better Decision Support
- Revenue Growth

AutoForecastSolutions.com

Data That Drives Tomorrow



AutoForecast Solutions (AFS) is the only fully integrated solutions provider of **vehicle, powertrain, and drivetrain production forecasting, business planning software, and advisory services** to the global automotive industry.



AFS helps our customer...

Understand the opportunities
Develop a value proposition to defend core operations
Identify areas for growth.





A comprehensive view of the past, current, and future global automotive electrified market



Includes: Images, specs, details, and more!

Opportunity Identification - Vehicle
Release: R1810 Oct 31 2018

Data that drives tomorrow

Show Chart  Show Volume 

Start Window: 2021Q3 End Window: 2022Q3

Vehicle Type: Car and Light Truck Segment: All

Region: All Plant Country: All VM: All Plant: All

Brand Owner: All Brand: All Nameplate: All

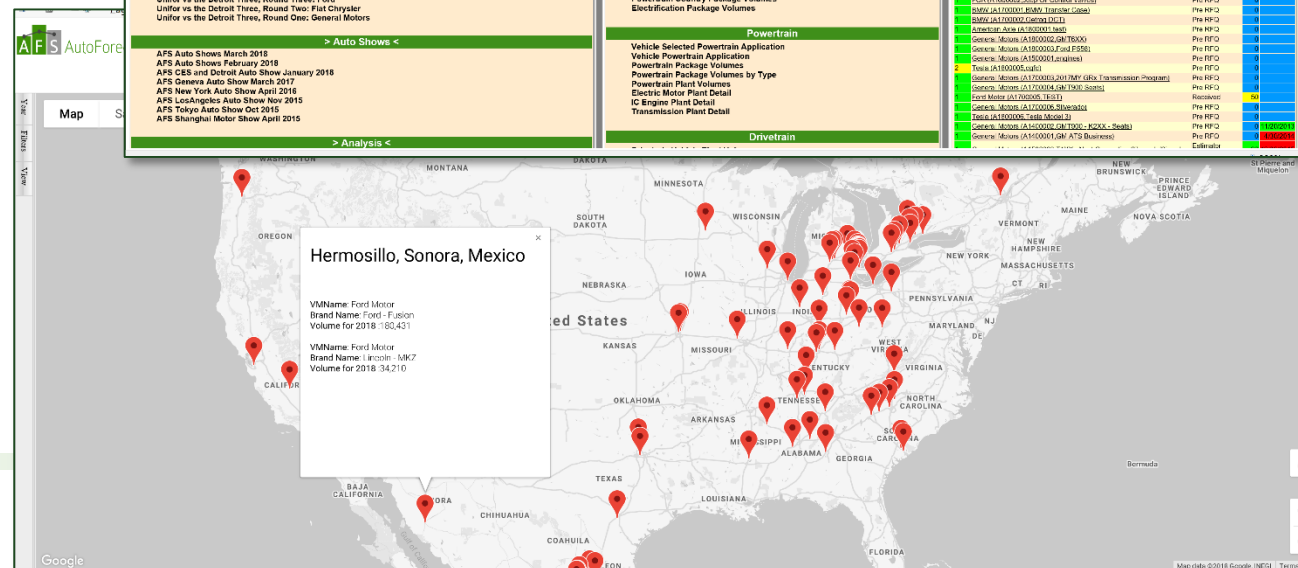
Platform Designer: All Platform: All Program: All

Use SOP/SOP Date Sort Order: Brand Owner, Brand Name, Date Date Volume Type: AutoForecast Solutions (A)

☒ Show Life Cycle Avg Annual Vol ☐ Show Vkey ☐ Show Vehicle Type ☐ Show Segment Type: HTML

Run

| Region | YName | BrandName | ManufacturerName | ProgramName | PlatformName | PlanName | PlanCountry | StateTerritory | BrandOwnerName | QOP | SOP | QOP | SOP | Vehicle Ave Annual Vol | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|----------------|----------------------|----------------|------------------------|-------------|--------------|-----------------|----------------|-----------------|--------------------------|---------|---------|---------|---------|------------------------|------|------|------|------|------|------|------|
| ASIA-PACIFIC | Ashok Leyland/Nissan | Ashok Leyland | Dost | C25-2 | SCV | Honor | India | Tamil Nadu | Ashok Leyland | 2021/10 | 2021/10 | 2021/18 | 2021/18 | 46255 | | | | | | | |
| WESTERN EUROPE | Aston Martin | Aston Martin | Valkyrie | AMAR-B03 | Monoco | Gaydon | United Kingdom | West Midlands | Aston Martin | 2021/10 | 2021/10 | 2021/18 | 2021/18 | 63 | | | | | | | |
| ASIA-PACIFIC | BAIC-Yinxiang | Beiw | M3 | CH2-0 | BC300 | Chongqing 2 | China | Chongqing | BAIC-Yinxiang | 2022/4 | 2022/4 | 2023/8 | 2023/8 | 581 | | | | | | | |
| ASIA-PACIFIC | BAIC Motor | Bjw | BJ20 | B20-2 | CG2900/22900 | Zhenjiang | China | Jiangsu | Beijing Automotive Group | 2022/6 | 2022/6 | 2023/8 | 2023/8 | 11624 | | | | | | | |
| ASIA-PACIFIC | Blue Sky NEV | BEV | AO SED | N51 | BE21 | Zhenjiang | China | Jiangsu | Beijing Automotive Group | 2022/4 | 2022/4 | 2030/12 | 2030/12 | 16123 | | | | | | | |
| ASIA-PACIFIC | Blue Sky NEV | BEV | AO SUV | N50 | BE21 | Zhenjiang | China | Jiangsu | Beijing Automotive Group | 2021/8 | 2021/8 | 2030/12 | 2030/12 | 12629 | | | | | | | |
| ASIA-PACIFIC | Beiqi Foton | Foton | BK7 | BT10-2 | BSM | Beijing | China | Beijing | Beijing Automotive Group | 2022/4 | 2022/4 | 2023/4 | 2023/4 | 11623 | | | | | | | |
| ASIA-PACIFIC | Beiqi Foton | Foton | MP-X | G-2 | G | Myun | China | Beijing | Beijing Automotive Group | 2021/7 | 2021/7 | 2023/6 | 2023/6 | 8865 | | | | | | | |
| ASIA-PACIFIC | Beiqi Foton | Foton | Tunland L | P201-2 | 26ST | Myun | China | Beijing | Beijing Automotive Group | 2021/10 | 2021/10 | 2023/18 | 2023/18 | 2037 | | | | | | | |
| ASIA-PACIFIC | United Motors | Foton | Tunland L | P201-2 | 26ST | Gateway | Thailand | Chachoengsao | Beijing Automotive Group | 2021/10 | 2021/10 | 2023/18 | 2023/18 | 1280 | | | | | | | |
| ASIA-PACIFIC | BAIC-Yinxiang | Huatai | N3 | CH2-0 | BC300 | Chongqing 1 | China | Chongqing | Beijing Automotive Group | 2022/4 | 2022/4 | 2023/8 | 2023/8 | 1783 | | | | | | | |
| ASIA-PACIFIC | BAIC-Yinxiang | Huatai | SE | SE0-2 | M-Trix | Chongqing 1 | China | Chongqing | Beijing Automotive Group | 2021/8 | 2021/8 | 2027/8 | 2027/8 | 2156 | | | | | | | |
| ASIA-PACIFIC | BAIC Motor | Shenbao/Senova | X25 | C2B-2 | Z-Car | Beijing | China | Beijing | Beijing Automotive Group | 2022/3 | 2022/3 | 2023/2 | 2023/2 | 28087 | | | | | | | |
| ASIA-PACIFIC | BAIC Motor | Shenbao | X55 | C51A-2 | M-Trix | Beijing | China | Beijing | Beijing Automotive Group | 2022/4 | 2022/4 | 2023/8 | 2023/8 | 5811 | | | | | | | |
| ASIA-PACIFIC | BAIC Motor | Weiwang | B05 | B05-2 | CG2900/22900 | Guangdong | China | Guangdong | Beijing Automotive Group | 2022/6 | 2022/6 | 2027/6 | 2027/6 | 11151 | | | | | | | |
| ASIA-PACIFIC | BAIC Motor | Weiwang | B05 | B05-2 | CG2900/22900 | Guangdong | China | Guangdong | Beijing Automotive Group | 2022/3 | 2022/3 | 2023/8 | 2023/8 | 3695 | | | | | | | |
| WESTERN EUROPE | BMW | BMW | 2-Series Active Tourer | LOU | FAAR WE | Ludwig | Germany | Saxony | BMW | 2021/10 | 2021/10 | 2023/6 | 2023/6 | 49032 | | | | | | | |
| ASIA-PACIFIC | BMW Brilliance | BMW | 2-Series Active Tourer | LOU | FAAR WE | Shenyang 2 | China | Liaoning | BMW | 2022/1 | 2022/1 | 2029/12 | 2029/12 | 9635 | | | | | | | |
| NORTH AMERICA | BMW | BMW | 2-Series Coupe | G42GB87 | LK | San Luis Potosi | Mexico | San Luis Potosi | BMW | 2021/8 | 2021/8 | 2023/8 | 2023/8 | 28067 | | | | | | | |
| WESTERN EUROPE | BMW | BMW | 4-Series Gran Coupe | G26 | UK | Munich | Germany | Bavaria | BMW | 2021/8 | 2021/8 | 2027/6 | 2027/6 | 48067 | | | | | | | |
| WESTERN EUROPE | BMW | BMW | 7-Series | G70/G71 | UK | Düsseldorf | Germany | Bavaria | BMW | 2022/7 | 2022/7 | 2026/6 | 2026/6 | 59034 | | | | | | | |
| WESTERN EUROPE | BMW | BMW | i5 | G60 | L | L | Germany | Bavaria | BMW | 2021/7 | 2021/7 | 2023/6 | 2023/6 | 6093 | | | | | | | |

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AFS Services – ePower Pack subscription

AFS ePower Pack Electrified Outlook

- 12-month access to the global ePower Pack light vehicle forecast
 - Detailing every electrified light vehicle built globally:
 - VM, Platform, Program, Brand, Nameplate, Plant, Start of productions / End of production
 - Updated monthly with actuals and new production outlook through 2026
- Full suite of user-friendly reporting and analysis tools
 - Sample report of the Opportunity Identification on the following slide
 - Vehicle production detail by powertrain variant, timing, and volume

AFS ePower Pack Guide

- 1000+ page report guide of every electrified light vehicle worldwide, through 2027
- Glossary and industry definitions
- Images, specs, motor position, and much more
- Use in conjunction with ePower Pack Electrified Outlook
- Sample data provided upon request and commitment to learn more about the total AFS Services

AFS Market Alerts

- Sent weekly, monthly, and periodically based on content
- Additional details further in this document

Bentley

Bentayga PHEV



Plug-in Hybrid Electric Vehicle

Production: announced in September 2015, expected to begin in mid 2018

Engine: Volkswagen 2.9L V6

Motor: 101kW

Power (combined): 462hp

VKey: 6934, 11182

AFS ePower Pack Global Electrified Outlook

AFS ePower Pack Electrified Outlook:

Vehicle/Powertrain Database: Access to the global view of every electrified light vehicle built in the past, currently, and into the future through 2027

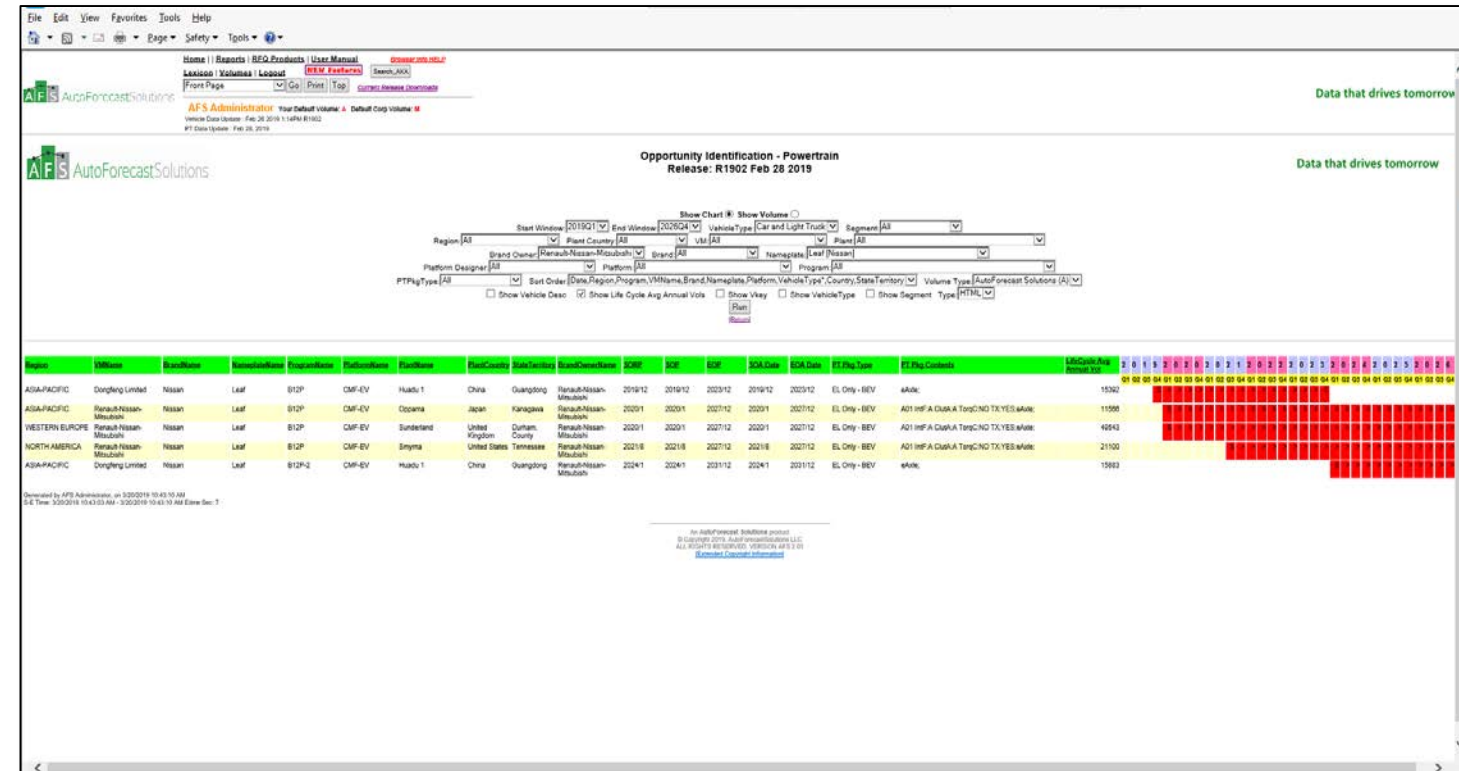
Opportunity Identification: User-friendly, web-interface to report, analyze, and extract vehicle data by powertrain detail. Filter, sort, and download to Excel.

Frequency: Updated monthly, including variance analysis and industry market alerts to stay informed to improve competitiveness

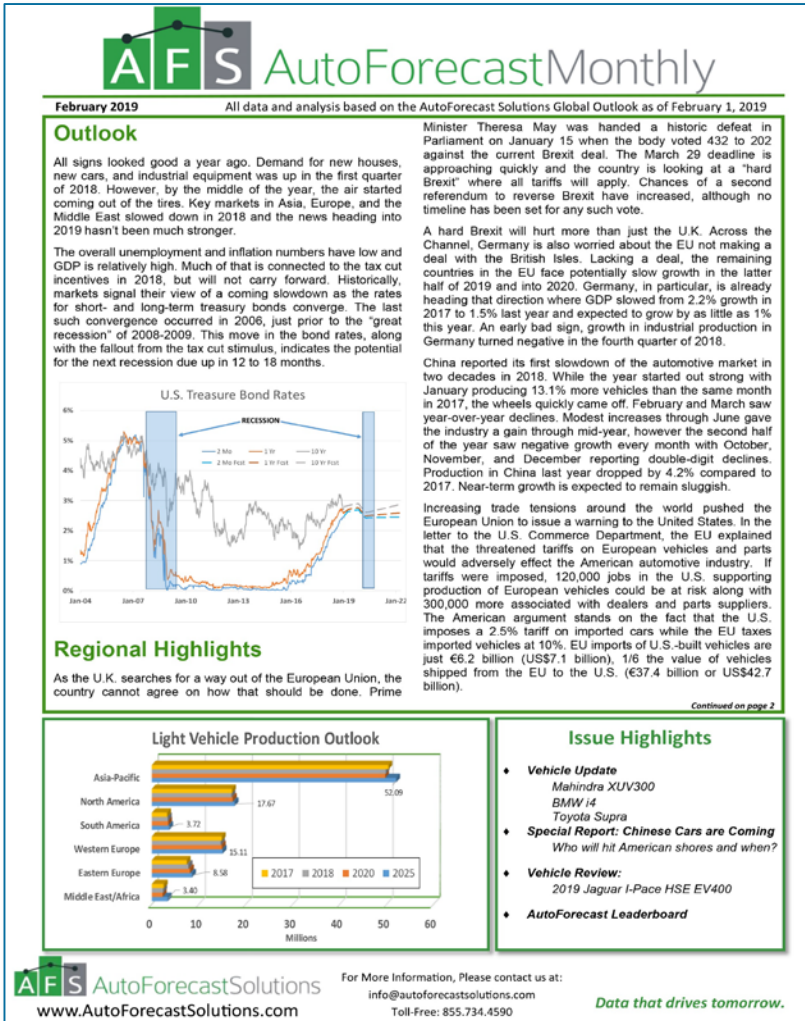
Support: Direct access to the AFS data team members, each with over 25 years of automotive forecasting experience.

Opportunity Identification Reporting by Powertrain Type:

- Vehicle assembly detail, location, and electrified powertrain variants
- Average annual production volumes and graphic of lifecycle
- One of many reports available in the user-friendly, web-based interface



AFS Market Alerts: AFS Monthly



AFS Monthly Includes:

This monthly distributed document highlights the key issues impacting the AFS global automotive production forecast.

TOPICS INCLUDE:

- Global, regional, and industry issues shaping the outlook
- Detailed analysis by country, vehicle, powertrain, and timely topics that support opportunity identification and revenue growth
- Short-, mid-, and long-term global production outlooks
- Key performance indicators
- Global vehicle production ranking reports
- U.S. light vehicle sales analysis

The volatility of today's global automotive industry requires timely insight for better decision making. AFS Services are designed to improve the competitiveness of our clients. Creating a proactive environment to strengthen core operations while identifying opportunities for revenue growth.

Delivered Monthly as part of your AFS Forecast Subscription

AFS Market Alerts: AFS Vision

AFS AutoForecastVision

December 3, 2018

Analysis exclusively provided to AutoForecast Solutions customers

Analysis: GM November 2018 Announcement

Overview

During the "great recession," General Motors fled thinking at the time was to remove redundant plants Pontiac and Saturn. Cuts were rather surgical and the industry restructured.

A decade has passed and GM's decisions were a bit products. GM had the Chevrolet Volt hybrid, Chevy Regal and Chevrolet Malibu mid-sized sedans, the ready. Unfortunately, buyers shifted toward trucks and

GM has taken the current window of opportunity, just three vehicle plants "will be unallocated" of vehicles the UAW contract talks beginning next summer Oshawa (Ontario) closing in 2019. Removing these

The cancellation of most of GM's U.S. - and Canada production for the Cadillac XTS and Chevrolet Impala buyers, mostly fleets, dissipate. The slow-sell are expected to limp along through their current

Closure of these plants affects the aforementioned remain in Mexico while the Buick LaCrosse and Cam likely, prevent introduction of the LaCrosse and

General Motors announced its intention to reduce closures includes 2,900 in Canada and 3,805 in the transfer to remaining facilities, however about 8,100 offered early retirement to 18,000 employees, but involuntary layoffs will be needed to reach the current

| Plant | Vehicle Capacity (Two-shifts/straight time) | 2018 |
|------------------------------|---|---------|
| Detroit-Hamtramck (Michigan) | 140,000 | 140,000 |
| Lordstown (Ohio) | 332,000 | 332,000 |
| Oshawa 1 & 2 (Ontario) | 621,000 | 621,000 |
| Baltimore | - | - |
| Warren Transmission | - | - |

Table 1

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AFS AutoForecastVision

December 3, 2018

Even after the announced closures, General Motors still has a number of under performing plants and potentially too many cars. Light trucks, defined as pickups, vans, sport-utilities, and crossovers, have been steadily taking over the U.S. market for the last decade, leaving traditional cars in the dust. Ford and FCA previously announced their intention to eliminate most car production from North America and the GM announcement just narrows the gap with its rivals.

GM's shift from passenger cars to trucks continues (Figure 1). In 2007, General Motors produced 23 car nameplates in North America. By 2023, the car count will fall to just 10 nameplates. Volume of car production dramatically falls from just over 1.5 million to 445,000 over the same timeframe.

As GM fills in the holes in its light truck lineup, some existing plants will be better utilized. Luxury crossovers such as Cadillac's XT4 and upcoming XT6 will fill empty space at Fairfax and Spring Hill. Chevrolet is adding the mid-sized Blazer at their Ramos Arizpe plant in Mexico. The company still has room for future light trucks in North America especially if importing models like the Buick Encore and Envision becomes too expensive due to tariffs.

Impact Analysis

There are North American plants that could use the additional volumes from those imported vehicles (Figure 2). Orion is planned to become the electric and autonomous vehicle plant for GM, however those products will not fill the plant. Lansing Grand River is also a focused plant with too little planned product expected. In Kansas, the Fairfax plant makes the Chevrolet Malibu sedan along with the Cadillac XT4 compact crossover, which will not be enough to fill the large facility. Unique among GM's light-truck plants, Lansing Delta Township has a significant amount of excess capacity in the AFS forecast window.

Figure 2 - The blue area at the bottom shows all of the light truck (pickup, van, utility) nameplates while all other colors represent all GM individual passenger car nameplates in North America.

Figure 1

On the powertrain side, only the loss of Warren Transmission's front-drive 6-speed affects a remaining product. Used on the GMC Acadia, the 6T70/75 6-speed will be replaced by a 6-speed, GM's GFE transmission is only found in hybrids and with the end of the Volt, the Chevrolet Malibu Hybrid will be updated with a different hybrid system. The 6-speed automatic, found in the heavy-duty versions of the Silverado and Sierra pickups, will be replaced as the new 10-speed spreads out across the lineup.

In 2019, the United Auto Workers will open up contract negotiations with Ford, FCA, and General Motors. With these five plants "unallocated" after 2019, the union will look to "save" one or more of the plants from closure. The likelihood of any remaining open is very small due to the ongoing excess capacity issues at GM. Compounding these troubles is the push by the Trump Administration to locate more product into U.S.-based plants, especially from

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AFS Vision Includes:

An analysis of major automotive events impacting the manufacturing footprint and business plans for industry stakeholders.

THE ISSUE: First step is to summarize the issue in a concise way in order to frame the impact on the industry.

THE IMPACT: Second is to analyze the information and provide insight into the impact on the industry, the supply base, the consumer, and the economy.

FUTURE IMPLICATIONS: AFS always looks at the data in terms of how it will affect our customers in short- and long-term. For example:

- An AFS Vision report focused on GM's announcement of plant closures provided an overview of the topic, but went further to analyze the ramifications of the decision.
- By diving deeper into the analysis, It was determined that four additional GM plants are also underutilized. This could have a future impact on production capacity and create a ripple effect for the supply base.
- AFS highlighted the production capacity of these plants in an effort to provide visibility into the additional concerns.

VALUE-ADD: The concept is simple, AFS helps transform your operations from a traditionally reactive business model, to a proactive one. Targeted analysis supports this critical initiative for improved opportunity identification and revenue growth.

Delivered Periodically as part of your AFS Forecast Subscription

AFS Market Alerts: AFS AutoShow Review (ASR)

AFS AutoForecast Solutions ASR
March 2019
Supplement to the AutoForecast Solutions Global Outlook

European Motor Show, Brussels
January 19-January 27, 2019

Ford Mondeo Clipper Hybrid



Ford's mid-sized Mondeo, known as the Fusion in North America, gets its first facelift since entering production in 2014. Updated front and rear, the new Mondeo receives new bumpers, headlights, taillights, and a bit more chrome. In addition to the sedan, the hybrid power is finally offered on the station wagon. Under the hood is Ford's 2.0L four-cylinder joined with an electric motor and a 1.4kWh battery pack.

Hyundai i40



Updates to the large Hyundai sedan and wagon include new front end styling and a new diesel engine. Hyundai's SmartSense includes Forward Collision Avoidance Assist, which alerts the driver of an emergency and can apply the brakes if needed. A new Smartstream 1.6L turbodiesel produces 113hp or 134hp and offered with a manual or dual-clutch transmission.

Land Rover Range Rover Evoque



An evolutionary design updates the oldest model in the Range Rover line, available in standard and sportier R-Dynamic trim. Gone are the two-door and convertible models leaving just the four-door. Inside, the infotainment system gets a 12.3-inch touchscreen along with a heads-up display and audio supplied by Meridian. Under the hood is the JLR Ingenium 2.0L turbocharged four-cylinder engine in either 246hp or 296hp forms. A new Hybrid model adds in a 48-volt belt-alternator system. All-wheel drive is standard on all versions. Sales begin in the spring.

Nissan NV300 Concept



The commercial side of Nissan has been growing over the last few years and this year the attention is on the big NV300. In this concept, Nissan has stocked up the cargo van with all of the things a woodworker might need. Since woodworking goes better with electricity, a recycled Nissan Leaf battery pack has been stashed inside and powered by solar panels. This Energy Pack holds 700Wh and can produce up to 1kW of power.

Continued on page 2

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Data that drives tomorrow.

AFS ASR Includes:

A summary of vehicle introductions/updates at major global auto shows:

- Images
- Specs
- Vehicle reviews

Recent shows covered include:

- Geneva
- North America International Auto Show
- Los Angeles
- New York
- Shanghai

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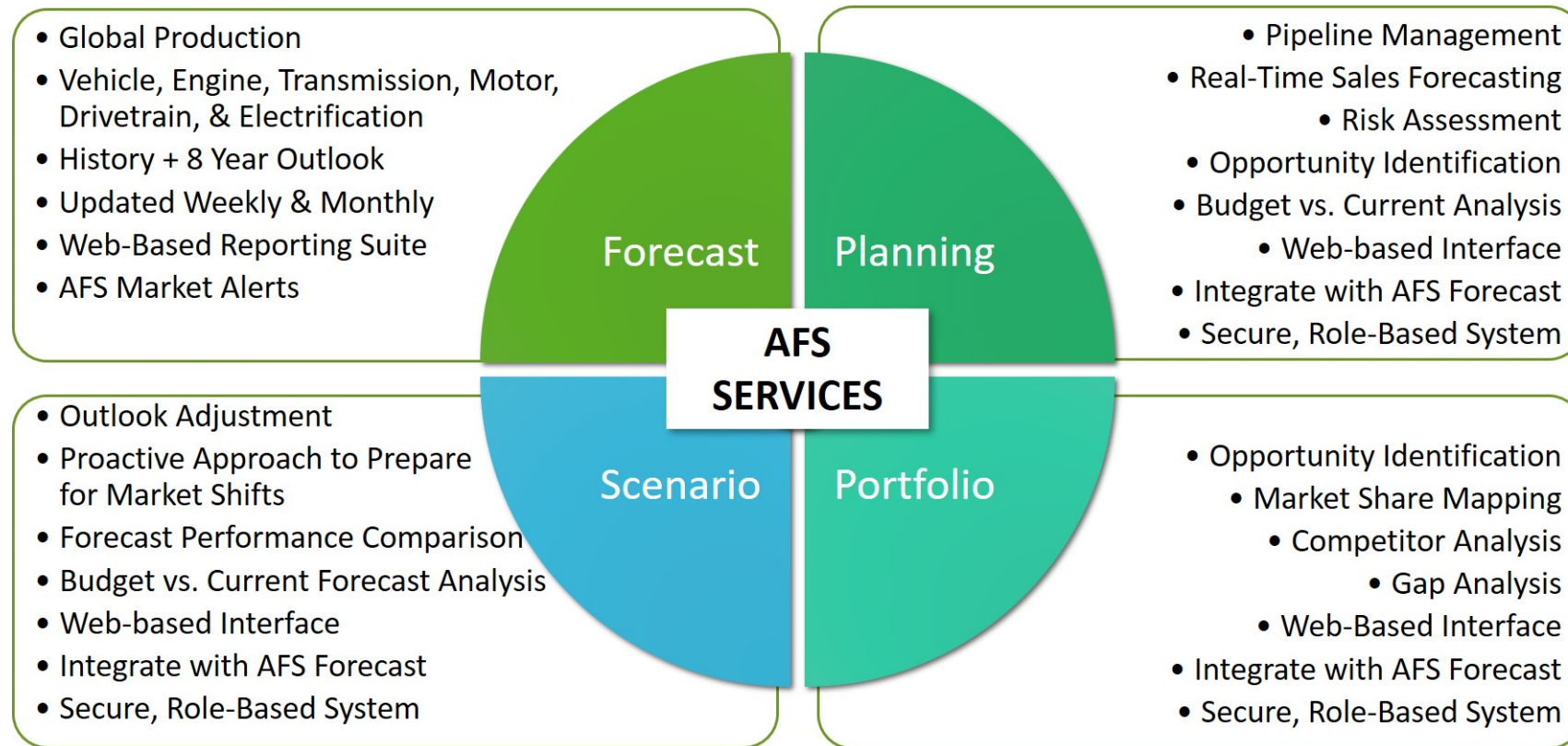
Contact AFS to learn more about the ePower Pack suite and the complete catalog of AFS Forecasting & Business Intelligence Solutions.

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Thank you from the AFS team.

Complete Turnkey Forecasting & Planning Solutions



AFS helps our customers...

Understand opportunities

Develop a value proposition to defend core operations

Identify areas of risk & growth.

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Driving Data into Decisions.*