

Bulletin - June 2020

48V Systems

Major developments, spotlight and player highlight

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FutureBridge

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OEM highlight for the month: Ford

- Ford Expands Climate Change Goals, Sets Global Target to Become Carbon Neutral By 2050

Key Takeaways

- Groupe PSA and Punch Powertrain expand their strategic partnership in electrification and sign an agreement to establish their second joint venture
- Kia develops new 'clutch-by-wire' technology for future Kia mild-hybrid models. New technology reduces CO₂ emissions by around 3% in real-world driving conditions when paired with 48V mild-hybrid starter generator
- Ford introduced mild-hybrid versions of Fiesta and Focus in Europe in an attempt to reduce the average fleet CO₂ emissions
- Mercedes AMG plans to bring yet another F1 tech to its passenger cars, an e-Turbo powered by on-board 48V mild-hybrid system

01

Major Developments

Major Developments



Partnerships and Technology Development

02-June-2020

Groupe PSA and Punch Powertrain expand partnership in electrification




- Groupe PSA and Punch Powertrain have signed an agreement to establish a second Joint Venture named "Punch Powertrain PSA e-transmissions" and expand their strategic partnership in the field of electrification.
- Punch Powertrain holds majority control in the new Joint 61/39 Venture, which will design, manufacture, and supply Punch Powertrain's DT2 dual-clutch transmission for the industry's next generation of mild hybrid electric (MHEV) and plug-in hybrid electric (PHEV) vehicles



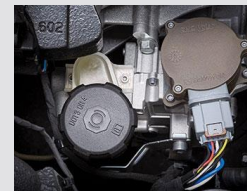
Analyst Comment

- The JV plans to supply Punch Powertrain DT2 dual clutch transmission—the first in the industry to integrate an electric motor in a mild hybrid electric vehicle
- Recently, PSA CEO Carlos Tavares stated that he is confident that a \$50 billion merger of the maker of Peugeot vehicles with Fiat Chrysler Automobiles will proceed as planned and deliver synergies of at least 3.7 billion euros (\$4.2 billion).

Read this story 

14-June-2020

Kia develops a new manual gearbox for future mild-hybrid models



- Kia has revealed a new manual gearbox (iMT), using an electronic linkage, for its forthcoming mild-hybrid models, which the firm claims offer enhanced fuel efficiency and greater driver engagement.
- It works with the mild hybrid's starter-generator (P0) to switch off the engine when coasting while keeping the chosen gear engaged, which Kia claims improves fuel efficiency and reduces CO2 emissions by up to 3% in real-world conditions.
- The new Intelligent Manual Transmission (iMT) system is expected to be introduced in the 1.6-litre 48V mild-hybrid diesel powertrain for the Ceed and Xceed, and will also be used on the 1.0-litre mild-hybrid petrol version of the forthcoming refreshed Rio



Analyst Comment

- Kia started introducing 48V mild-hybridization technology to its mass-produced passenger vehicles recently to keep the average fleet CO2 emissions low for the European market.
- iMT was developed in Europe as part of the powertrain electrification programme. The brand plans to introduce a range of new engines and MHEV powertrains later this year.

Read this story 

Ford expanding its mild-hybrid line-up for Europe

08-June-2020

Ford Fiesta mild hybrid version launched



- Ford is expanding its range of mild-hybrids with the launch of mild-hybrid Ford Fiesta.
- Ford has previously introduced 48V technology called Ecoboost hybrid (P0) in Ford Puma and will be using the same BSG in Ford Fiesta
- Ecoboost hybrid offers various advantages including 5 percent improved fuel economy and engine shutdown below 15mph
- Ford is offering the 1.0 Ecoboost Hybrid engine in 125hp and 155hp guise



Analyst Comment

- Since the cost difference between regular (95hp) and mild-hybrid model is marginal, customer acceptance would be more towards the mild-hybrid models as they offer 52.3mpg.

Read this story

22-June-2020

Ford expands the Focus range in Europe for 2020 with the mild-hybrid powertrain



- As a part of the mission to cut its average CO2 emissions, Ford is replacing the existing 1.5-litre Ecoboost petrol engine in Ford Focus with the mild-hybrid (P0) 1.0-litre Ecoboost unit.
- The mild hybrid unit paired with a six-speed manual gearbox raises power 5bhp to 153bhp and emits 116g/km of CO2 on the WLTP cycle
- Ford offers a 123bhp version as well, and both models are capable of 51.4mpg, a noticeable increase on the old engine's 48.7mpg



Analyst Comment

- The Focus is the fourth model in Ford's passenger car portfolio, after the Kuga, Puma, and Fiesta, to adopt mild-hybrid technology, as the company maintains a commitment to electrifying all its European cars by the end of 2021.

Read this story

02

Spotlight

▶▶ **Spotlight:** Mercedes-AMG to deploy 48V powered turbochargers in its upcoming models



Mercedes-Benz



Garrett
ADVANCING MOTION

SPOTLIGHT



Expert says

“We have clearly defined our goals for an electrified future. In a first step, this includes the electrified turbocharger – an example of the transfer of Formula 1 technology to the road, something with which we will take turbocharged combustion engines to a previously unattainable level of agility”

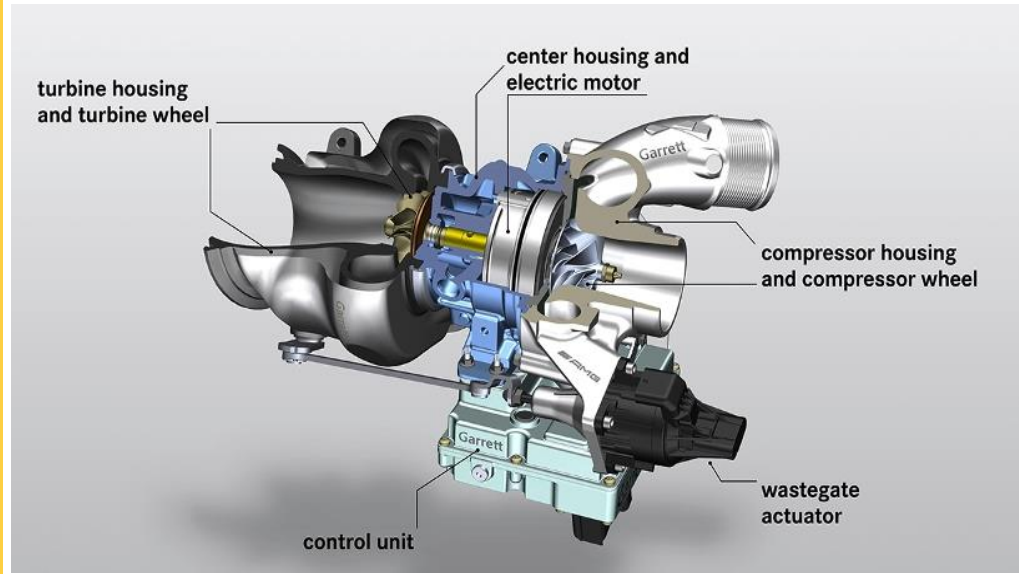
Tobias Moers,

Chairman of the board of management of Mercedes-AMG GmbH >>

48V Systems Mercedes-AMG to deploy 48V powered turbochargers in its upcoming models

Overview

- Automakers have developed various technologies to reduce turbo lag, delivering response close to that of naturally aspirated engines, electric turbochargers can further narrow that gap.
- The Mercedes-AMG eTurbo was developed in partnership with Garrett motion
- The eTurbo is slated for an engine on a next-generation "series production" model.



Mercedes-AMG has teamed up with Garrett to deliver a new electric turbo solution powered from the on-board 48V mild hybrid system for its upcoming models. >>

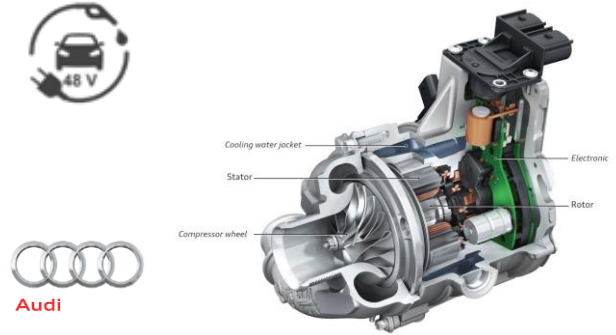
- The electric turbocharge technology is usually used by the company for its Formula One cars and is now making way into Mercedes passenger vehicles as well
- The highlight of the innovative solution is the 4 cm electric motor integrated directly to the turbocharger shaft and, the turbo could run up to 170,000rpm

Evolution of E-boosting Technologies



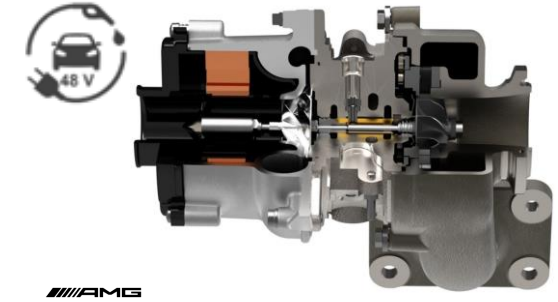
Volvo PowerPulse >>>

- **2016:** There are 2-key components to the Volvo PowerPulse system – a small compressor that runs off the car's existing electrical system, and a 2-litre tank that holds compressed air at a pressure of 12-bar, with a magnetic valve to control the release of this pressurised air
- Works with existing electrical system
- Minimal weight penalty



Audi Electric biturbo >>>

- **2018:** Audi uses a 48-volt electrical system for power, which harvests energy from braking and stores it in a small lithium-ion battery pack. The electric-turbo hardware adds 22 pounds but reduces throttle response time to 250 milliseconds
- Uses 9.6 Ah lithium-ion battery



Mercedes AMG e-Turbo >>>

- **2020:** Electric turbo solution powered from the on-board 48V mild-hybrid system uses a 4 cm electric motor integrated directly to the turbocharger shaft
- Turbine rpm - 170000



2024: BMTS Technology (formerly Bosch Mahle Turbo Systems), detailed for media in mid-2019 an electrically-assisted turbocharger that it is targeting for early 2024 production. That unit is designed to achieve a maximum speed of 216,000 rpm and requires approximately 2.2 kW of power. >>>

03

» Ford Electrification Strategy in Europe



OEM
Highlight of the
month:
Ford

Ford Electrification Strategy in Europe

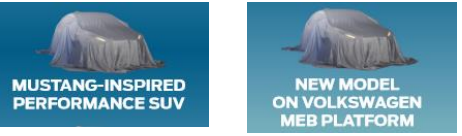
48V Mild-Hybrids from Ford



High Voltage Full Hybrids and PHEVs



Full-electric under development



To be revealed



Key takeaways

- Ford is investing more than \$11.5 billion in electric vehicles through 2022 and committed to offering an electrified version of every passenger vehicle it brings to market in Europe where it will grow its range of electrified vehicles on sale to 18 before the end of 2021, including mild hybrid, full hybrid, plug-in hybrid, and battery electric vehicles
- Ford targets Europe to be among the first Ford regions to become carbon neutral before global target
- Ford significantly accelerated its plan for electric vehicles during 2019, unveiling the all-electric Mustang Mach-E that will be available in Europe in early 2021 with a targeted EPA-estimated range of up to 600 kilometres under Worldwide Harmonised Light Vehicles Test Procedure (WLTP) regulations >>>

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