Innovative Transit Smart Energy Concept is Helping Ford Find New Ways to Go Further in Future Electrified Vehicles

- Ford develops battery-electric Transit Smart Energy Concept to trial technologies which could help maximise driving range of future electrified vehicles

- Heat pump innovation saves 20 per cent of driving range. Smart device activated power door, solar panels, and innovative subliminal mood lighting also among ideas being tested

- Minibus format selected as it represents the toughest challenge for maximising range. Traditional heating system can reduce electric vehicle range by up to 50 per cent alone

PRETORIA, South Africa, 16 May 2019 - Ford Motor Company has revealed the new Transit Smart Energy Concept - a one-of-a-kind 10-seater minibus which is helping the automaker explore solutions for maximising the energy efficiency and driving range of electrified vehicles.

While one survey showed that 40 per cent of Europeans say the next vehicle they buy will likely be electric, the distance that drivers can travel on a single charge of a battery-electric vehicle continues to be greatly impacted by the use of cabin heating features. Research has showed that using the climate control system in a battery-electric vehicle can reduce the driving range by up to 50 per cent in cold weather.

Compared to goods transport vehicles, multi-occupant vehicles such as minibuses require significantly more energy to create a comfortable temperature for occupants. The energy is provided by the high-voltage battery, presenting a significant challenge to the vehicle's driving range.

Demonstrated recently for the first time at a special 'Go Further' experience in Amsterdam, Netherlands, the fully-functioning, all-electric Transit Smart Energy Concept delivers 150kilometres driving range from a four-hour charge, supported by energy-saving and energy-generating innovations from solar panels to powertrain heat recovery systems.

"With frequent door openings, a large space to keep at comfortable temperatures, and a big payload to carry, a minibus presents the toughest challenge for maximising battery-electric vehicle range, and that's exactly why we chose it for our new Transit Smart Energy Concept," said Kilian Vas, project leader, Vehicle Architecture, Ford of Europe. "By developing this concept we've found a number of clever ways to save energy which could help further improve the electrified vehicle experience for customers in the future."

Developed by engineers at Ford's Merkenich Technical Centre, Germany, the Transit Smart Energy Concept uses the same drivetrain technology as the StreetScooter WORK XL commercial vehicle, and a Ford Transit chassis fitted with a battery-electric drivetrain for zero-emissions driving.

Innovations which enhance energy efficiency and driving range being tested for the first time include:

- An innovative heat pump system which utilises waste heat from the drivetrain components, the outside air, and the air within the cabin to reduce heating system energy usage by up to 65 per cent, resulting in a range extension of 20 per cent

- A power sliding door which opens halfway to reduce heat loss, and can be activated by the passenger using a smart device. The heating, ventilation, and air-conditioning blower is automatically deactivated when the door is open
• Heated business-class passenger seats and surfaces which enable passengers to control their local temperature, reducing the energy required for the large cabin
• Six roof-mounted solar panels which charge a 12-volt battery for powering seat heating, cabin lighting, and on-board electrical systems, including wireless charging for passenger mobile devices
• A polycarbonate divider between the passenger door and seating area, which further reduces heat loss as passengers enter and exit, and protects passengers from external elements
• Ventilated double-glazed windows which reduce cold contact surfaces, and insulate against heat loss
• Mood lighting which adjusts according to cabin temperature - red for warmth and blue for cooling - subliminally influencing passengers' perception of cabin temperature
• An insulated rear floor and roof which further reduce cabin heat loss

The driver can monitor the temperature status of all passenger seats from a tablet-inspired screen mounted in the centre console, which also gives an overview of the power savings. Two screens mounted behind the driver enable passengers to track the vehicle's location, find out about points-of-interest, and receive news and weather updates.

Future iterations of the concept are planned to enable the driver to control heating and cooling of individual seats, and deactivation of unoccupied seats. Automatic passenger detection, inspired by existing airbag deployment technologies, will also feature.

Ford anticipates beginning road-trials with the Transit Smart Energy Concept later this year after completing wind-tunnel tests.

"Whilst the Transit Smart Energy Concept isn't available in South Africa," says Kuda Takura, Smart Mobility specialist, Ford Motor Company of Southern Africa, "it's a shining example of Ford's ongoing commitment to developing new strategies to enhance the energy efficiency and driving range of electrified vehicles globally."

Earlier this year, Ford announced that every nameplate from the all-new Focus onwards will include an electrified option. This includes new nameplates, and new versions of existing vehicles. From Fiesta to Transit, either a mild-hybrid, full-hybrid, plug-in hybrid, or full battery-electric option will be offered.

The Transit provides the basis for the Deutsche Post StreetScooter WORK XL electric van, produced at Ford's European HQ in Cologne, Germany. Ford is also trialling Transit Custom Plug-In Hybrid vans in London, Cologne, and Valencia, Spain, to improve air quality and increase productivity.

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• Explorer Plug-In Hybrid anticipated CO\textsubscript{2} emissions from 78 g/km, fuel-efficiency from 3.4l/100 km
• Kuga Plug-In Hybrid anticipated CO\textsubscript{2} emissions from 29 g/km, fuel-efficiency from 1.2l/100km
• Kuga Hybrid anticipated CO\textsubscript{2} emissions from 130 g/km, fuel-efficiency from 5.6l/100 km
• Kuga EcoBlue Hybrid anticipated CO\textsubscript{2} emissions from 132 g/km, fuel-efficiency from 5.0l/100km
• Tourneo Custom Plug-In Hybrid anticipated CO\textsubscript{2} emissions from 75 g/km, fuel-efficiency from 3.3l/100 km
• Transit Custom Plug-In Hybrid anticipated CO\textsubscript{2} emissions from 75 g/km, fuel-efficiency from 3.3l/100km

*Officially homologated fuel-efficiency and CO\textsubscript{2} emission figures will be published closer to on-sale date

The declared fuel/energy consumptions, CO\textsubscript{2} emissions and electric range are measured according to the technical requirements and specifications of the European Regulations (EC) 715/2007 and (EC) 692/2008 as last amended. Fuel consumption and CO\textsubscript{2} emissions are specified for a vehicle variant and not for a single car. The applied standard test procedure enables comparison between different vehicle types and different manufacturers. In addition to the fuel-efficiency of a car, driving behaviour as well as other non-technical factors play a role in determining a car's fuel/energy consumption, CO\textsubscript{2} emissions and electric range. CO\textsubscript{2} is the main greenhouse gas responsible for global warming.
Since 1 September 2017, certain new vehicles are being type-approved using the World Harmonised Light Vehicle Test Procedure (WLTP) according to (EU) 2017/1151 as last amended, which is a new, more realistic test procedure for measuring fuel consumption and CO₂ emissions. Since 1 September 2018 the WLTP has begun replacing the New European Drive Cycle (NEDC), which is the outgoing test procedure. During NEDC Phase-out, WLTP fuel consumption and CO₂ emissions are being correlated back to NEDC. There will be some variance to the previous fuel economy and emissions as some elements of the tests have altered i.e., the same car might have different fuel consumption and CO₂ emissions.