The B-Class F-CELL. Emission-free mobility with electric drive and fuel cell

Fast forward to tomorrow

BLUE EFFICIENCY

Mercedes-Benz

“Our philosophy is very simple. We give our best for people who expect the best.”

Dr. Dieter Zetsche

Contents

Drive the car of tomorrow today

The wait for the future of motoring is over – our models with BlueEFFICIENCY technologies already offer you an exceedingly economical and eco-friendly means of travel today. In each model series, we combine the most efficient engines with the right aerodynamic and energy-management measures to suit. Our BlueEFFICIENCY philosophy means that the planning, manufacture and recycling of our vehicles are also conceived with the protection of the environment in mind.

Now we have created a BlueEFFICIENCY technology which turns the vision of locally emission-free driving into reality: in the B-Class F-CELL, a fuel cell transforms hydrogen into electrical power, which is then used to drive an electric motor. With this new model, Mercedes-Benz is raising the bar in the field of drive technology and fuel sources, as well as for cost efficiency and comfort. In 2010, a small production run will be tested out by selected customers around the world. So, as you can see: it won't be long before you can drive the car of the future at Mercedes-Benz.


F-CELL
BlueEFFICIENCY

The strong, silent type

Even from the outside, the B-Class shows great power. Visually, there is a distinctly dynamic feel to it. This is down to the Sports package including top-quality 10-spoke light-alloy wheels with 205/60 R 16 tyres as well as the rear bumper with trim strip in reflector look. The standard Exterior Chrome package gives the sporty appearance an extra air of elegance, which the special bonamite silver metallic paint finish puts the perfect finishing touch to. Thanks to the high-performance electric motor under the bonnet, you can enjoy maximum torque and lightning fast power delivery the instant you move off. Acoustically speaking, however, the B-Class F-CELL is extremely reserved. It's the ultimate understatement: even at maximum power, the sound emitted by the electric motor is barely audible – quite different from what you're used to with conventional vehicles powered by combustion engines. Inside, you will find the proven Mercedes-Benz control and display concept awaiting you – making sure you feel at home the moment you get in.

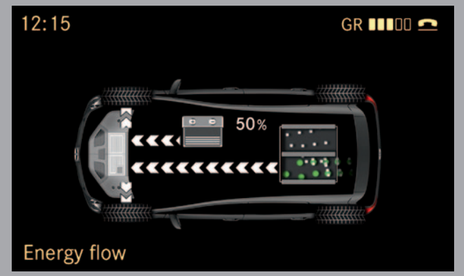
Dynamic in general – innovative in detail

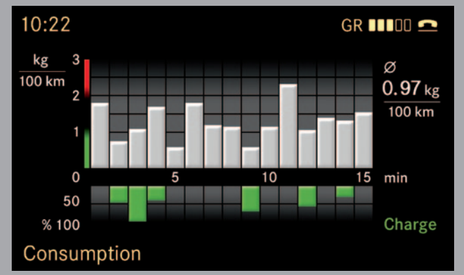
The B-Class F-CELL is the first ever Mercedes-Benz fuel-cell-powered electric vehicle suited to everyday use in which you don't have to sacrifice a thing!

Heated seats in elegant leather upholstery and the aluminium highlights adorning the interior offer the comfort you have come to expect of Mercedes-Benz.

The COMAND APS multimedia system has been adapted to the futuristic drive concept, and now features an energy flow display for the drive system in addition to its extensive multimedia functions. A consumption bar chart indicates fuel consumption, while the navigation system guides you straight to the nearest hydrogen filling station.

The driver and front passenger can set their individual preferred temperatures, which are then maintained by the standard THERMOTRONIC automatic climate control system. So, with its array of drive-specific features and equipment details there is nothing that the B-Class F-CELL makes do without, apart from just one thing – local emissions.





Special F-CELL displays in the COMAND APS

Every time you stop, you'll be doing your bit for the environment

The B-Class F-CELL has supreme efficiency ingrained into it. Your fuel cell doubles the vehicle's overall degree of efficiency compared to a modern combustion engine. At the same time, it supplies full torque instantaneously. Our engineers have furthermore incorporated the ECO start/stop function, meaning zero hydrogen consumption when stopped at traffic lights or in a traffic jam.

This is because when power demands drop below a certain level, the energy from the fuel cell is no longer required and the supply of hydrogen to the fuel cell system is shut off. As soon as you accelerate again, propulsive power will initially be supplied by the battery; above a certain power demand threshold, the fuel cell system will cut in once more – without you noticing a thing.

And even when you drive, you'll still be doing your bit for the environment

The B-Class F-CELL is fitted with an electric drive system, in which a fuel cell serves as the energy converter. In the fuel cell, power is generated extremely efficiently before being channelled via a powerful electric motor to the front wheels to propel the vehicle.

The high torque of 290 Nm is on tap instantly and promises performance equal to that of the B 180 CDI.

It doesn't matter whether you are driving in town or on country roads; the B-Class F-CELL runs silently, handles dynamically and, all in all, makes motoring a pure pleasure. All combined with an operating range of some 400 km free of pollutants and CO_2 emissions.

The compact fuel cell in the B-Class F-CELL operates more efficiently than its predecessor in the A-Class F-CELL test vehicle. The newly designed fuel cell stack, where the energy is converted, is now smaller and develops a higher output while consuming less. This is the result of innovations such as an optimised operating strategy and the new humidifying and dehumidifying system for the fuel cell stack. What's more, the system has cold-start capability down to minus 25°C, making it very reliable in the winter too.

The small-scale B-Class F-CELL series therefore eclipses any of the fuel-cell electric drives that have come before it. As soon as the test phase has been completed, it will become a genuine and, most importantly, clean alternative to combustion engines – as far as performance, comfort, driving pleasure and safety are concerned, it already is.

Your personal power station – for energy en route

The main drive components as well as the hydrogen tanks are housed in the sandwich floor underneath the passenger compartment of the B-Class F-CELL. The supplementary high-voltage battery is located in the boot, while the electric motor and cooling system can be found under the bonnet.

The modular-structured fuel cell system in the B-Class F-CELL comprises the following components:

1) Fuel cell stack: the fuel cells are stacked together. In each individual cell, hydrogen reacts with air to produce electrical power. The only emission given off by the vehicle is water vapour.

2) Fuel tank system: special compressed-gas tanks store the hydrogen at a pressure of around 700 bar.

3) Battery: the lithium-ion battery stores electrical energy and uses this to boost the vehicle's acceleration. It draws its power from the fuel cell system and from the kinetic energy recovered from regenerative braking.

4) Electric motor: the high-torque electric motor drives the vehicle's front axle. Its energy comes from the fuel cell stack and the battery.

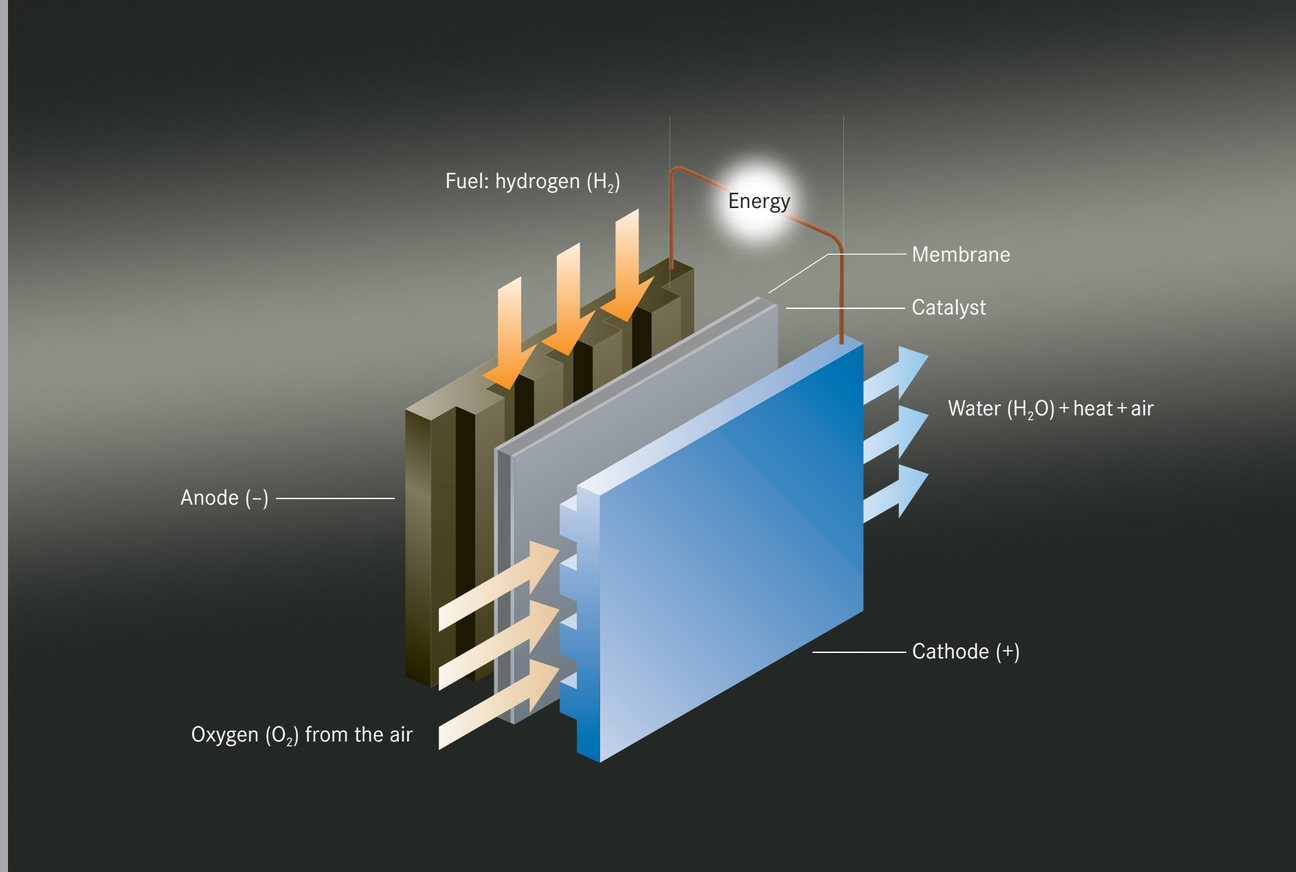
A water generator of untold capabilities

Water is the only thing the B-Class F-CELL leaves in its trail – together with the occasional look of amazement at how little noise it makes. This is all thanks to the electric motor, which has a fuel cell system as its power source. The drive energy is produced by the highly efficient chemical reaction between hydrogen and oxygen that occurs in the fuel cell stack. The hydrogen needed for this is carried in the hydrogen tanks aboard the B-Class F-CELL, while the oxygen is simply taken from the ambient air.

At the heart of the fuel cell is a proton-conducting synthetic membrane which is a fraction of a millimetre thick. This separates the hydrogen and oxygen gases from one another. It has a wafer-thin platinum coating on both sides which acts as a catalyst and breaks down the hydrogen into positively charged protons and negatively charged electrons. The protons migrate through the membrane to the oxygen, combining with it to form water. The membrane is impermeable to electrons, so they are left behind. Because there is now a surplus of electrons on the hydrogen side and an electron deficiency on the oxygen side, a positive pole (cathode) and a negative pole (anode) form. If these are connected together, an electrical current flows which is ultimately used to power the vehicle.

The vehicle's basic power load is covered by either the fuel cell system or the battery, while the full combined power of fuel cell system and battery is summoned up to handle peaks in demand, for instance when accelerating.

When the vehicle is braked, the electric motor assumes the role of a generator, feeding the battery with the recovered kinetic energy.



Driving on hydrogen power. Freedom and independence

The hydrogen needed for your B-Class F-CELL is already available today from selected filling stations. The refuelling procedure is just as quick, simple and safe as with a conventionally powered vehicle.

The use of hydrogen sees the introduction of a new fuel that holds unique benefits for road transport. It can be obtained from numerous energy sources – both fossil and renewable – and is not subject to any geographical constraints.

As hydrogen is simple to transport and store, energy can be consumed independently of its production – both at a different time and in a different place. This all adds up to make hydrogen an ideal means of energy storage.

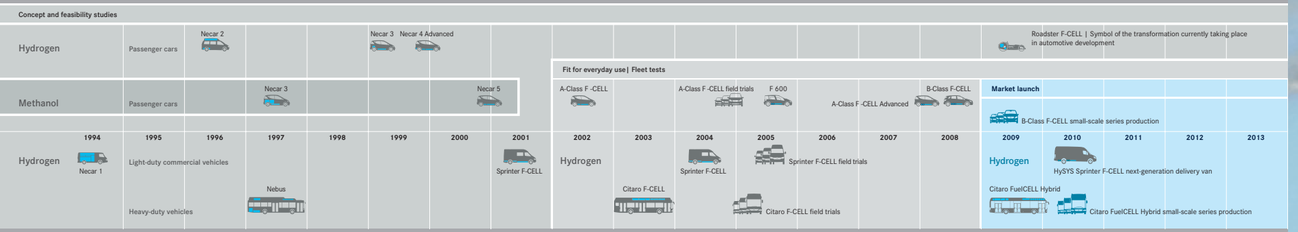
The full-scale launch of fuel-cell vehicles is dependent on a comprehensive infrastructure being established. This is something that car makers, petroleum and energy companies, as well as policy makers around the world are working hand-in-hand to achieve.

Hydrogen can be generated from renewable resources

The hydrogen filling station at Stuttgart Airport is a cooperative project between the firms OMV, Linde and Daimler that is supported by the German state of Baden-Württemberg

Unrivalled experience – ideally equipped for the future

The first roadworthy fuel-cell-powered vehicle from Mercedes-Benz was unveiled in 1994, making it the pioneer of this forward-looking drive technology. In the years that followed, numerous concept vehicles and prototypes were built, including buses, vans and cars, confirming the fuel-cell drive system's viability for in-vehicle applications. In early 2000, the first fleets of fuel-cell vehicles were put together and the first ever customer trials under everyday conditions got underway. With each new generation of vehicle and drive system, performance increased while the components became progressively smaller. Today, our engineers have amassed exceptional expertise and experience in the field of fuel-cell technology that places Mercedes-Benz at the forefront of the automotive sector.



Over 4,500,000 kilometres of fuel-cell vehicle testing since 1994

The predecessor to the B-Class F-CELL: the A-Class F-CELL with electric drive and fuel cell

BlueEFFICIENCY – fast forward to tomorrow

We do not pay lip service to protection of the environment. It's a matter close to our hearts. As the inventor of the motor car, Mercedes-Benz has a special responsibility – one we have undertaken with all our might for many years. By the end of 2010, we will be able to offer you 85 models with BlueEFFICIENCY technologies, all of which place far less of a burden on the environment – without compromising on safety, comfort and driving enjoyment.

Our BlueEFFICIENCY concept comprises innovations for efficient mobility as well as optimised processes all the way along the value chain. They involve different approaches, but they all have a common goal: to make your individual mobility as sustainable as possible.

The BlueEFFICIENCY measures – the Mercedes-Benz efficiency package. The BlueEFFICIENCY measures are comprehensive vehicle optimisations which save fuel and, therefore, ease the burden on the environment. Each model combines the most efficient engine with optimum aerodynamic and energy-management measures to minimise fuel consumption. Such measures include intelligently controlled ancillaries, tyres with optimised rolling resistance, lightweight components, enhanced aerodynamics and the ECO start/stop function, which is being made available for an increasing number of models. Our new V6 and V8 petrol engines in the S-Class and CL-Class, for example, reduce fuel consumption by up to 20 % yet have a much higher power output.

BlueTEC – the clean diesel. Mercedes-Benz has brought to market BlueTEC technology for diesel engines based on common-rail direct injection (CDI). A modular emission-control system makes BlueTEC an exceptionally clean diesel technology. Not only does it remove up to 95 % of the particulate from the exhaust gases, it also reduces nitrogen oxides by up to 90 %. All that remains is water, harmless nitrogen and the satisfying feeling of having helped to ease the burden on the environment.

HYBRID – the intelligent combination of petrol and electric drive. A well-established team makes a lot of things easier. And this is certainly true in the case of HYBRID technology. During braking, the electric motor supplies the battery with the kinetic energy that's recovered. When needed, this energy is forwarded to the electric drive, which assists the petrol engine when the car is accelerating. What's more, the ECU shuts off the petrol engine when the speed falls below 15 km/h. In this way, a HYBRID can reduce fuel consumption by up to 20 %. So it looks after the environment as well as your bank balance. Perfect teamwork, you might say.

The **BlueEFFICIENCY measures** bring about a substantial reduction in fuel consumption and CO_2 emissions

BlueTEC HYBRID – clean diesel combined with electric drive. From 2011, BlueTEC HYBRID will marry the benefits of HYBRID technology with those of BlueTEC technology: during braking, the kinetic energy is converted into electrical energy, which can be reused when required. At the same time, the BlueTEC technology cleans the exhaust gases and removes most of the pollutants, making the economical diesel powerplant even more efficient, agile and clean.

Innovative drive systems that break new ground: E-CELL and F-CELL. Mercedes-Benz has developed two locally emission-free drive concepts called E-CELL and F-CELL. The B-Class F-CELL is already being produced on a small scale and has been displaying its everyday practicality on Germany's roads since mid-2010. It uses hydrogen to produce power for the electric motor in a fuel cell. A small series of the A-Class E-CELL with an electric motor which draws its energy from a battery alone will be introduced in autumn 2010. There will also be an E-CELL PLUS, which will include a small internal combustion engine (Range Extender) to increase the range of the electric vehicle.

But that is not all: under the banner "Design for Environment", we also look at a vehicle's entire lifecycle and work hard to preserve the environment from the planning stage right through to recycling. The same applies to the building and running of new plants. In addition, we are heavily involved in the development of alternative fuels and carry out research in the field of bionics. In short, BlueEFFICIENCY is good news for both you and the environment.

Further information about our comprehensive measures can be found at:
www.mercedes-benz.com/blueefficiency

HYBRID technology reduces fuel consumption by up to 20 %

The B-Class **F-CELL** is locally emission-free thanks to an electric drive system which draws its energy from a fuel cell

Equipment for the small-scale series (selection)*

- 10-spoke light-alloy wheels with 205/60 R 16 tyres
- Armrests, fixed in front, folding in rear, with cup holder
- COMAND APS with built-in 6-disc DVD changer, hard-drive map navigation
- Electrically folding exterior mirrors left and right
- Exterior Chrome package, flashing adaptive brake lights
- Heated front seats
- Instrument cluster with white-illuminated dials and special fuel-cell information, output indicator and powermeter; charge level indicator for high-voltage battery accessible via display
- Leather appointments in alpaca grey
- Light and Sight package, comprising automatically dimming interior mirror, rain sensor, headlamp switch-off delay, locator lighting, reading light for driver and rear passengers, illuminated vanity mirror, footwell lights
- LINGUATRONIC, hydrogen filling stations integrated into navigation map material, detailed fuel consumption gauge, energy flow display
- Power windows front and rear with one-touch control
- Seat Comfort package, comprising height-adjustable front passenger seat, seat cushion angle adjustment and 4-way lumbar support for front seats
- Single-speed transmission (1 forwards and 1 reverse gear) and cruise control
- Special paint finish in bonamite silver metallic
- Sports package, comprising perforated-leather steering wheel with two aluminium inlays, leather selector lever, leather handbrake lever, pedals with stainless steel caps and rubber studs, trim strip in reflector look on rear bumper
- THERMOTRONIC luxury automatic climate control
- Trim elements in diagonally brushed smoke silver aluminium
- Tyre pressure monitoring system

10-spoke light-alloy wheels

The selector lever for forwards and reverse travel

The flexible interior concept with generous load capacity

* Specification is fixed - no other equipment features are available

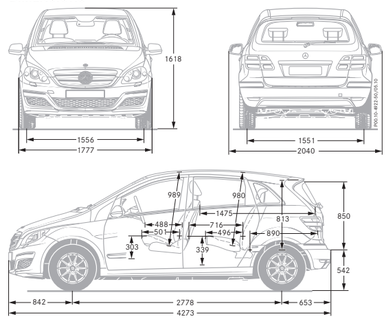
Technical data[1]

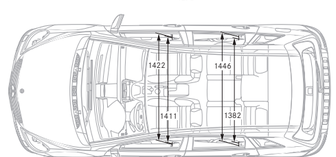
VEHICLE DATA	
Peak output	100 kW
Continuous output	70 kW
Max. torque	290 Nm
Top speed	170 km/h
Acceleration from 0 to 100 km/h	11.4 s
Kerb weight[2]	1809 kg
Perm. gross vehicle weight[3]	2084 kg
Payload capacity[3]	275 kg
Boot capacity	545 – 1345 l
Fuel consumption (NEDC)	0.97 kg H_2 / 100 km
CO_2 emissions	0.0 g/km
Range (NEDC)	385 km

DRIVE SYSTEM DATA	
Stack technology	PEM (Proton Exchange Membrane)
Fuel tank capacity	3.7 kg H_2
Tank system pressure	700 bar
Battery technology	Lithium-ion, liquid-cooled
Battery capacity	1.4 kWh
Cold-start capability	Down to -25°C

[1] The technical data is provisional. Finalised data, particularly for the NEDC fuel consumption and range, was not available at the time of going to press. The figures are not based on an individual model and do not constitute part of the product offer; they are provided solely for purposes of comparison between different vehicle models
[2] The kerb weight measured according to the EC Directive includes driver (68 kg), luggage (7 kg) and all fluids (fuel tank 90 % full)
[3] According to EC Directive

DIMENSIONS [4]





[4] All measurements in millimetres. The dimensions shown are mean values and apply to the unladen B-Class F-CELL model

Take-back of end-of-life vehicles. Coming full circle. At the end of its long life, you can return your B-Class F-CELL to us for environment-friendly disposal in accordance with the EC End-Of-Life Vehicle Directive[1]. But that day lies a long way off.

[1] Applies in accordance with national regulations to vehicles up to 3.5 tonnes gross weight. Mercedes-Benz passenger cars have met the statutory regulations governing the suitability of their design for reuse and recycling for a number of years now. A network of vehicle take-back depots and dismantlers has been established which will process your vehicle in an environment-friendly manner. The ways in which both vehicles and parts can be recovered are subject to ongoing development and improvement. Consequently, the B-Class F-CELL will be able to comply with any future increases in the recycling quota within the stipulated time limits. For further information please call 00800 1 777 7777.

Please note: changes may have been made to the product since this brochure went to press (31.10.2011). The manufacturer reserves the right to make changes to the design, form, colour and specification during the delivery period, provided these changes, while taking into account the interests of the vendor, can be deemed reasonable with respect to the purchaser. Where the vendor or the manufacturer uses symbols or numbers to describe an order or the subject of an order, no rights may be derived solely from these. The illustrations may show accessories and items of optional equipment which are not part of standard specification. Colours may differ slightly from those shown in the brochure, owing to the limitations of the printing process. This brochure may contain models and services which are not available in certain countries. Information given regarding statutory regulations, legal requirements and taxation applies only to the Federal Republic of Germany at the time of going to press. Please contact your nearest authorised Mercedes-Benz Passenger Car Dealer for final details. **www.mercedes-benz.com**

Daimler AG, Stuttgart BC / MI 2960 · 2001 · **02**-02 / 1111 Printed in Germany