

Media Information 29 July, 2013

## The new BMW i3 - born to be electric

- The first all-electric, zero-emission premium car
- Ground breaking carbon fibre structure
- From £369 a month\* or £25,680\*\* OTR
- BMW 360° ELECTRIC provides unique package of assistance and mobility solutions
- Innovative range of ConnectedDrive features provides high levels of connectivity
- Launches 16 November, 2013

Today heralds a new era of premium car ownership with the launch of the all-new BMW i3. This revolutionary car offers zero emissions in a premium car package, yet at an affordable price.

The BMW i3 is the world's first premium car designed from the ground up to be powered by an electric drive system. The result is a vehicle that embodies BMW's commitment to driving pleasure without compromise.

The use of lightweight CFRP for the passenger cell compensates for the extra weight of the battery, while the low, central location of the battery pack enhances the car's agility thanks to perfectly balanced 50:50 weight distribution and a low centre of gravity.

Model	Price OTR	Power Hp	Torque Nm	0 – 62mph Seconds	Top Speed Mph	Range (miles)	CO2 Emissions g/km
BMW i3	£25,680**	170	250	7.2	93	80-100	0
BMW i3 Range Extender	£28,830**	170	250	7.9	93	160-186	13

<sup>\*\*</sup>With £5,000 OLEV Government grant.

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Internet www.bmw.co.uk The electric motor generates an output of 170hp, with peak torque of 250Nm on demand instantly. This allows the BMW i3 to sprint from zero to 37mph in a mere 3.7 seconds and zero to 62mph in just 7.2 seconds, while the lithium-ion battery gives a

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range of 80 –100 miles in everyday driving. This rises by approximately 15 per cent in ECO PRO mode and by the same again in ECO PRO+ mode.

As a point of reference, since 2009 BMW has conducted research on a global scale with the MINI E and BMW Active E programmes. A UK government report found that the average commute was found to be 13.1 miles each way, and the average daily mileage 25 miles.

For customers particularly conscious of 'range anxiety', the BMW i3 is available with a range extender engine, powering a generator to maintain the charge of the lithium-ion battery at a constant level while on the move. This is performed by a 650cc two-cylinder four-stroke petrol engine developing 34hp and mounted immediately next to the electric motor above the rear axle. The range extender increases the car's maximum range in day-to-day driving to around 180 miles on one tank of fuel. The BMW i3 Range Extender costs £28,830\*\* OTR.

Both BMW i3 models include a three-year, unlimited mileage vehicle warranty and an eight-year, 100,000 mile battery warranty. The battery is also included in the price of the car negating a separate lease charge for battery, as is the case for other electric vehicles.

The i3 is available with four different interior worlds: Standard, Loft, Lodge and Suite. These allow customers to change the look and feel of the interior. All worlds feature sustainable materials such as sustainably sourced wood, natural fibres and naturally tanned leather.

The price for the BMW i3 starts at  $£25,680^{**}$  and  $£28,830^{**}$  for the Range Extender. However, leasing is expected to be favoured by customers and the monthly rates are highly competitive. Starting at £369p/m for a 36 month contract and rising to £480p/m for an i3 Range Extender in Suite, the BMW i3 is a compelling package.

#### **Taxation benefits**

The BMW i3 is eligible for a host of government-backed grants and tax breaks due to its zero emissions powertrain. In addition to the 'Plug-in' grant that reduces the OTR cost

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of the vehicle by £5,000, both versions of the BMW i3 also benefit from a zero road fund licence charge and are exempt from the London Congestion Charge. For corporate customers, businesses benefit from 100 per cent capital write down allowance and very low levels of National Insurance taxation, whilst drivers will pay significantly less (in the case of the standard i3 zero per cent) Benefit in Kind taxation. For these customers in particular, the benefits over three years compared with contemporary internal combustion engine vehicles run into thousands of pounds.

#### A car that was born electric

The BMW i3 was designed from the outset to incorporate an all-electric drive system. This has numerous advantages over vehicles that were originally designed to incorporate internal combustion power, but have subsequently been converted to electric propulsion.

Engineers had free rein with the dimensions and the configuration of all the electric drive system components. For example, when a conventional car is adapted to take an electric drivetrain, the space in a traditional vehicle set aside for the fuel tank or exhaust system cannot be put to constructive use. In the BMW i3 there has been no need for this kind of compromise. Instead, the engineers were able to focus entirely on shaping the character of the BMW i3 as a sporty, agile, yet space-efficient and comfortable premium car for an urban environment.

## The electric drivetrain

The hybrid synchronous electric motor, developed and produced specially by the BMW Group for use in the BMW i3, generates an output of 170hp and provides maximum torque of 250Nm from the moment the car pulls away.

Thanks to an average power consumption of around 0.21kW/h per mile (in the New European Driving Cycle (NEDC), the efficiency of the motor plays a key role in optimising the car's range. This is an extraordinarily low consumption figure, especially considering the maximum power and torque on offer. The BMW i3 is the most economical electrically powered car of its size and output class. With significant benefits available from low charging tariffs, the low cost per mile would equate to running a diesel engine achieving over 400mpg.

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The power density of the electric motor, weighing around 50kg, sets a new benchmark for electric vehicles. But the new engine is about more than simply numbers: with its smooth running, minimal vibration and low noise levels, it offers a uniquely calm driving experience.

## Chassis - intelligent engineering

When it comes to the driving attributes of the i3, the BMW engineers have achieved a perfect balance of vehicle weight, performance and range. Increasing battery size can extend the operating range of electric vehicles, but that adds weight and therefore has a negative impact on performance. Similarly, a more powerful motor requires more energy, which again means heavier batteries or restricted range. In short, simply increasing the specification of various key components is not the answer. An intelligent solution is required.

BMW's response has been to invest in the pioneering development of a lightweight body, which enhances performance and means the weight saving can be "invested" in larger batteries which, in turn, boost the car's range. With a DIN kerb weight of 1,195kg the i3 is lighter than most compact vehicles, yet offers significantly more space for up to four occupants. It also has the edge over conventionally powered models of a comparable size and output in performance terms.

Other weight-saving innovations include: the direct connection between the power electronics and electric motor in the rear which reduces the length of cabling required and saves 1.5kg; the forged aluminium suspension links that weigh 15 per cent less than a conventional design; hollow drive shafts which are 18 per cent lighter than a conventional equivalent; and the standard 19-inch forged aluminium wheels are 36 per cent lower in weight than comparable steel rims of the same size. Even the door trim panels, made from renewable raw materials, are 10 per cent lighter compared to normal while the screws and bolts are aluminium, not steel, and the windscreen wiper has a honeycomb structure to add lightness.

The battery is encased in aluminium sections and is particularly well positioned from a crash safety perspective. The electric motor and transmission unit are located in direct

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proximity to the driven rear axle: this compact integration has been greatly assisted by the in-house development of the drive components at the BMW Group. The clear subdivision of Life and Drive modules means no central tunnel is necessary, with noticeable benefits for the freedom of movement and the generous space available inside the BMW i3.

In traditional BMW fashion, the i3's rear-wheel drive layout allows the front axle to remain free of torque steer and fulfil its steering function to full effect. As with current models from the BMW and MINI brands, electric power assistance sends the BMW i3 driver's steering commands to the road with smoothness and precision.

Its extraordinarily small turning circle of 9.86m and a steering set-up that demands just 2.5 turns from lock to lock enhance the agile handling of the BMW i3, particularly in confined urban environments. This agility is the defining characteristic of the driving experience, but in addition, a long wheelbase (2,570mm), the Drive module's rigid aluminium frame and advanced chassis technology provide the perfect ingredients for a sure-footed and relaxing ride.

The suspension components of the BMW i3 are notable for their lightweight design yet extremely stiff construction. The BMW i3 has MacPherson strut front suspension and a five-link rear axle mounted directly to the Drive module. The comittment to lightweight design means a reduction in unsprung weight, which means a smoother ride at all speeds.

The dimensions of the standard tyres (155 / 70 R19) are specific to the BMW i3, and have been chosen with good reason. These large but comparatively narrow tyres allow an excellent balance between dynamics and drag. Their aerodynamic properties and low rolling resistance provide extremely efficient driving. However, their contact patch barely differs from that of the tyres fitted as standard on conventional cars. This gives great assurance and poise so the DSC (Dynamic Stability Control) system is only required in extreme situations.

The standard DSC system offers all the functions familiar from current BMW models, including the Anti-lock Braking System (ABS), Cornering Brake Control (CBC), Dynamic

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Brake Control (DBC), Brake Assist, Brake Standby, Start-Off Assistant, Fading Compensation and the Brake Drying function. The DTC (Dynamic Traction Control) mode, activated at the touch of a button, raises the intervention thresholds of the stability control system and allows a controlled degree of slip through the BMW i3's driven wheels when pulling away on snow or loose sand, or in particularly enthusiastic cornering.

# One pedal driving

A standout feature of the BMW i3's driving experience is the single-pedal control, carefully configured by the development engineers. There is a brake and an accelerator pedal but it is possible to drive without using the brake pedal in normal driving conditions.

The moment the driver takes his foot off the accelerator the electric motor switches from drive to generator mode, feeding power into the lithium-ion battery. This recharging mode has the side effect of generating a precisely controllable braking motion, thus the car brakes itself. This recharging effect is speed-sensitive, which means the car "coasts" with maximum efficiency at high speeds and generates a strong braking effect at low speeds. Thinking ahead in city traffic can allow the driver to carry out 75 per cent of braking manoeuvres without applying the brake pedal. As a safety measure the brake lights illuminate if the regeneration produces the same braking effect as the brakes.

Intensive use of this form of brake energy recuperation through the motor also increases the range of the BMW i3 by as much as 20 per cent, and the "coasting" facility further enhances the user-friendly nature of single-pedal control. The BMW i3's accelerator has a distinct "neutral" position; i.e. rather than switching straight to energy recuperation when the driver eases off the accelerator, the electric motor uses only the available kinetic energy for propulsion. In this mode, the BMW i3 glides along using virtually no energy at all. This is another example of how an anticipatory driving style can preserve energy and further increase the car's range on electric power.

## The latest in battery technology

The high-voltage battery in the BMW i3 consists of eight modules (each with 12

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individual cells), which together produce a rated voltage of 360 volts and generate approximately 22kW/h of energy. The lithium-ion cells used in the battery are particularly notable for their high energy density and impressive cycle life: they are designed to perform their energy storage function over the vehicle's entire lifespan.

In order to maintain their output and storage capacity over time, the battery management system controls both the charging and the discharging processes, as well as the operating temperature of the cells. When the vehicle is on the move all the cells are used equally to supply energy, while the air conditioning coolant is used to provide effective cooling of the high-voltage battery, and this fluid can also be warmed using a heat exchanger. All these characteristics enable the optimum operating temperature of around 20°C to be reached before a journey begins, even when the ambient temperature is low.

This preconditioning ensures the battery operates to optimum effect in terms of power output, range and durability. The BMW Group has planned and developed this battery to last for the full life of the vehicle and the battery warranty is valid for eight years or 100,000 miles. However, in the case of maintenance to the battery being required, it is also possible to replace individual modules in the event of a fault.

The battery pack is mounted flat in the Drive module and weighs approximately 230kg. The battery casing and its model-specific attachment systems were developed by the BMW Group to provide the high-voltage battery with extensive protection against environmental factors and in the event of a crash. Three levels of safety for the car's software and hardware, including a cut-off mechanism, provide reliable protection for the electrical system as a whole.

#### Production and sustainability beyond the life of the car

The manufacturing procedure and lifespan of the BMW i3 has been carefully considered, with sustainability at the forefront of thinking. Regenerative energy is used at all four BMW i plants across the globe, with 50 per cent less water consumed and 70 per cent less energy than in a conventional automotive facility.

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The carbon fibre required is produced at the BMW SGL Moses Lake plant in Washington State, which is completely powered by hydro-generated electricity. Construction of the CFRP architecture at Landshut, general assembly at Leipzig and recycling at Wackersdorf (all in Germany) are all powered by 100 per cent wind turbine

energy.

## ConnectedDrive and 360° ELECTRIC

But the BMW i3 is more than just a very intelligent car, it's a wholly new approach to personal mobility: just one element in a package that includes innovative driver assistance systems and mobility services from BMW ConnectedDrive and the new 360° ELECTRIC portfolio.

Within the 360° ELECTRIC portfolio, BMW i brings together a wide range of innovative products and services that make electric car ownership an easy and satisfying experience, offering services including home charging and access to a continually expanding network of public charging points. Other benefits include networked navigation including dynamic range mapping, efficient ECO routing, and access to a range of Electric Packages helping to provide flexible mobility.

In fact, the BMW i3 is the world's first fully networked electrically powered car. No other car boasts such a far-reaching exchange of information between the vehicle, its driver and the outside world. A SIM card, fitted as standard in the BMW i3, is the key that unlocks the BMW ConnectedDrive services which, for example, offers navigation services specially developed to enhance electric mobility, as well as the more familiar features.

Drivers can use the BMW i Remote app to share information with their car at any time using their smartphone. This enables features such as the pedestrian navigation function that guides the driver from parking place to final destination and back. BMW ConnectedDrive also offers unique intermodal route guidance as a world first, which incorporates local public transport connections into journey planning, available 2014.

#### Charging the BMW i3 in the UK

The BMW i3 comes as standard in the UK with AC Fast Charging which sees a 7.4kW

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charge power up the BMW i3 from zero to 80 per cent within three hours. This can be performed by the optional BMW i Wallbox. The exclusive Wallbox has been created to give customers a comprehensive and premium sustainable mobility experience.

This equipment must be installed by a qualified electrician so a home survey, delivery, fitting and maintenance package for the BMW i Wallbox is available through Schneider Electric, while the installation service is managed by BMW and customised to customer's specific requirements. Additional "renewable" power options will be offered via selected BMW i partners, for emission-free home charging. A seven day timer allows the car to be charged at night when renewable energy makes up a higher proportion of the energy supply and demand is at its lowest. AC Fast Charging is also the most widespread public charging option in the UK.

Occasional charging can also be performed using a pre-supplied cable, fitting a standard household socket at 2.4kW, when 32 Amp AC Fast Charging is not available. Charging this way takes eight to 10 hours. DC Rapid Charging is the third and final option available to owners and allows a BMW i3 to get an 80 per cent charge in just 30 minutes to one hour. It uses a 50kW connection to do this and is suited to public charging locations where available.

As part of a £37 million package of investment in electric vehicles in the UK, the government offers a 75 per cent grant across the United Kingdom for the provision of domestic charging points that includes the BMW i Wallbox, bringing the installed cost down to £315\*\*. The BMW i3 is engineered to meet standard industry specifications for charging compatibility.

For public charging BMW will offer its customers access to BMW ChargeNow, a unique service giving BMW customers in the UK cashless access to the largest nationwide network of public charging stations with a single card – the BMW i ChargeNow card. Charging stations in the ChargeNow network are displayed, along with their live availability, on the BMW ConnectedDrive services page in the navigation unit. Payment is a £20 annual fee, with pay as you go access, allowing customers complete control of their charging account. Customers will also receive an itemised monthly statement and have the ability to access their account information online at any time.

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## Complete mobility for the future

A range of Electric membership packages, consisting of ChargeNow, BMW Access and Maintenance, offer a flexible approach to electromobility.

BMW Access gives an i3 owner points to redeem against the use of other BMW Group vehicles should they wish to switch cars for European driving holidays and other long trips. This points system can be added to as and when members wish to access other vehicles. BMW Maintenance provides all regular servicing needs of the BMW i3 including the replacement of four tyres.

Customers can prioritise which of the above features are most important to them across four plans that bundle them together: Pulse, Charge, Spark and Energy. The price of these packages range from £40-£80 per month and are available through BMW Financial Services.

In the UK, 47 BMW dealerships have been appointed i3 agents, although the entire network can handle servicing of the i3. Service Inclusive is available on the BMW i3 for just £375, covering servicing costs for five years or 60,000 miles.

#### **BMW ConnectedDrive innovations**

The BMW i3 comes equipped as standard with a navigation system whose functionality has been extended to include the BMW ConnectedDrive services developed specifically for BMW i.

The Driving Range Assistant is featured as part of the navigation and can be invaluable for both route planning and the current journey. If the destination selected in the navigation system lies beyond the vehicle's current range, it comes to the driver's aid by suggesting switching to the ECO PRO or ECO PRO+ mode, as well as calculating a more efficient alternative route. Also if the battery has to be recharged at a public charging station, the driver is given a choice of available stations in the neighbourhood and their live availability.

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A further key element of the linked-up navigation unit is a dynamic range display, which delivers remarkably precise, up-to-date and reliable information by factoring in all the relevant variables. The battery's charge status, the driving style, activity of electric comfort functions and the selected driving mode are all taken into account for the calculation, along with the route's topography, current traffic levels and the outside temperature.

The system is therefore able to make allowance for the extra energy required for an upcoming climb, stop-start traffic or a traffic jam on the selected route, and lower its range calculation accordingly. The up-to-the-minute and detailed real-time traffic information provided by the RTTI system is also added to the equation. This information is analysed and evaluated centrally by the BMW ConnectedDrive server that is in permanent communication with the vehicle.

This dynamic range is visualised on the central information display in the BMW i3 as a peripheral contour within the navigation map. Taking the vehicle's current location as a starting point, all points that can be reached in the various driving modes are displayed in the form of a range spidergram.

Apart from the information required for the route guidance currently in progress, the navigation system also helps drivers to plan mobility requirements beyond their present destination. For the purpose of energy management, not only are the current battery capacity levels taken into account, but the various options for recharging are also considered. The lithium-ion battery in the BMW i3 can be recharged from any standard domestic socket to give maximum flexibility. However, energy levels can be topped up very quickly and conveniently at one of the charging stations specially designed for electric vehicles. The BMW ConnectedDrive services help drivers to quickly pinpoint these charging points by displaying all available charging stations along the route or in the vicinity of the destination on the navigation map, along with their real-time availability.

And it extends to your smartphone..

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The mobility planning information provided is made available on the customer's smartphone as well as in the vehicle. This connectivity is provided by an application developed especially for BMW i for mobile phones with the iOS and Android operating systems. The app is an enhanced version of the remote services offered by BMW ConnectedDrive.

If the vehicle is plugged into the BMW i Wallbox, the charging procedure can be controlled both remotely and using a timer function. The BMW i App can also be used to search for and select a navigation destination or a free charging station and then import it to the vehicle's system, and the available charging stations along the route and in the vicinity of the destination are likewise visualised in the BMW i App, just as they are in the vehicle's information display.

After leaving the vehicle at a selected car park, customers can also use the pedestrian navigation function integrated in the BMW i App to guide them to their final destination. The navigation destination selected by the driver in the vehicle is automatically transferred to the BMW i App via the BMW ConnectedDrive server so that route guidance can be continued by smartphone. The navigation system specifically developed for BMW i, to meet the demands of travel in urban centres, also features a unique intermodal route planning function. This function includes local public transport networks, allowing the available transport connections to be incorporated into route planning if required and displayed by the navigation system in the BMW i3 en route.

The app lets drivers see where they left their car parked at any time. Once a journey has been completed, customers are able to compare the efficiency of their driving style anonymously with that of other BMW i3 users. At the same time, they are given further efficiency-enhancing pointers as well as tips for honing the way they drive.

The BMW i3 launches in the UK on 16 November, 2013 with orders being taken from August.

**Ends** 

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\*Finance based on a 36 month Personal Lease agreements for models stated. Initial payment £2,995.00 inc VAT and contract mileage of 24,000 miles. Figures shown incorporate Government plug-in car grant. Excess mileage and vehicle condition charges apply. Subject to status and available to over 18's in the UK only (not the Channel Islands or Isle of Man). Retail customers only. Guarantees and indemnities may be required. Prices are correct at the time of going to print (July 2013) and are subject to change without notice. Lease is provided by BMW Financial Services, Europa House, Bartley Way, Hook, Hampshire RG27 9UF. Participating dealers only.

\*\* Subject to qualification.

#### The BMW Group

The BMW Group is one of the most successful manufacturers of automobiles and motorcycles in the world with its BMW, MINI, Husqvarna Motorcycles and Rolls-Royce brands. As a global company, the BMW Group operates 29 production and assembly facilities in 14 countries and has a global sales network in more than 140 countries.

In 2012, the BMW Group sold about 1.85 million cars and more than 117,000 motorcycles worldwide. The profit before tax for the financial year 2011 was euro 7.38 billion on revenues amounting to euro 68.82 billion. At 31 December 2011, the BMW Group had a workforce of approximately 100,000 employees.

The success of the BMW Group has always been built on long-term thinking and responsible action. The company has therefore established ecological and social sustainability throughout the value chain, comprehensive product responsibility and a clear commitment to conserving resources as an integral part of its strategy. As a result of its efforts, the BMW Group has been ranked industry leader in the Dow Jones Sustainability Indexes for the last eight years.

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