

# The MINI E. Contents.



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# A new Experience – Driving Pleasure Without Emissions: The MINI E (Version)



The BMW Group will be the world's first manufacturer of premium automobiles to deploy a fleet of some 500 all-electric vehicles for private use in daily traffic. The MINI E will be powered by a 150 kW (204 hp) electric motor fed by a high-performance rechargeable lithium-ion battery, transferring its power to the front wheels via a single-stage helical gearbox nearly without a sound and entirely free of emissions. Specially engineered for automobile use, the battery technology will have a range of more than 250 kilometers, or 156 miles. The MINI E will initially be made available to select private and corporate customers as part of a pilot project in the US states of California, New York and New Jersey. The company is looking into expanding the MINI E pilot to include Europe. The MINI E will celebrate its world premiere at the Los Angeles Auto Show on November 19 and 20.

The MINI E's electric drive train produces a peak torque of 220 Newton meters, delivering seamless acceleration to 100 km/h (62 mph) in 8.5 seconds. Top speed is electronically limited to 152 km/h (95 mph). Featuring a suspension system tuned to match its weight distribution, the MINI E sports the brand's hallmark agility and outstanding handling.

By introducing the MINI E, the BMW Group is underscoring the resolve with which it works towards reducing energy consumption and emissions in road traffic. The BMW Group is drawing on its unique technological expertise in the field of drive systems to develop a vehicle concept enabling zero emissions without renouncing the joy of driving. Putting some 500 cars on the road under real daily traffic conditions will make it possible to gain widely applicable hands-on experience. Evaluating these findings will generate valuable know-how, which will be factored into the engineering of mass-produced vehicles. The BMW Group aims to start series production of all-electric vehicles over the medium term as part of its Number ONE strategy. The development of innovative concepts for mobility in big-city conurbations within the scope of "project i" has a similar thrust, as its objective also includes making use of an all-electric power train.

## **The energy storage unit: cutting-edge lithium-ion technology engineered specifically for use in the MINI.**

Based on the current MINI, the car will initially be available as a two-seater. The space taken up by back-seat passengers in the series model has been

reserved for the lithium-ion battery. When in use in the zero-emissions MINI, the battery unit combines high output with ample storage capacity and a small footprint with power ratios that are unrivalled in this field of application so far. The lithium-ion storage unit will have a maximum capacity of 35 kilowatt hours (kWh) and transmit energy to the electric motor as direct current at a nominal 380 volts. The rechargeable battery is made up of 5,088 cells grouped into 48 modules. These modules are packaged into three battery elements that are compactly arranged inside the MINI E.

The energy storage unit's basic components are based on the technological principle that has proven itself in practice in power supplies for mobile phones and portable computers. The MINI E's lithium-ion battery can be plugged into all standard power outlets. Its charge time is strongly dependent on the voltage and amperage of the electricity flowing through the grid. In the USA, users can recharge a battery that has been completely drained within a very short period of time using a wallbox that will ship with every MINI E. The wallbox will be installed in the customer's garage, enable higher amperage, and thus provide for extremely short charging times. Wallboxes fully recharge batteries after a mere two-and-a-half hours.

**Driven by electricity: reliably, affordably and free of emissions.**

A full recharge draws a maximum of 28 kilowatt hours of electricity from the grid. Based on the car's range, a kilowatt hour translates into 5.4 miles. Besides the benefit of zero-emissions driving, the MINI E thus offers significant economic advantages over a vehicle powered by a conventional internal combustion engine as well.

The heavy-duty battery delivers its power to an electric motor, which transforms it into thrilling agility. Mounted transversely under the MINI E's bonnet, the drive train unleashes its full thrust from a dead standstill. This provides for the car's fascinating launch capability. The MINI E's intense driving experience is augmented by its dynamic deceleration potential, which is also directly coupled to the accelerator pedal. As soon as the driver releases the gas pedal, the electric motor acts as a generator. This results in braking force, and the power recovered from the kinetic energy is fed back to the battery. This interaction ensures extremely comfortable drives – especially at medium speed with constant, but marginal, variation. In city traffic, some 75 percent of all deceleration can be done without the brakes. Making substantial use of this energy recuperation feature extends the car's range by up to 20 percent.

### **Signature MINI agility in a new guise.**

Weighing in at 1,465 kilograms (3,230 lbs), the MINI E has an even weight distribution. Minor modifications made to the suspension ensure safe handling at all times. The Dynamic Stability Control (DSC) system has been adapted to this model's specific wheel loads.

The MINI E's brake system comes with a newly developed electric underpressure pump. Its Electrical Power Assisted Steering (EPS) is the same as the one used in mass-produced MINIs. Both brake and steering assistance react to driving conditions and are thus extremely efficient. Even the air conditioning's electrical compressor only operates if desired or necessary.

### **Design: unmistakably MINI, undoubtedly new.**

At first glance, the MINI E is obviously an iteration of the brand. But its design, which is the blueprint for the zero-emissions two-seater, has been complemented by a number of visual cues that point to its revolutionary drive concept. All of the units produced for the pilot project will have the same paintwork and bear a serial number next to their side turn signal lights.

The MINI E's coachwork sports an exclusive combination of metallic Dark Silver on all panels but the roof, which is clad in Pure Silver. What distinguishes the zero-emissions MINI is a specially designed logo in Interchange Yellow, depicting a stylized power plug in the shape of an "E" set against the silver backdrop. It has been applied to the roof, in smaller dimensions to the front and back, to the charger port lid, the dashboard trim, and – combined with the MINI logo – to the door jamb, in slightly modified form. The color of the roof edges, mirror housings, interior style cues and seat seams will match the logo's yellow tone as well.

Moreover, the central gauge and the battery level indicator behind the wheel of the MINI E, which replaces the MINI's rev counter, feature yellow lettering against a dark grey background. The battery level is displayed in percentage figures. The central gauge includes an LED display indicating power consumption in red and power recuperation in green.

### **MINI E customers will be part of a pioneering mission.**

A 500-unit, limited-production MINI E series will be manufactured through the end of 2008. The project will thus attain an order of magnitude that clearly exceeds the size of currently comparable test series. Putting the MINI E on the road on a daily basis will be a pioneering feat to which both the drivers and engineers of the first zero-emissions MINI will contribute as a team.

MINI E customers will join forces with BMW Group experts to assist in the project's scientific evaluation. MINI E engineers accord high importance to staying in touch with the drivers on a regular basis, as this will help them analyze driver behavior besides vehicle characteristics in order to gain the most accurate and realistic picture of the demands placed on a vehicle with a purely electrical drive in the select usage areas.

### **Special charging station and full service for every MINI E.**

The cars will change hands based on a one-year lease with an extension option. Monthly lease installments will cover any required technical service including all necessary maintenance and the replacement of wearing parts. At the end of the lease, all of the automobiles belonging to the project will be returned to the BMW Group's engineering fleet where they will be subjected to comparative tests.

The MINI E's lithium-ion battery can be charged using a wallbox provided to MINI customers. Only lockable garages or similar buildings will qualify as homebases and power stations for the MINI E.

### **Maintenance by qualified specialists.**

The electric drive's high-voltage technology requires that maintenance work be done by qualified personnel using special tools that are not included in MINI service partners' standard toolboxes. In light of this, a service base will be set up on both coasts, staffed by service engineers that are specially trained to perform maintenance and repair work on the MINI E's electrical components. In the event of drive malfunction, these experts will provide professional support at the customer's local MINI dealer or the service base's specially equipped workshop. Technical inspections will take place after 3,000 miles (just under 5,000 kilometers) and at least after six months.

### **Production in Oxford and Munich.**

The MINI E has already gone through the major phases of product development for mass-produced vehicles and passed numerous crash tests on the way. Aspects investigated besides passenger protection were the impact of collision forces on the lithium-ion battery and finding a non-hazardous location for it in the car. The MINI E's energy storage unit emerged completely unscathed from all of the crash tests mandated by US standards, which are especially high.

Production of the approximately 500 cars will take place at the company's Oxford and Munich sites and is scheduled for completion before the end of 2008. MINI's UK plant will be responsible for manufacturing the entire vehicle

with the exception of the drive components and the lithium-ion battery, with the brand's series models rolling off its assembly lines concurrently. The units will then be transferred to a specially equipped manufacturing complex situated on BMW plant premises where the electric motor, battery units, performance electronics and transmission will be integrated.

# A new Experience – Driving Pleasure Without Emissions: The MINI E (Long Version)



MINI's hallmark driving enjoyment will be mated to forward-looking efficiency. The MINI E will become a milestone en route to zero-emissions mobility. As the world's first manufacturer of premium automobiles, the BMW Group will deploy a fleet of about 500 purely electrically powered cars as daily drivers for personal use. The MINI E will come with a 150 kW/204 hp electric motor under its bonnet, which will draw energy from a high-performance lithium-ion battery and transfer power to its front wheels via a single-stage helical gearbox – virtually noise-free and without any emissions. On-board battery technology, which will be purpose-engineered for automobile applications, will be good for a range of over 250 kilometers, or 156 miles. It will take a mere two-and-a-half hours to recharge the lithium-ion power pack. The MINI E will be made available to select retail and corporate customers as part of a pilot project in the US states of California, New York and New Jersey. The company is looking into expanding the MINI E pilot to include Europe. The MINI E will celebrate its world premiere at the Los Angeles Auto Show on November 19 and 20.

The MINI E is a new iteration of the fun ride that has become the brand's hallmark, combining this trait with an essentially emissions-free drive concept. The electric powerhouse delivers a maximum torque of 220 Newton meters right off the mark. Putting the MINI E's pedal to the metal will produce a seamless 100 kph (62 mph) dash in 8.5 seconds. Maximum velocity is electronically capped at 152 kph (95 mph). Thanks to the electric drive's intrinsic properties, the MINI E has an impressive degree of elasticity. The engine's thrilling, instantaneous pickup enables extremely spontaneous bursts of speed. Since the vehicle's suspension has been fine-tuned to the car's weight distribution, the MINI E possesses the brand's trademark agility when thrown into bends and rapid changes of direction and boasts outstanding roadholding capabilities in city traffic.

## **The MINI E – a new mainstay of environmentally compatible mobility.**

By deploying the MINI E within the scope of an extensive project, the BMW Group is underscoring the resolute development work it is putting into lowering energy consumption and emissions in road traffic. Besides continuing to increase the efficiency of its petrol and diesel engines, introducing electric drive componentry into BMW ActiveHybrid concepts and engineering the world's first hydrogen-powered luxury sedan for daily use, the first all-electric

MINI E is yet another pillar in the strategy of offering personal mobility with the lowest possible consumption and emissions. Using hydrogen as an energy source, driving purely electrically powered vehicles, and generating electricity from renewables can all contribute to creating a world of mobility that is completely devoid of emissions. The BMW Group leverages its unique technology know-how in the field of drive systems for its multi-faceted development work which aims to provide the most efficient vehicle concepts for the most diverse segments, purposes, customer preferences and markets.

Having some 500 cars on the road as daily drivers will enable the company to gain hands-on experience with the innovative MINI E across a representative number of settings. Evaluating the findings will generate valuable intelligence which will flow into the development of mass-produced vehicles. The BMW Group aims to start series production of all-electric vehicles over the medium term as part of its Number ONE strategy. The development of innovative concepts for mobility in big-city conurbations within the scope of "project i" has a similar thrust, as its objective also includes making use of an all-electric power train.

### **Comprehensive crash test program confirms bumper-to-bumper safety.**

The MINI E is based on the current MINI. Its design includes the style elements that are typical of the brand, but has been customized to suit the E model, sporting its very own visual cues. Amongst them are the paintwork and the logo on every MINI E that symbolizes the electric drive fitted to the limited edition model. The first zero-emissions MINI will take it to the streets as a two-seater. The room occupied by back-seat passengers in the series model has been reserved for the lithium-ion battery. The energy storage unit is housed in a special casing with a high-grade cladding, which is compact enough to give the driver an unlimited rear view.

As is customary in the development of mass-produced vehicles, the MINI E has passed extensive crash tests, confirming the effectiveness of all its passive and active safety features. Besides passenger protection, the effects of impact forces on the lithium-ion battery were analyzed, and it was confirmed that its in-vehicle location is non-hazardous. The power storage unit emerged from all of the strict US accident safety standards unscathed.

So far, fully charged road-ready prototypes of the MINI E have passed 9 front, 5 side and 4 rear crash tests at various speeds, at differing angles of impact, and with diverse collision objects. In fact, the engineers exceeded prevailing vehicle testing standards by running a series of simulations with additional

accident scenarios. Even under these supplementary conditions, the MINI E's safety features revealed that they rise to the high standards set by the BMW Group in the development of series vehicles. The energy storage pack did not suffer any intrusion or deformation even when subjected to the highest of stresses. Passenger injury risk was in line with the low ratings customary for MINI – a feat that was confirmed by the highest score of five stars in the Euro NCAP crash test for the MINI Cooper.

**The energy storage unit: next-generation lithium-ion technology specially engineered for use in the MINI.**

The MINI E's power pack lifts lithium-ion battery technology for automobile applications into a new dimension. The battery unit deployed in the zero-emissions MINI combines high performance, storage capacity and space-saving design with ratios hitherto unrivalled. The lithium-ion power pack has an aggregate capacity of 35 kilowatt hours (kWh) and transfers energy to the electric motor as DC current at a nominal 380 volts. The battery system weighs in at a total of 260 kilograms.

The BMW Group is working in close cooperation with a renowned battery cell manufacturer to develop the lithium-ion battery for the MINI E. The energy storage unit's basic components follow the fundamental technological principle that has proven successful in power supplies for commercially available mobile phones and portable computers. Combined in the power pack engineered to MINI E specifications are an unusually high engine output and an above-average range. The MINI E's driving enjoyment and suitability as a daily driver will set standards for fully electric vehicles.

The MINI E's rechargeable battery is made up of 5,088 cells grouped into 48 modules. These modules are packaged into three battery elements that are compactly arranged inside the MINI E. A temperature-controlled fan ensures a constant operating temperature. A shared high-voltage connection supplies the electric engine with energy from the three battery units.

**Power from conventional outlets. Special wallbox delivers full charge in two-and-a-half hours.**

The MINI E's suitability for daily use comes primarily courtesy of its outstanding storage capacity and charging options, which are as diverse as they are uncomplicated. The car's lithium-ion battery can be charged through a conventional electric outlet. Thanks to this feature, the MINI E's range can be exhausted at any time and extended on the road. Every MINI E comes with a special charging cable in its trunk. Charging times largely depend on the voltage and amperage present in the power grid.

In the USA, fully spent batteries can be charged very quickly using a wallbox, which will ship with every MINI E. The wallbox will be installed in the customer's garage and enable higher amperage. The high-tension power connection initiated by MINI and set up by the local electric utilities (240 volts, 60 amperes) will shorten charging times significantly. Wallboxes will fully recharge batteries after a mere two-and-a-half hours. This is enough to drive the MINI E for another 250 kilometers (156 miles) without emissions. Charging times diminish according to the charge remaining in the battery.

**Riding the current: reliably, affordably and free of emissions.**

When in motion, the battery must always have residual capacity for safety reasons and to guarantee system reliability. Therefore, a full recharge only draws a maximum of 28 kilowatt hours from the power grid. At an average of 15 cents per kilowatt hour, this results in an energy cost of 180 cents every 100 kilometers (62 miles). Converted to range terms, one kilowatt hour allows the driver to cover 54.4 miles. In consequence, besides the benefit of mobility without emissions, the MINI E offers significant economic advantages over vehicles powered by conventional internal combustion engines.

The MINI E combines its standout ecological and economical position with a new joy of driving. The powerful battery supplies energy to an electric motor, which converts it into exciting agility. The MINI E's transversely mounted power plant produces 150 kW (204 bhp) and delivers a peak torque of 220 Newton meters. Typical of an electric motor, its full thrust is on tap from a dead standstill. This results in the MINI E's fascinating, spontaneous takeoff. Putting one's foot on the gas pedal immediately causes the car to jump off the line, accelerating to 100 km/h (62 mph) in just 8.5 seconds. The MINI E is very zippy when overtaking in flowing traffic as well. Its high torque translates into strong surges as soon as the pedal is put to the metal, propelling the car past all service stations virtually noise-free and completely without emissions. One can travel at speeds of up to 152 km/h (95 mph), the artificial limit imposed by the engine management system.

**Novel driving experience: spontaneous acceleration, efficient braking.**

The electric power train gives MINI E drivers an intense driving experience. The car's instantaneous power on tap during takeoff and acceleration is augmented by its dynamic deceleration potential, which is also directly coupled to the accelerator pedal. As soon as the driver releases the gas pedal, the electric motor acts as a generator. This results in braking force, and the power recovered from the kinetic energy is fed back to the battery. This interaction ensures extremely comfortable drives – especially at medium speed with

constant, but marginal, variation. In city traffic, some 75 percent of all deceleration can be done without using the brake system. When the gas pedal is suddenly and completely released, the car decelerates by 0.3 g.

Drivers can make efficient and convenient use of the MINI E's engine braking force. They only need to press the brake pedal if the car needs to be brought to a standstill. Since energy is recuperated when the engine acts as a generator in thrust mode, by driving with foresight, one can not only reduce the number of braking maneuvers, but increase the MINI E's efficiency to boot. Making frequent use of the recuperation feature can extend the car's range by as much as 20 percent.

### **Signature MINI agility in a new guise.**

Thanks to the characteristics of electric motors, the MINI E is a new iteration of the agility that is typical of its brand. Its immediate reactions to any movement of the gas pedal combined with its high-output power plant make for a sporty drive. With a curb weight of 1,465 kilograms, the MINI E has an even weight distribution. Minor modifications made to the suspension ensure safe handling at all times. The Dynamic Stability Control (DSC) system has been adapted to this model's specific wheel loads as well.

The MINI E's brake system comes with a newly developed electric underpressure pump. Its electromechanical Electrical Power Assisted Steering (EPS) is the same as the one used in mass-produced MINIs. Both brake and steering assistance react to driving conditions and are thus extremely efficient. The air conditioning's electrical compressor only operates if desired or necessary. An electrically operated heating system was developed for the MINI E as well. Powering auxiliary devices with electricity is increasingly raising the efficiency bar in series model MINIs too.

### **Design: unmistakably MINI, undoubtedly new.**

A first glance at the MINI E confirms that the car belongs to the brand's family. The MINI's design, which is the structural basis for the emission-free two-seater, is supplemented with a host of design cues that are indicative of the car's revolutionary drive concept. Some 500 units will be manufactured for the pilot project and sport uniform paintwork. Serial numbers running from "001" to "500" next to the turn indicator lights show that each of the cars is part of a closed program under which the zero-emissions power plant will be tested extensively in daily traffic.

The MINI E's coachwork sports an exclusive combination of metallic Dark Silver and Pure Silver. What distinguishes the zero-emissions MINI is a

specially designed logo in Interchange Yellow, symbolizing a power plug in the shape of an “E” that contrasts the silver backdrop. The stylized graphic element has been applied to the roof in an extra-large version and in smaller dimensions to the front and back, to the charger port lid, the dashboard trim, and – combined with the MINI logo – to the door jamb, in slightly modified form. It is an unmistakable pointer to the extraordinary drive concept implemented in the MINI E. The color of the roof edges and outside mirror housings are matte yellow as well. This makes the MINI E clearly recognizable from every angle. Furthermore, the eye-catching color composition underscores the power and agility of the first fully electrically powered MINI.

Thanks to its coachwork, the MINI E seamlessly fits into the model family. Its front design borrows cues from the MINI Cooper S, and – similarly to the MINI Cooper D – the strong bulge in the bonnet gives away its extraordinarily high torque. The 16-inch, 5-Star Blaster lightweight alloy rims are shod in low-resistance, runflat tires that enable continued driving even when the tires have completely lost air pressure. A unique touch can be found on the rear flap, which does not have a cut-out for an exhaust tailpipe, since the MINI E does not produce emissions.

#### **The interior: color highlights and technical finesse.**

Yellow color accents against a backdrop of black and silver hues also dominate the design of the MINI E’s interior. Besides the decorative surfaces of the instrumentation panel and the elliptical door trim panel inserts, the ornamental seams of the cloth-and-leather sports seats are clad in the vivacious yellow tone as well.

Moreover, the central gauge and the battery level indicator behind the wheel of the MINI E, which replaces the MINI’s rev counter, feature yellow lettering against a dark grey background. The battery level is displayed in percentage figures. The central gauge includes an LED display indicating power consumption in red and power recuperation in green. Charging progress is indicated visually as well. An orange light located on the battery status display housing flashes until a full charge has been achieved.

Standard fare on the MINI E alongside an air-conditioning system, power windows and power outside mirrors as well as an audio system includes a multifunction sports steering wheel. The selector lever used to activate the drive mode is a familiar element. Its visual appearance is similar to that of the MINI with the optional automatic six-gear transmission. Since the MINI E transfers power generated by its electric motor to the front wheels via a single-stage gearbox, the only modes besides Park are Drive and Reverse.

**MINI E customers will be part of a pioneering mission.**

A 500-unit, limited-production MINI E series will be manufactured through the end of 2008. The project will thus attain an order of magnitude that clearly exceeds the size of currently comparable test series in the field of sustainable mobility. The BMW Group is thus underscoring its goal-oriented ambition to amass a broad spectrum of experience from real-life use of the innovative drive concept. The BMW Group's engineering strategy also aims to supplement the automaker's range of highly efficient models with all-electric drive vehicles over the medium term.

Putting the MINI E on the road on a daily basis will be a pioneering feat from which both the drivers and engineers of the first zero-emissions MINI will benefit as a team. With a view to ensuring that information is shared as intensively as possible and that the drivers receive optimal support, the joint pilot project will be limited to certain regions. Specialized MINI dealers in the US states of California, New York and New Jersey will make the cars available to a select circle of private and corporate customers residing in their vicinity. The plan envisions letting up to 280 MINI E autos roam the streets of California and putting at least 200 into circulation in New York and New Jersey.

**Ideal conditions for gaining all-encompassing knowledge.**

For a number of reasons, these three states offer perfect conditions for ensuring that the project progresses successfully. With the MINI E on the road on both the West and East Coasts, the car will be tested under various climate conditions. As a result, experience will be gained from using the automobile as a daily driver in city and suburban environments – conditions that come closest to replicating the demands that would realistically be placed on a purely electrically powered vehicle. Moreover, the MINI has consistently been a huge success in California as well as in New York and New Jersey. Considerable attention is certain to be attracted by the project as well as each and every zero-emissions MINI in California, New York and New Jersey.

An open and tech-friendly attitude to progressive mobility concepts is required of MINI E customers as well. They will work in concert with BMW Group experts to evaluate the project scientifically. MINI E engineers accord high importance to staying in touch with the drivers on a regular basis, as this will help them analyze both vehicle characteristics and driver behavior in order to gain the most accurate and realistic picture of the demands placed on a vehicle with a purely electrical drive in the chosen deployment areas.

### **Special charging station and full service for every MINI E.**

The cars will change hands based on a one-year lease with an extension option. Monthly lease installments will cover technical service and required maintenance as well as the replacement of wearing parts. At the end of the usage period, all of the automobiles belonging to the project will be returned to the BMW Group's engineering fleet where they will be subjected to comparative tests. The effects of continuous strain on the vehicle as a whole and on individual components will then be analyzed in detail. Major findings made as a result would be factored into the mass production of a vehicle featuring a purely electric drive system. This explains why the MINI E leases will not include the customary option enabling the customer to purchase the vehicle on expiry of the agreed term.

Another precondition enabling the use of the MINI E within the scope of the pilot project is provided courtesy of charging technology developed especially for this model. The MINI E's lithium-ion battery can be fully charged using a high-current, high-voltage wallbox in a mere two-and-a-half hours. MINI E customers will be provided with a wallbox drawing specially conditioned power supplied by regional electric companies to BMW Group specifications. The wallboxes will be installed in a manner that prevents unauthorized access. Therefore, only lockable garages or similar buildings will qualify as homebases and power stations for the MINI E.

### **Maintenance by qualified specialists.**

The MINI E's drive technology differs from that used in mass-produced vehicles so far – both conceptually and in many details – placing special demands on servicing work. Most notably, the electric drive's high-voltage technology requires that maintenance work be done by qualified personnel using special tools that are not included in MINI service partners' standard toolboxes. In light of this, a service base will be set up on both coasts, staffed by personnel that is specially trained to perform maintenance and repair work on the MINI E's electrical components. These experts will provide professional support in the event of drive malfunction. Depending on the nature and severity of the fault, this work will be done at the local MINI dealership or the service base's specially equipped workshop. All necessary transportation will be handled by MINI, and the customer will be provided with a courtesy car for the duration of the repair work.

In principle, the MINI E's service requirements hardly differ from those of conventional IC engine-powered vehicles. However, the car's condition will be monitored in depth during this pilot project, as is customary in all field trials and test series. Technical inspections will be carried out after 3,000 miles (just

under 5,000 kilometers) and at least after six months. Above and beyond this, any repair and maintenance work that is not directly related to the drive train can be performed by the dealerships responsible for delivering the cars to the project participants.

### **Production in Oxford and Munich.**

Production of the approximately 500 cars will take place at the company's Oxford and Munich sites and is scheduled for completion before the end of 2008. MINI's UK plant will be responsible for manufacturing the entire vehicle with the exception of the drive components and the lithium-ion battery, with the brand's series models rolling off its assembly lines concurrently. The units will then be transferred to a specially equipped manufacturing complex situated on BMW plant premises where the electric motor, battery units, performance electronics and transmission will be integrated. The BMW Group has trained special teams to handle the engineering and production processes. They possess in-depth knowledge of the assembly and model-specific configuration of high-voltage energy storage units, associated cabling and performance electronics as well as all of the logistics and safety requirements that go hand in hand with this technology.

### **The MINI E: new joy of driving without emissions.**

Typical of all MINI models besides their unique design and multitude of "youification" options is the driving pleasure and efficiency they offer. One of the keys to their allure is that they enable fascinating mobility with unusually low fuel consumption. This concept is already pointing the way to the future. And the MINI E is showing the world what it may look like.

MINI's first zero-emissions car is setting standards in the field of all-electric automobiles. Thanks to its driving performance, range and suitability as a daily driver, it unites the best of prerequisites for a continued rise in interest in this drive concept. The MINI E is a trendsetter – and this also applies to the customers driving these automobiles within the scope of the pilot project. Together, they are charting the course towards a new form of mobility and a concept that allows one to avoid emissions without renouncing the fun in driving.

# MINI E – Technical Specifications.



<b>Body</b>		<b>MINI E</b>
Number of doors/seats		3/2
Length/width/height (unloaded)	mm	3,714/1,683/1,407
	inches	146.2/66.3/55.4
Wheelbase	mm	2,467
	inches	97.1
Track front/rear	mm	1,453/1,461
	inches	57.2/57.5
Turning circle	m	10.7
	feet	35.1
Transmission oil incl. axle drive	l	Permanent filling
Curb weight	kg	1,465
	lbs	3,230
Payload	kg	195
	lbs	430
Gross vehicle weight rating	kg	1,660
	lbs	3,656
Cargo space (DIN)	l	60
<b>Engine</b>		
Type		Electric motor
Motor type		Asynchronous motor AC Induction Motor
Output	kW/hp	150/204
Torque (from idle)	Nm	220
Max. RPM (cut off)	min <sup>-1</sup>	12,500
<b>Electrical System</b>		
Battery capacity	kWh	35kWh, approx. 30kWh of which useable
Battery weight	kg	260
	lbs	573
Battery charge time in h	at 110 V/20 A (1.3 kW)	26.5
	at 240 V/40 A (7.7 kW)	4.5
	at 240 V/60 A (11.5 kW)	3.0
Battery design		53 cells connected in parallel constitute a unit, 2 units connected in series constitute a module, 48 modules connected in series constitute the battery; 5,088 individual cells in total
Battery cooling		Air cooling via temperature-, load- and speed-sensitive fans
Battery location		Extends rearward from the heel plate; replaces the rear seat bench
Peak current	A	Short bursts of up to 500A

### Running Gear

Front wheel suspension		Single-joint McPherson spring strut axle with anti-dive control
Rear wheel suspension		Longitudinal link with centrally mounted control arms, z axis
Front brakes		Vented disc
Diameter	mm	294
	inches	11.6
Rear brakes		Disc
Diameter	mm	259
	inches	10.2
Road stability systems		DSC adapted to modified curb weight and wheel load (always on), low-friction recuperation control via DSC, ELUP (electronic underpressure pump) brake boost
Steering		Rack and pinion with electronic power steering (EPS)
Total steering transmission ratio	:1	14.1
Type of transmission		Single-stage helical gearbox, derived from the Cooper S helical gearbox
Axle load distribution	front/rear in kg	750/715
	front/rear in lbs	1,651/1,575
Tires		All-season Runflat 16"

### Performance Ratings

Power-to-weight ratio (DIN)	kg/kW	9.76
Acceleration 0–100 km/h (0–62 mph)	s	8.5
Top speed <sup>1</sup>	mph	95.0
	km/h	152
Range (FTP 72) <sup>2</sup>	mls	156
	km	250

### Consumption (FTP 72)

Total	kWh/mls	0.19
	kWh/km	0.12
CO <sub>2</sub>	g/mls	0
	g/km	0

<sup>1</sup> With electronic cut-off.

<sup>2</sup> US Federal Test Procedure, also referred to as UDDS (Urban Dynamometer Driving Schedule).