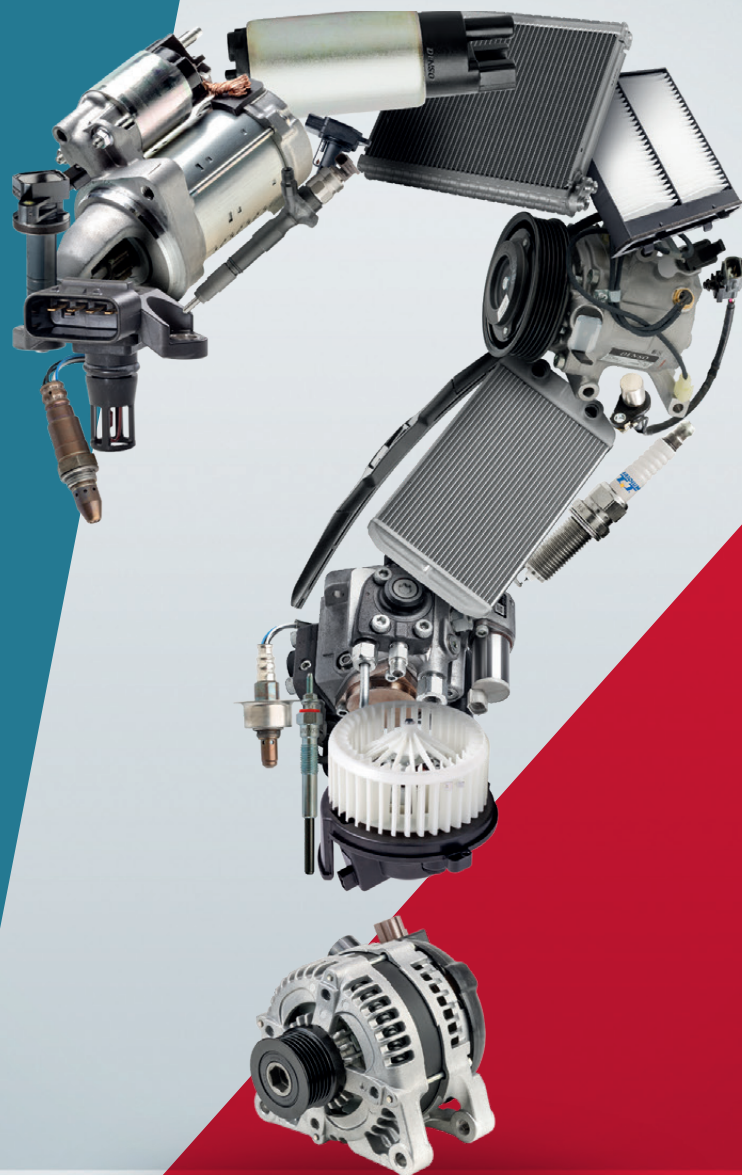


DENSO

75th
SINCE 1949



Business Insight

Driven by
Quality

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For further information, please contact

Fatiha Laauich

Marketing and Communications,
DENSO Europe Aftermarket
f.laauich@eu.denso.com

www.denso-am.eu

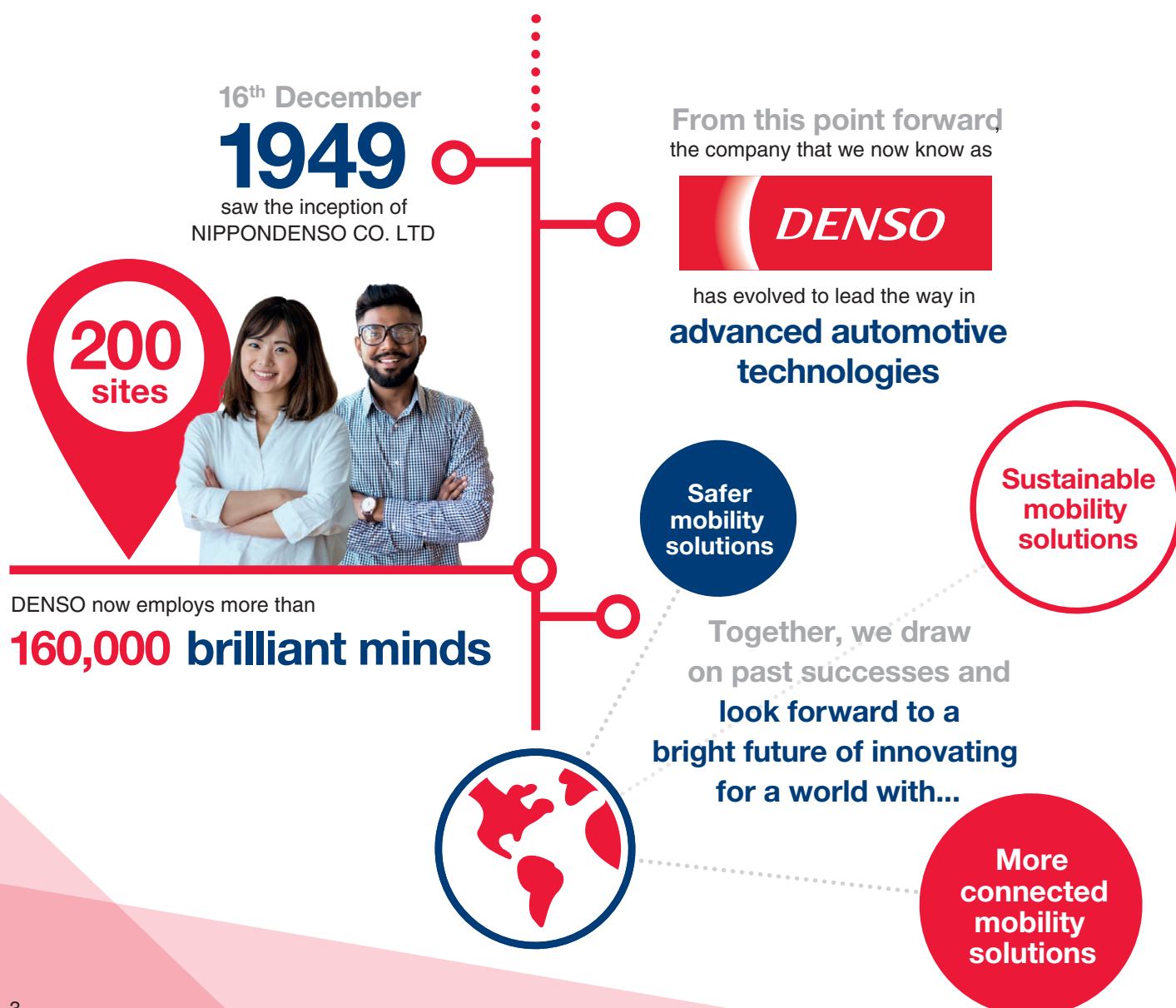
Driving aftermarket innovation

DENSO is a world-leading automotive supplier of advanced technology and components for thermal systems, powertrain control, electronics, information and safety.

With headquarters in Japan and local offices throughout Europe, the company is a key supplier for manufacturers, distributors, wholesalers and repairers across the globe.

Few aftermarket suppliers are as future-facing as DENSO. The company pioneered the first electric compressor for hybrid cars and continues to invest in research and development around electric and hybrid vehicles.

DENSO plans to invest €63 billion (¥10 trillion) in research and development over the next 10 years in line with its pursuit of zero emissions and zero traffic fatalities within mobility and society.



The DENSO Creed

The DENSO Creed represents our commitment to the sustainability of society as well as our basic management philosophies and long-term policies.

“Be trustworthy and responsible.” 	 “Cherish modesty, sincerity, and cooperation”	“Be pioneering, innovative, and creative.” 	 “Provide quality products and services.”
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Sustainability goals

Our vision for 2025 is based around 3 key targets:

 Energy ½ To cut CO² emissions by half with technologies that resolve global warming, energy, and resource issues.	 Clean x2 To reduce the impact of environmentally hazardous substances, emissions, and waste by half, as well as contribute to improved air quality by cutting vehicle emissions.	 Green x2 To double our green activities, with programmes such as biofuel research and the creation of green spaces and communities.
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DENSO adds Peace of Mind-oriented technologies to product portfolio

As of the world's second largest parts and systems provider, DENSO has the ability and influence to help find solutions for societal's greatest needs.

Alongside its recognised range of automotive components that are of proven quality for both OE and aftermarket use, DENSO's future technology development goals are focused on enabling greater peace of mind across all areas of society.

Peace of mind is one of DENSO's three key global development pillars ahead of 2030, along with supporting the environment and inspiring others by making a difference.

DENSO world-first innovations

Our world-first innovations range from **common rail systems** that dramatically improved diesel engine performance to **night view technology** that detects pedestrians in the dark.

The platinum spark plug in 1988 was the world's first with a lifespan of up to 100,000 km

And the **creation of the QR code** originally developed in 1994, is the machine-readable barcode now used by companies and consumers all over the world.

One of our engine tests simulates a 'worst case' scenario in Death Valley, the hottest place on earth. The test involves a 10-mile uphill drive, towing a trailer, in 40°C. If the parts can handle that, they can handle anything!

Editorial

Reflecting on DENSO's 75th anniversary, the Aftermarket team unveils its vision of the future

As DENSO celebrates its first **75 years**, the Aftermarket division's senior management team, provides some insight of its ongoing strategy, and its vision of the future



The first member of the team in the hotseat is **Senior Manager, IAM Sales, Richard Rybacek.**

What is the focus of the DENSO Aftermarket sales strategy?

"Our customers remain our primary concern and how we can help them face the challenges of a changing market. Naturally, giving them greater access to premium quality replacement products is paramount, and part of this objective is to develop a more sustainable supply chain and increase the lifecycle of these parts. In addition, we will further strengthen these relationships by opening new digital communication channels to better serve workshops and end users, which increases knowledge and reduces installation related issues."

What is the state of aftermarket?

"The EU aftermarket is strong, resilient and ever evolving and, with an ageing car parc, it's growing. It is however, a hugely competitive market and with the current shift fuelled by electrification, ADAS, and other technological developments, such as increased software repairs and over-the-air updates, we are paying attention at the impact this will have on our partners and are planning strategic ways to support them on this journey."

Next up is Director, **Deputy Head EU Aftermarket & Industrial Solutions, Thomas Bosman.**

What are the most exciting innovations that DENSO has in the pipeline?

"Our mission is to contribute to a better world. We want to help power society's shift to green, safe and worry-free mobility.

"Carbon neutral technology like hydrogen related technologies, will have a tremendously positive impact on the world and the well-being of its people, but also urban air mobility, a project that has the potential to change the dynamics of personal transportation.

"Focusing on our own department, we are working on exciting non-automotive projects, such as the Last Mile Cold Chain (Temperature controlled food and pharma urban deliveries)

"In addition, in his first European public appearance as DENSO President and COO of DENSO, Shinnosuke Hayashi revealed during the IAA Mobility show in September, that the business plans to invest €63 billion (¥10 trillion) in research and development over the next 10 years in line with its pursuit of zero emissions and zero traffic fatalities within mobility and society."



What areas does the DENSO Aftermarket & Industrial Solution strategy focus on?

"In line with the DENSO Global strategy to achieve carbon neutrality, sustainability is the dominant theme, so our Reman & Repair activities are a particularly important part of this objective, so we are constantly challenging ourselves to further expand our capabilities and help our partners to do the same."

Finally, we spoke with **Executive Coordinator, EU Aftermarket & Industrial Solutions, Masayuki Yamada.**

From a product perspective, what can you tell us about DENSO's aftermarket future?



"Since its foundation, the DENSO Group has been dedicated to the design and manufacture of safe, high quality products that will satisfy the needs of customers and earn their trust, which is why DENSO Aftermarket has always been synonymous with premium quality components. Naturally, this policy will continue, whether we deliver products with a DENSO label or, more recently, with a PowerEdge label. Irrespective of the brand, all of our products have to conform with strict standards that ensure that, whatever the part, it is of the highest quality, regardless of the colour of the box."

Are there any new products or services in the pipeline?

"We are continuously expanding our aftermarket programme, with new-to-range additions being added monthly, but with the launch of the PowerEdge brand, we have been able to extend our reach and provide a solution for customers looking for a value driven range that still provides quality assurance. In addition, as well as the sales and marketing support we provide for our direct customers, we will continue to support those responsible for installing our products with technical information and training, to offer a holistic approach to both sectors of the market. Naturally, this objective is constant, so we are always working on ways that will bring us closer to the market in order for us to deliver added value across the sector."

75th
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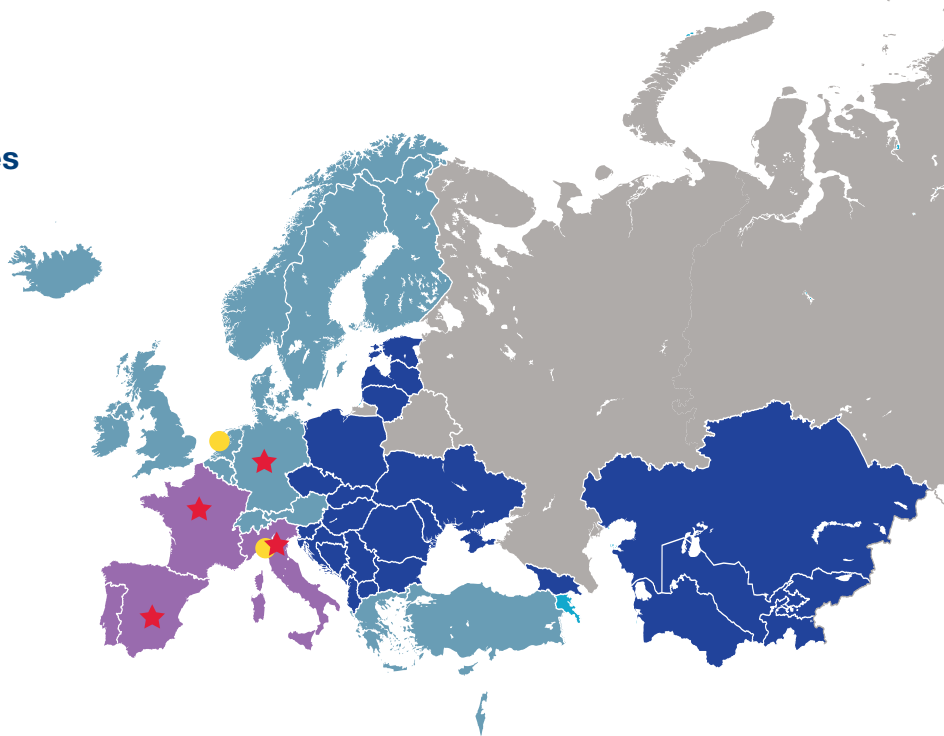


Stay tuned for exciting updates, product highlights, and more!

Working together

Our sales teams are available to support you with information, technical data and your account settings. We have eight warehouses across the UK, Germany, France, Spain, Italy, supplying parts to 46 countries with next day delivery.*

All territories coloured in the map are covered by local Sales offices and/or local Sales Representatives.



● South Region

France, Italy, Portugal and Spain.

● West Region

Austria, Belgium, Cyprus, Denmark, Finland, Germany, Greece, Iceland, Ireland, Israel, Luxembourg, Malta, Netherlands, Norway, Sweden, Switzerland, Turkey and United Kingdom.

● Central Region

Albania, Armenia, Azerbaijan, Bosnia & Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Kosovo, Latvia, Lithuania, Moldova, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovakia, Slovenia, Tadjikistan, Turkmenistan, Ukraine and Uzbekistan.

★ Distribution Warehouses

Genevilliers, France
Krefeld, Germany
Madrid, Spain
Poirino, Italy

● European Headquarters

North - Weesp, Netherlands
South - Poirino, Italy

Change is here to stay!

2,600 years ago, the Greek philosopher, Heraclitus stated that "The only constant is change!" How true this is of the automotive industry and our IAM sector.

Electrification, the great environmental saviour! Is this really going to be the complete answer for automotive? What about Hydrogen and all of the work currently being done to develop clean alternative fuels for ICE? How will these technologies impact our IAM?

One this is for certain, if any company is to survive and grow their business in this constant changing environment. They have to be prepared for and embrace change.

As one of the global automotive leaders, DENSO is at the forefront of many of the future technology changes in the Automotive industry. DENSO is well positioned and committed to helping our business partners navigate their way in this constantly changing and dynamic industry.

Nigel Cole
Senior Global ITG Manager
DENSO Solutions, Japan

Your DENSO Aftermarket Sales contacts across Europe can be reached via the online form:



What is PowerEdge?

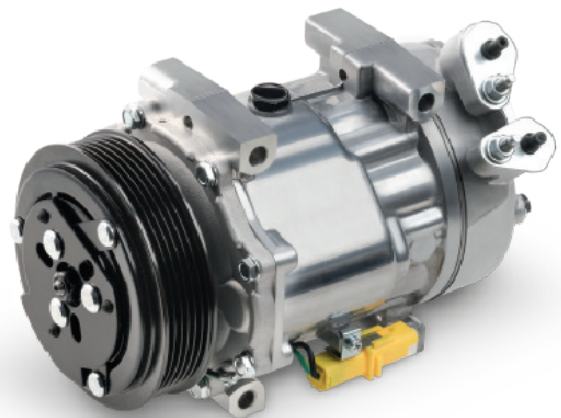
PowerEdge is a new global second brand by DENSO, created specifically to deliver a comprehensive range of competitively-priced products. Current PowerEdge range includes A/C compressors.

Compressors features & benefits

PowerEdge compressor range consists of high quality A/C Compressors including most popular applications in passengers cars, trucks, heavy duty / agriculture / universal.

- Pre-filled with PAG-oil
- New assemblies (no re-manufactured units)
- High quality and long-lasting
- Fit a wide range of vehicles

PowerEdge brand is designed to support distributors and workshops to help them fill the gaps in their existing ranges and allow them to provide a competitive solution for those customers looking for a value alternative.



www.poweredgeproducts.eu

Why choose PowerEdge?

- PowerEdge is the perfect choice for drivers of older vehicles and those seeking quality, yet cost-effective components.
- PowerEdge is proud to give you the power to ensure price-sensitive customers now have a new alternative.
- 24-month warranty is available.

Add PowerEdge parts to your DENSO order to save time and give your business the power to deliver a competitive offer to your customers. Your customers get more choice.

PowerEdge range overview

- Cost-effective: competitively priced products that are good quality, but appeal to budget-focused end-users.
- Comprehensive coverage: large range of variants per product to widen the opportunity of targeting suitable end-users.
- Reliable performance: PowerEdge products are hard-wearing, deliver mile after mile and can be used with confidence.
- Environmentally friendly: product carton boxes are biodegradable, reduce the product's carbon footprint and minimize packaging.

E-catalogue



Installation videos



Supporting materials



For more information, please visit www.poweredgeproducts.eu or contact your local DENSO representative.

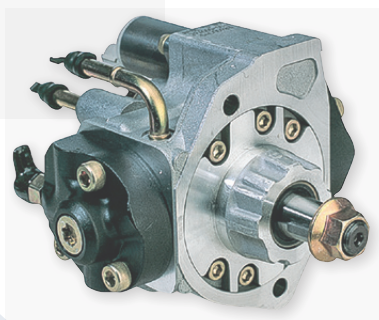
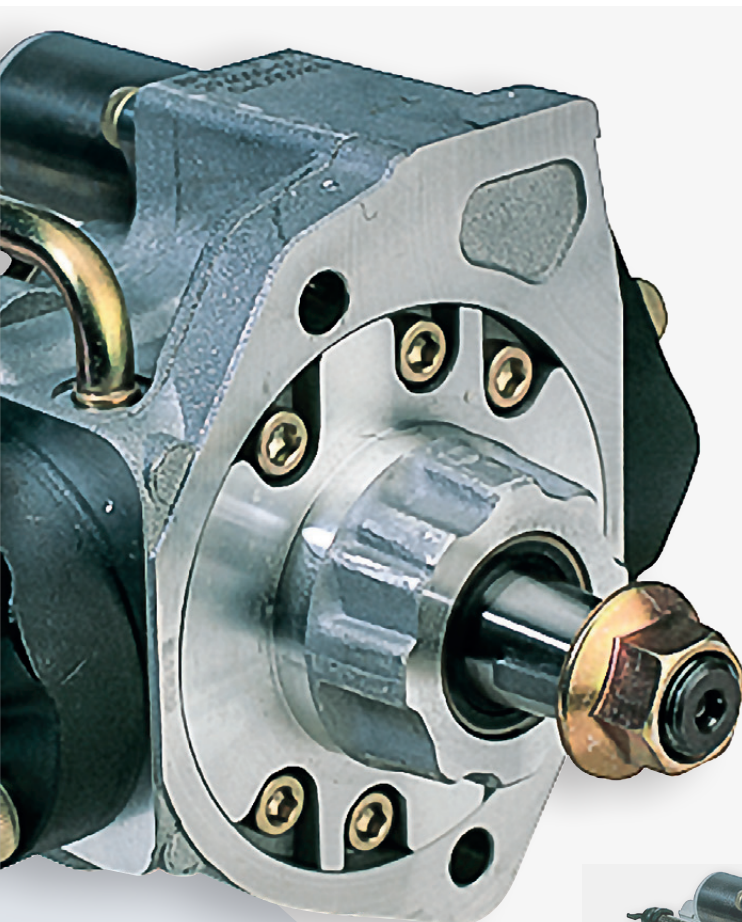
POWEREDGE®

The power of choice

Driven by DENSO

Diesel

Although the recent industry trend shows a move towards electric vehicles, diesel-fuelled vehicles will remain a significant part of the global fleet of vehicles. Innovations from manufacturers, including DENSO, will remain necessary to ensure improved diesel technology performance.



DENSO is one of the world's major suppliers of diesel systems. We have produced injection pumps for diesel engines since 1957 and offer a complete range of products for the engines of today and tomorrow. Our diesel programme gives wholesalers, distributors and workshops access to advanced, original DENSO technologies, as well as delivering guaranteed quality and performance.

DENSO's common rail (CR) system remains one of the most popular across the automotive world. The following CR components are supplied by DENSO to the independent aftermarket:

CR Supply Pumps

Our CR supply pumps ensure consistently high-pressurised fuel in the rail and fuel supply lines to each injector.

CR Injectors

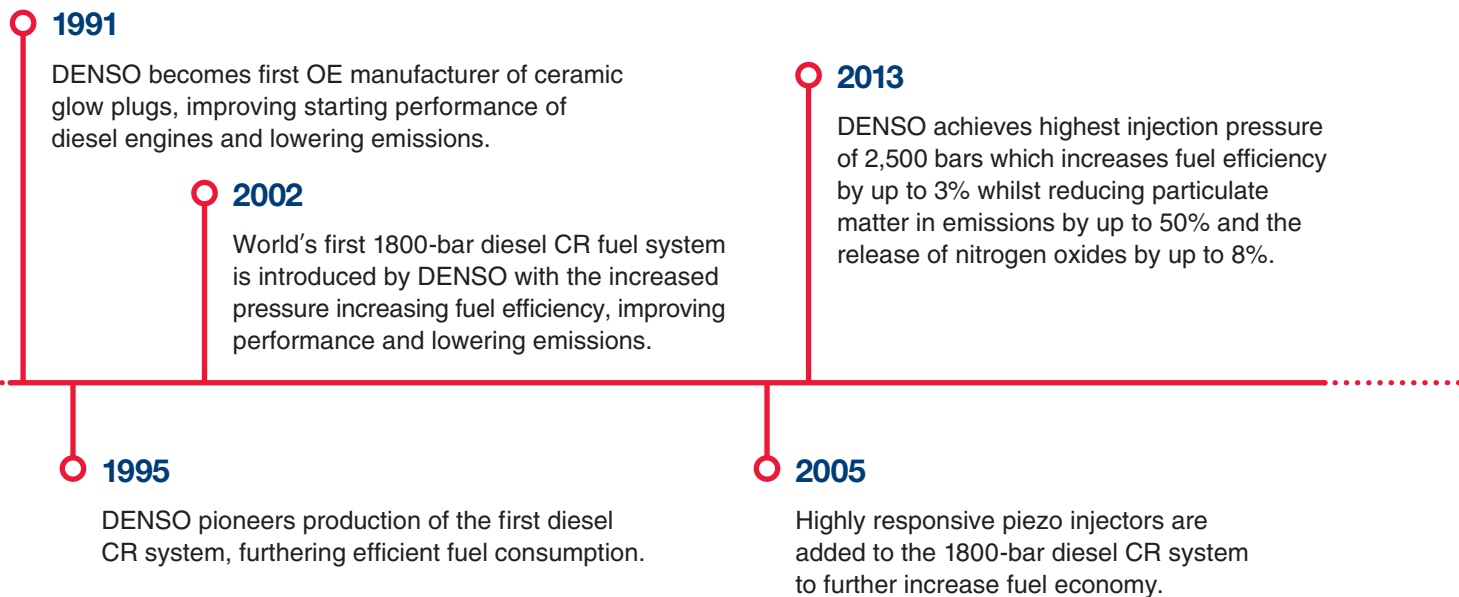
Our advanced CR diesel fuel injectors are the reliable, powerful solution to provide diesel engines with the precise amount of fuel, at exactly the right time, creating the ideal condition for efficient combustion.

Suction Control Valve Kits

These valve kits ensure the right amount of fuel is fed from the fuel tank, through the fuel filter, into the supply pump. This technology allows a reduction of components in the fuel supply circuit.

Leading the way in diesel development

A number of DENSO industry-first technologies have helped clean up diesel engine emissions, including:



Why choose DENSO diesel products?

- All units are unique to the DENSO range.
- As the products fulfil OE quality level standards, the diesel replacement parts are of the highest quality.
- The system boasts a very low warranty ratio.
- Professional CR-DENSO system diagnostics are possible due to the DENSO diagnostic C-tool.

DENSO'S



DID YOU KNOW?

The latest version of DENSO's CR system optimises fuel injection quantity and timing with 100,000th of a second precision – the equivalent amount of time it takes a Formula 1 race car, travelling 300 km/h, to drive one millimetre.

For more information scan the QR code:



Engine Management Systems

Advanced design and the highest OEM quality. These are the exceptional qualities you'll look for in an engine management systems (EMS) range for the aftermarket.

Precision is also vitally important; making sure replacement parts are an exact fit for the vehicle, without the risk of difficult-to-trace electronic malfunctions.

EMS components are usually developed for a specific engine architecture. It is possible for two OE parts to look identical, but to have different functional behaviour. Examples of these invisible, yet crucial, differences are; a different pinout on the connector, different internal components, and other firmware loaded into the electronics.

As one of the world's foremost pioneers and tier-one OE manufacturer of engine management systems, DENSO pays a great deal of attention to optimising parts for specific applications, ensuring better overall performance, efficiency and lifetime (reliability). Such a detailed approach to production means volumes per part are smaller.

In contrast to OEM business, the aftermarket can often be in search of generic products, that are suitable for a range of cars. However, this is a risk. There are many products to be found on the market that fail OE specifications. Sometimes this is noticeable because of poor fitment, or when the part's performance is a bad match for the car. These flaws are known as consolidation mistakes. Sometimes such errors aren't immediately evident, but over time can cause higher fuel consumption, increased exhaust emissions or poor engine performance. These can lead to dangerous situations when an engine stalls suddenly, or only allows "limp-home" driving mode.

Consolidation mistakes derive from suppliers with less experience in producing specific components. Without detailed engineering experience or expert knowledge of the OE product, the quality cannot be premium.



DENSO's OE heritage provides an essential foundation of technical competence and expert engineering information, both of which are utilised in developing and producing an aftermarket EMS range. We have great understanding of car maker's specifications, the integration of functions within EMS systems, and we use state-of-the-art OEM testing facilities. As a result, the independent aftermarket can be assured that the contents of a DENSO aftermarket box comply with the same specifications as the part that was designed and installed into the vehicle when it came off the assembly line.

DENSO's continually expanding EMS aftermarket programme includes:

- Cam and crankshaft position sensors
- Exhaust gas temperature (EGT) sensors
- Exhaust gas recirculation (EGR) valves
- Ignition coils
- Fuel pumps
- Manifold absolute pressure (MAP) sensors
- Mass air flow (MAF) sensors

Why choose DENSO EMS sensors?

- DENSO developed the world's first EGR valve with an integrated air intake throttle valve. This EGR combination valve is half the size of conventional models, reducing weight which is key in the down-sized engines of today.
- We launched the world's first plug-in type Mass Air Flow meter inserted into the intake pipe wall, reducing the size and weight and aiding installation.
- We were also the first to introduce quantitative measurement to our Lambda Sensors, enabling them to sense both if the air/fuel mixture is too lean or too rich, and by how much.
- DENSO EMS products are fitted as original equipment in many of the world's leading vehicle manufacturers.
- The EMS products that we sell to the aftermarket meet the same quality standard as the products that we sell to our OE customers.

DENSO'S



DID YOU KNOW?

The maximum temperature range of DENSO EGT Sensors exceeds 1000°C, and they are capable of sensing a sudden change to such temperatures within 7 seconds!

For more information scan the QR code:



Ignition

Successful, fuel-efficient ignition is one of the most important engine functions, yet a common cause of motorist complaint. DENSO has been setting the standard for ignition innovation for 70 years. Our product range covers ignition components for diesel, petrol and hybrid vehicles.

DENSO is the founder of hybrid systems, and with their use becoming more commonplace, the traditional Internal Combustion Engine (ICE) will have a different role in the future. This means that there is also a new future for ignition. The ICE connected to the hybrid system will be switched on and off more often than an ICE in a traditionally-fuelled vehicle, which gives more importance to a non-failure ignition system with worse ignition circumstances.

Currently, the most important areas for improvement in ICEs are the environmental features and operating parameters. In this context, small but mighty products like glow plugs and spark plugs play a very important role in the here-and-now of car production and the aftermarket.

Glow plugs:

Glow plugs have been an essential part of all diesel engines since their invention way back in the early 1900s. In a diesel engine, combustion is achieved by compressing the air in the combustion chamber. The compressed air raises the temperature, fuel is added to initiate the combustion cycle, powering the engine.

During the combustion process, if the combustion cycle does not meet the required temperature, not all of the fuel will be burnt. The unburnt fuel becomes carbon particles, which are released into the atmosphere via the exhaust and are harmful for the environment. In order to avoid this situation, glow plugs are used to heat up the air and ensure the correct temperatures are reached, so all the fuel is burnt and harmful emissions are reduced.

Glow plugs also play another important role in reducing emissions – they provide heat for the diesel particulate filter at regular intervals, as determined by the engine management system.

At DENSO we are proud of our all-makes, high quality glow plug programme. The product range encompasses all current glow plug technologies including single coil, double coil, extended post-heating, ceramic and instant heating.

Why choose DENSO glow plugs?

- Our glow plugs are compatible with manufacturers' specifications and provide long service durability.
- Faster heat-up times and a reliable cold-start.
- Extended post-heat temperatures, meaning lower emissions.
- DENSO's excellent coverage ensures suitability for almost every diesel passenger car engine in Europe and beyond.
- More applications are covered with fewer part references.
- At DENSO, we are experts at developing and manufacturing glow plugs – we have been doing so since 1963. We use the best materials for the best quality.
- DENSO glow plugs meet ISO TS16949, ISO14001 and OHSAS 18001 standards.



DENSO'S



DID YOU KNOW?

A world-first innovation; in 1991, DENSO became the first OE manufacturer of ceramic glow plugs.



Spark plugs:

Downsizing, hybrid and start/stop technology bring new dimensions to the role of the spark plug; its size will reduce, its electrodes will slim down, and its materials will be more precious. The 20th Century designed engines equipped with nickel will give way to more effective iridium plugs.

As an engine's coefficient of performance and fuel efficiency increases and as emissions decrease, the temperature in the combustion chamber goes up. But only the very best, most durable ultra-thin electrode can withstand the high temperatures and pressured environment of the combustion chamber. That is why the assembly lines of many car companies have already fully transitioned to the use of iridium spark plugs. As one of the hardest materials with a high melting point, iridium offers the advantage of high density and high corrosion resistance even at a temperature of 2450°C. So compared to regular nickel plugs, iridium spark plugs have much higher capabilities.

Today, we can confidently say that iridium, this master of durability, corrosion resistance and strength, is the perfect material for spark plug electrodes. It is a huge step up compared to platinum.

At DENSO, we offer the aftermarket's best, all-makes spark plug programmes, including our market-leading Iridium TT spark plug (DENSO uses higher grade technology that enables the plug to outperform the less advanced competition).

Why choose DENSO spark plugs?

- DENSO has been selling its patented Twin Tip (TT) spark plug technology for over 10 years.
- Unique to the independent aftermarket, DENSO's TT spark plugs are available in nickel and iridium, offering 87% car parc coverage throughout Europe.
- DENSO spark plugs offer higher margins for distributors compared to competitors.
- The thinner the electrode, the easier the flame growth and more stable the combustion. Many DENSO Spark Plugs have the thinnest centre electrode on the market at only 0.4mm.
- Since the introduction of Nickel TT in 2009 and Iridium TT in 2015, the range has continued to grow in popularity, with its market share increasing 25% year on year over the past six years.
- Our product range includes Nickel with patented U-groove, Double Platinum, Patented Twin Tip (TT), Iridium Power 0.4mm, Iridium Long Life, Iridium Tough 0.4mm, Super Ignition Plug (SIP) and Iridium Racing 0.4mm.
- Many spark plugs featuring DENSO-patented innovations like U-groove on Nickel and Iridium Power, the Twin Tip with protruded ground electrode, and the 0.4mm center electrode size are made from an improved Iridium and Rhodium Alloy.

DENSO'S



DID YOU KNOW?

DENSO Iridium TT spark plugs have, for the majority of cars, a life span of 120,000 km. For selected models, they can meet all OE car maintenance requirements for the lifetime of the vehicle. Check TecDoc/MAM for your DENSO TT reference.

For more information about glow plugs scan the QR code:



For more information about spark plugs scan the QR code:



Lambda Sensors

As one of the world's foremost developers and manufacturers of original vehicle parts and systems, DENSO's understanding of lambda (O₂) sensor technology is unrivalled.

Since we first produced them in 1978, DENSO has become one of the leading lambda sensor suppliers in the world, with several hundred million of our devices measuring the air/fuel (A/F) mixture in cars globally. As the automotive industry continues to improve its emission standards, DENSO's engineering advances ensure that our lambda sensors become more advanced – featuring pioneering sensor technologies that help cars to burn fuel more efficiently and produce fewer emissions.

Inside each sensor, there is the element that undertakes the sensing function. From a construction perspective, there are two types of sensor element design:

Thimble type elements, made from Zirconia ceramic. These are supported by a separate heater to reach the operational temperatures quickly. Thimble type sensors are more robust; able to handle high levels of vibrations and pollution.

Planar type elements, which consist of laminated layers of ceramic materials that integrate both the sensing element and heater functions. Planar sensors allow the quickest activation time possible.

Both types are suitable for all diagnostic functions where oxygen concentration detection is crucial. They are traditionally used to detect lean and rich combustion mixtures in order to regulate the engine within the catalyst purification window. Both types can be produced as switching or linear versions.

Switching sensors form the majority of the market. They generate a discrete high-low output signal around stoichiometric exhaust conditions that occur when the air-fuel ratio is 14.7:1 ($\lambda=1$).

DENSO's cutting edge A/F sensor technology is a world-first innovation, offering a sensor with a linear output that helps vehicles to meet the tightening emission regulations. This is done over a very wide range of air-fuel mixtures, enabling the engine computer to compensate in the most efficient way. Both thimble and planar type A/F sensors are available to the aftermarket in direct fit only.





Why choose DENSO lambda sensors?

- DENSO's unique thimble type O₂ sensors have the fastest feedback response time on the market.
- With the planar types of our O₂ sensor, the unique single heater-sensor element guarantees the quickest start-up time possible.
- Due to the rapid start-up time, DENSO planar sensors immediately activate to maintain the operating temperature.
- DENSO lambda sensors boast high tolerance to aggressive fuel types. The unique aluminium oxide double trap layer surrounding the sensor's ceramic element protects it from problem fuel, maintaining its lifespan and efficient performance.
- Hassle-free installation – all DENSO lambda sensors come complete with housing (screw or flange type) so there is no need for add-on adaptors.
- DENSO offers wide coverage and unique applications for Asian and European cars.

DENSO'S



DID YOU KNOW?

In 1978 DENSO's ceramic division launched its first lambda sensor. In the same year Sony built a prototype of the first portable stereo, the Walkman.

For more information scan the QR code:



Rotating

Since the 1960s, DENSO has used its world-leading engineering expertise to develop the highest quality starters and alternators programme on the market. Already selected as original equipment by manufacturers worldwide, DENSO's aftermarket range offers the same OE specifications, with entirely new parts and no remanufactured units. Every machine is subjected to our rigorous manufacturing and testing processes,

The DENSO rotating range is comprised of starters and alternators.

Starters

A starter is a device that initiates engine operation. Since a vehicle engine cannot start unaided, an external force is required to provide rotational speed at or above a set value. The starter drives a built-in motor using the vehicle battery as a power source to create power and start the engine. Unlike normal direct current (DC) motors, the starter is only used for a short time (rated at 30 seconds). Thus, the starter is designed to be very small despite producing a large output.

Today, DENSO offers two, advanced types of starter for aftermarket customers:

RA-Starter

Heat resistant electric wire reduces the size and weight of this high-speed motor, whilst a cold-forged spline reduces the size and weight of the magnetic switch. It boasts an improved deceleration.

PS-Starter

A rectangular conductor and surface commutator in the armature, together with a magnet between the main electrodes of the yoke, reduce the size and weight of the starter. The damper unit combined with a high deceleration ratio further reduce starter size and decrease driving noise.



Alternators

An alternator is an important component that generates electricity using the power of the engine and supplies electricity to all the electrical components in a vehicle. The electricity remaining after consumption by the electrical components is sent to a battery for storage.

An alternator is connected to the crankshaft of the engine via a pulley and belt, and generates electricity using engine torque. Improving the power generation efficiency of the alternator reduces the engine torque load and increases the fuel efficiency of the vehicle.

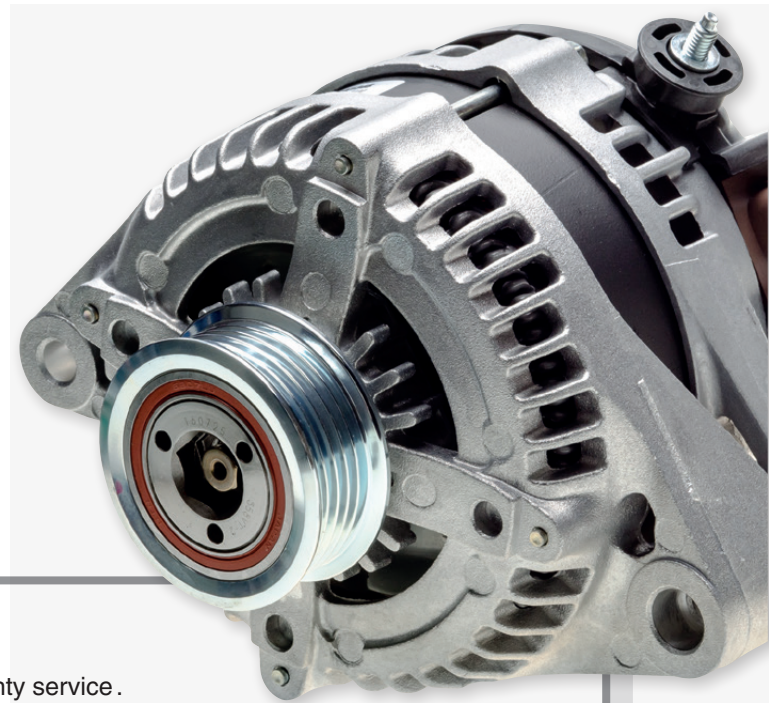
Today, DENSO offers two, advanced types of alternator for aftermarket customers:

Type III Alternator

Optimised stator and rotor sizes improve the magnetic circuit to increase output. A smaller pulley diameter allows a faster rotor. The fan features two blades, integrated with the rotor, to reduce fan noise, size and weight.

SC Alternator

The world's first rectangular conductor in the stator coil increases winding density, reduces weight and increases output. This alternator utilises a one chip integrated circuit (IC) regulator.



Why choose DENSO rotating products?

- DENSO's rotating products come with a two-year warranty service.
- DENSO's products have to comply with the strict DENSO design standard which guarantees long-lasting, efficient performance.
- All DENSO rotating products are 'new in box'. There are no remanufactured units and no core surcharge or returns policy.
- Boasting maximum efficiency, DENSO Starters and Alternators are the smallest and lightest in the world, while delivering the highest outputs.

DENSO'S



DID YOU KNOW?

The 1912 Cadillac became the first car to replace the hand crank with an electric starter motor.

For more information scan the QR code:



Thermal

DENSO thermal components ensure the engine of a vehicle operates at the optimal temperature. Furthermore, thermal components ensure effective air conditioning (A/C) operation and heat exchange performance, as well as playing a key role in reducing vehicle fuel consumption and exhaust gas emissions.

Engine Cooling

Fitted as OE to almost 25% of European cars, DENSO's engine cooling technologies are world class. Our continually expanding ranges now bring these advanced, environmentally driven heat exchange technologies direct to the independent aftermarket – including Cooling Radiators, Heater Cores and Intercoolers, Cooling Fans and Cabin Blower Fans.

Cooling Radiators – Braze welding delivers 'closer' contact between tube and fin for more efficient heat transmission. DENSO's use of advanced metals combines high levels of conductivity and low weight to enable even thin surfaces to be machined.

Intercoolers – A heat exchanger that cools the air before being compressed by the turbocharger, making modern engines increasingly efficient. Developed by DENSO in direct cooperation with car makers, these are the highest quality intercoolers the aftermarket can offer.

Heater Cores – DENSO heater cores are designed for optimum performance in the vehicle's heating, ventilation, and air conditioning (HVAC), offering the most efficient heat transfer and maximum comfort inside the vehicle's cabin.

Cooling Fans – Developed for specific cars and engines, DENSO guarantee a perfect match. The cooling fans are only activated when required, to avoid unnecessary fuel consumption.

A/C Components

Drivers and their passengers expect a comfortable environment in the cabin on every journey, in all weathers.

As a world-leading manufacturer of OE thermal system products, DENSO's replacement ranges can offer unique advantages to aftermarket customers. Our OE quality programme includes replacement Air Conditioning (A/C) Compressors, A/C Condensers, Receiver Driers, Expansion Valves and Pressure Switches – each offering independent aftermarket customers a comprehensive, premium quality selection of parts to meet growing demand.

Cabin Blower Fans – Co-developed with air conditioning experts, these fans are able to cope with extreme environmental conditions. The highest quality components and housing ensure performance without unwanted vibrations. They achieve maximum ventilation efficiency whilst reducing noise.



A/C Compressors – The compressor suctions and compresses low-temperature, low-pressure gaseous refrigerant that has been vaporized in the evaporator through the absorption of heat from the passenger compartment. The compressor then discharges the high-temperature, high-pressure gaseous refrigerant to the condenser, where it changes state to liquid by dissipation of heat from the gaseous refrigerant to the outside air. The compressor is driven by the engine via a belt from the engine and a power transmitting device (magnetic clutch or DL pulley). There are also electric and hybrid vehicles equipped with electric compressors that are driven by electric motors. Rotary type compressors and Reciprocating (or piston) type compressors are available.

A/C Condensers – These integrate seamlessly with the vehicle's original air conditioning system. The premium aluminium construction guarantees a long lifespan and improved heat radiation, due to the additional sub-cooling section. The result is a lower thermal load on the compressor, aiding better fuel economy.

Receiver Driers – The receiver drier stores refrigerant until the evaporator requires it, depending on the cooling load. It separates gaseous refrigerant from liquid refrigerant, ensuring that only liquid refrigerant flows to the expansion valve. It also works to filter and dry the refrigerant.

Expansion Valves – A thermostatic expansion valve controls the evaporation process, inside the evaporator. It reduces the high-pressure, high-temperature liquid refrigerant into a low-pressure, low-temperature mist refrigerant. The expansion valve also adjusts the refrigerant quantity to the evaporator, to maintain optimal cooling performance, depending on the cooling load.

Pressure Switches – Pressure switches (or pressure sensors) are a safety device, which protect the refrigerant cycle components from refrigerant pressure that is too high or too low.

Thermostats – The thermostat controls the engine's temperature by adjusting the coolant flow to the radiator. It keeps the engine's temperature within normal operational values, regardless of the outside temperature.

Why choose DENSO thermal products?

- DENSO is the global number one for OE thermal products. This market-leading research, development and technology is applied to DENSO's premium aftermarket thermal product range.
- Easy to install: DENSO cooling units are built for a specific car and its engine specification which guarantees trouble-free installation.
- All DENSO A/C Compressors are new (no remanufactured parts) filled with the right type of oil and delivered as complete assemblies, so no core charge or deposit is required.
- DENSO's thermal range offers distributors and workshops quality products for aging vehicles at a competitive price.
- All DENSO thermal products have to comply to the strict DENSO design standard which guarantees long-lasting, efficient performance. The warranty ratio is extremely low.

DENSO'S



DID YOU KNOW?

With a 40% global market share, automotive manufacturers across the world rely on the quality of DENSO's A/C Compressors. DENSO brings the same OE A/C Compressors to the aftermarket.

For more information scan the QR code:



Wiper Blades

Unique design features. Superior quality materials. Made to the strictest OEM standards. These are the exceptional credentials of DENSO's Wiper Blades - providing drivers with a safe, comfortable field of vision whatever the weather.

DENSO Wiper Blades are the choice of leading car makers worldwide and are fitted as original equipment on a host of high-end vehicles. From standard and flat blades to the latest hybrid designs, DENSO Wiper Blades combine intelligent design, top quality materials and accurate manufacture – ensuring they wipe better and last longer. All these advantages are also available for our aftermarket customers.

There are four product types in our wiper blades range:

DENSO Flat Wiper Blades – Flat Wiper Blades hug every windscreen closely and evenly to wipe away rain and debris in even the worst weather conditions. With sleek styling and long life, they offer all-round appeal to every motorist.

DENSO Conventional Blades – Conventional Blades offer a selection of four advanced blade profiles to suit different windscreens and vehicle styles. There are also four different choices of installation systems, and three clip options.

DENSO Hybrid Wiper Blades – Hybrid Wiper Blades are designed with an integrated, fully covered blade and wiper arm. They combine sophisticated design with a low, out-of-view profile. Inside the wiper housing, common-use vertebrae deliver superior surface holding capability; whilst the rigid, graphite-coated rubber blade delivers a smooth, more efficient wiping performance.

DENSO Rear Wiper Blades – Manufactured using high quality, durable, non-corrosive materials, including a natural, high compression rubber which delivers an exceptional wiping edge. Our rear wiper blades' design guarantees an easy fitment.

Why choose DENSO wiper products?

- DENSO's OE technology and quality guarantee outstanding wiping performance.
- Durable, non-corrosive materials, including a natural, high compression rubber wiper, deliver long service life.
- Evenly cut edges ensure an effective wiping edge.
- Low profile inserts provide the perfect wiping angle.
- High coverage of Asian and European vehicle applications offers optimum customer convenience.
- DENSO wiper blades cover 95% of the European car parc.

DENSO'S



DID YOU KNOW?

Japanese bullet trains are significant feats of modern engineering, reaching speeds of around 320 km per hour (200 miles per hour). In order to reach these speeds effectively and safely, the bullet train engineers select the highest quality parts to ensure that the trains perform reliably under extreme stress. DENSO Wiper Blades are one of these products.

For more information scan the QR code:



Filtration

No-one wants the eye and nose irritation, headaches and even breathing problems that can be caused by inhaling air containing road dust, pollutants and allergenic pollens while driving.

Happily, there is an effective solution: DENSO's world class, OE quality, technologically advanced Cabin Air Filter range, developed especially for aftermarket customers.

Trapping even those damaging particles that are far too small to see, our replacement filter ranges draw on DENSO's decades of world-leading OEM expertise, to deliver advanced, easy-fit design, long-life efficiency and complete peace of mind.

We offer two filter types to the aftermarket:

Particle

DENSO Particle Filters offer exceptional protection from dust, soot, pollen and particles. Featuring multi-layer fleece material to efficiently remove dust and solid matter, they also have a large dust-holding capacity and minimise air flow resistance.

Combination

DENSO Combination Filters offer all of the blocking, electrostatic and nanofiber technologies of our particle filters, trapping almost 100% of dust, pollen and solid particles before they can be inhaled. But thanks to an additional, activated charcoal layer located inside the filtration material, our combination filters offer an added advantage. The result is a cabin atmosphere that always stays fresh, pleasant and healthy to breathe.



Why choose DENSO filter products?

- Continuous range development by DENSO ensures the product range boasts the newest market applications.
- DENSO's Cabin Air Filters contain up to five individual layers to trap almost 100% of harmful pollutants and particles.
- Using DENSO products means a very low-pressure drop in HVAC system, ensuring efficient performance without risking damage to other components.
- The DENSO Cabin Air Filter range provides a perfect fit to the vehicle.

DENSO'S



DID YOU KNOW?

Without a cabin air filter, the air inside a car could be up to eight times dirtier than the air outside – especially during the first few minutes of switching the engine on.

For more information scan the QR code:



Discover **DENSO**

DENSO EUROPE B.V.

Hogeweyselaan 165 | 1382 JL Weesp | The Netherlands

Tel. +31 (0)294 - 493 493 | Fax. +31 (0)294 - 417 122

www.denso-am.eu



linkedin.com/company/86643893



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