

# DEUTZ WORLD

Edition 1 | 2015

The customer magazine of DEUTZ AG

## DEUTZ service in a new look!

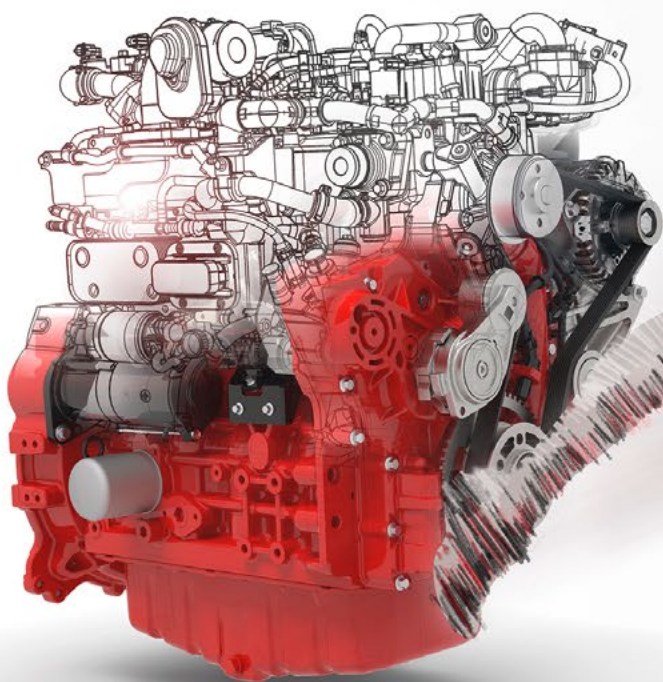
The service area presents  
its range of services

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## For the sake of the environment

DEUTZ engines reduce  
pollutant emissions worldwide

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▶ **STAGE**  
**ready**  **DEUTZ**  
goes to the next **level**

The engine company.  **DEUTZ**





**6 HIGHLIGHTS**  
**DEUTZ goes to the next level**

DEUTZ engines already comply with the coming exhaust emission standard EU Tier V today.



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**DEUTZ service in a new look!**

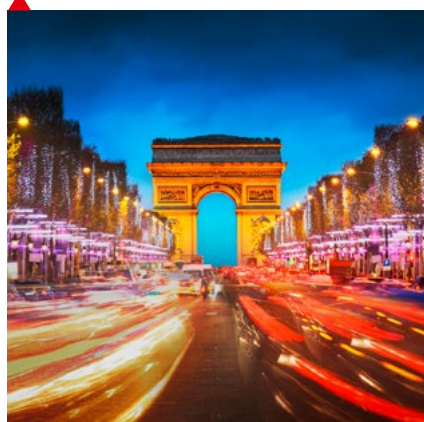
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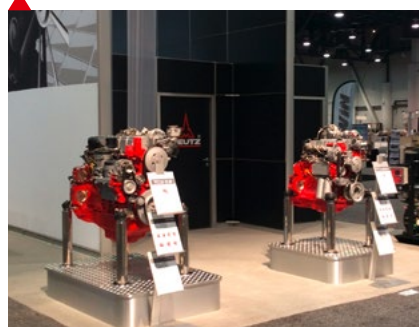
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**Dear readers,**

Throughout, the DEUTZ brand has been closely associated with the pursuit of innovations. Our engines have always been ahead of the times and, with numerous patents and new technologies, have decisively contributed to the development of the modern diesel engine.

To this very day, aligning our daily work to the pursuit of innovations is one of the fundamental values we work on every day – with success: Our customers will be well-prepared for the next emission standard for mobile working machines, which is expected in January 2019 in the form of the EU Stage V in Europe, because DEUTZ is already “Stage V ready” today. Thanks to our technology, we are able to pass through two emission cycles with the same product version, so that the DEUTZ engines that are equipped with a diesel particulate filter in the range of 2.9 to 7.8 litres of cylinder capacity already comply with the next emission level today. Why we can already offer our customer the technologies of tomorrow today, can be found out in our cover story starting on page 6.

Also forming a part of a successful, cooperative partnership is mutual respect and the ability to find solutions quickly and competently – in every stage of the joint collaboration. Therefore, service means “Life Time Support” for us: On page 16/17, you will discover which

Best regards,

Dr Helmut Leube

Dr Margarete Haase

Michael Wellenzohn



comprehensive product and service offer DEUTZ provides for the complete engine and machine service life.

What is more, we would also be happy to show you to which extent a diesel engine can also reduce emissions “For the sake of the environment”. You will find out more about this in the article of the same name, on p. 20.

We hope you enjoy reading this magazine!



## +++ On our own behalf +++

Dear readers,

You probably noticed at first sight: DEUTZ INSIDE is now called **DEUTZWORLD**. With a new concept and a modern design, our new customer magazine directly addresses our customers, dealers and partners. With **DEUTZWORLD** we wish to continue providing you, our dear readers, with comprehensive information about all the interesting things happening in the international world of DEUTZ. From now on, for instance, you will also find reports and news from our DEUTZ subsidiaries around the world. **DEUTZWORLD** will be available to our customers, retailers and partners in print and online.

We hope that you will enjoy our new magazine, and are looking forward to hearing from you at [pr@deutz.com](mailto:pr@deutz.com).

Best wishes,  
Your **DEUTZWORLD** editorial team

## DEUTZ makes dreams come true

Just on time for the first of Advent, a Christmas tree adorned the reception hall of the DEUTZ headquarters in Cologne-Porz in December 2014. And for the first time, our Christmas tree became a wishing tree: the DEUTZ team organised a Christmas wish campaign in support of the Hollenberg Child and Youth Welfare organisation in Lohmar. Hollenberg Child and Youth Welfare is a Catholic-led organisation with in-patient, daycare and out-patient services, offering approximately 80 care places for all ages from infancy to adolescence.



The children and teenagers artfully put together 77 colourful lists with their personal Christmas wishes. These were then placed on the DEUTZ wishing tree. Each DEUTZ employee got to take one list from the tree and later place the respective present underneath the tree, nicely wrapped with the corresponding list attached. It took no time at all until the lists had all disappeared from the tree, and just before German Boxing Day, all 77 of the kids' wishes had been placed underneath the splendid Christmas tree, lovingly wrapped and supplemented with little extra gifts and greeting cards. The presents were given to the children of the Hollenberg Youth Centre on Boxing Day.

The DEUTZ "wishing tree" was hugely successful, and the DEUTZ team would like to extend its warmest thanks to all employees for their enthusiasm and dedication!

## New chairman of the Supervisory Board of DEUTZ AG



At its ordinary meeting on 12 March 2015, the Supervisory Board of DEUTZ AG elected Hans-Georg Härter as its new chairman. Mr Härter is a widely respected businessman and has been a member of the DEUTZ Supervisory Board since 30 April 2013. Among the many posts he has held in his career, Mr Härter – born in 1945 in Bensheim, southern Germany – was chief executive officer of ZF Friedrichshafen AG from 2007 to 2012 and therefore possesses extensive experience of this industry. The election of a new chairman of the Supervisory Board of DEUTZ AG was precipitated by the resignation of Lars-Göran Moberg from the position, for personal reasons, after a period of six years in office.

## DEUTZ's Board of Management opened the day's trading on the Frankfurt Stock Exchange



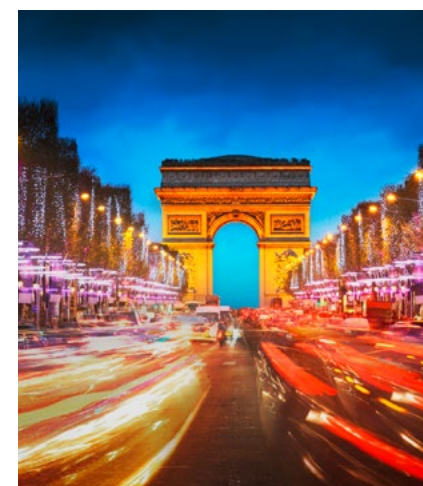
On March 20 2015, Dr Helmut Leube – the Chairman of DEUTZ's Board of Management – and Dr Margarete Haase – DEUTZ's Chief Financial Officer (CFO), who has responsibility for finance, human resources, investor relations and public relations – opened the trading session on the floor of the Frankfurt Stock Exchange by ringing the opening bell to mark the fact that it is exactly 115 years since DEUTZ AG was first listed on this bourse. The sounding of the traditional opening bell at 9am signalled the official start of trading.

„It is a particular honour for us to be able to conduct today's opening bell ceremony to mark our 115th anniversary on the Frankfurt Stock Exchange. It was only last year that DEUTZ celebrated the 150 years since its foundation, so this year we are delighted to be able mark a further highlight in the form of this anniversary on the Frankfurt bourse,“ said Dr Leube.

Gregor Pottmeyer, CFO of Deutsche Börse AG, added: „DEUTZ AG is a German firm that has a fine tradition going back many years and is widely renowned for its high-quality products. We are delighted to celebrate our longstanding association with this Cologne-based engine manufacturer and wish the company all the best for the future.“



From 2 to 4 March 2015, DEUTZ presented its current products in the field of gen sets at the Middle East Electricity (MEE) in Dubai. The specialist trade fair for electrical engineering and electrical energy is geared towards an international expert audience. It is the largest industry fair in the region. As a highlight, DEUTZ presented the so-called "Telco" engine TD 2011 L4 with a performance of 40 kVA. The engine, which is optimised for powering telecommunication transmitter towers, already celebrated its début at the Middle East Electricity 2014 and immediately received a very positive response from the market. This generator is particularly well-suited for the rapidly growing African mobile communications sector: rural areas without an electricity supply have an especially high demand for transmitter towers powered by Diesel generators. The DEUTZ TD 2011 impresses with its particularly cost-efficient fuel consumption, which helps to lower operating costs significantly. For areas of application that require a higher performance, DEUTZ presented the TCD 2013 L6 4V with a performance of 250 kVA in Dubai. This engine, which is also optimised for fuel efficiency, allows for a simple and low-cost installation thanks to its low space requirement and weight. Its acoustically optimised parts have very low noise emission rates as well as high running smoothness and long-term durability. DEUTZ's most high-powered engine was the TCD 2015 V8 at 500 kVA. This model also has very compact design and accordingly low installation costs. The robust engine allows for worldwide operation even with high-sulphur fuels.



capacity between 2.9 and 7.8 litres! In the following article "DEUTZ goes to the next level" (p 6-9) you can find further information about how DEUTZ is not just complying with the statutorily prescribed threshold values, but also surpassing them or you can visit us live at Intermat!

DEUTZ at Intermat 2015:  
Hall 5b, booth L016

**INTERMAT**  
Paris 2015

## New Head of Sales and Service EMEA



With effect from 1 January 2015, Georg Diderich, 50, has assumed control of Sales & Service in the region Europe, Middle East & Africa (EMEA). Since 2009, the graduate in economics had headed the Corporate Governance division and, in this role, had also been engaged as press spokesperson of DEUTZ AG. In his new role of Senior Vice President, Sales & Service – EMEA, Georg Diderich is responsible for a region that extends from South Africa in the south to Siberia (Russia) in the north, from Cape Verde in the west to Pakistan in the east. EMEA encompasses 126 different countries with the most diverse languages and cultures; it is the largest region and the one with the highest turnover within the DEUTZ Group. In 2013, turnover stood at approximately 1,155 million euros (approx. 80% of the consolidated total turnover).

DEUTZ is represented in the EMEA region by subsidiaries in France, Morocco, Spain and Russia, a branch office in Great Britain, as well as proprietary service centres and over 300 distribution and service partners.

## New Head of Development for DEUTZ

Dr Markus Schwaderlapp has headed the Research & Development division at DEUTZ AG since 1 January 2015. In this role, the former Managing Director of FEV GmbH, key area engineering, subsidiaries & customers in Europe/South America, re-

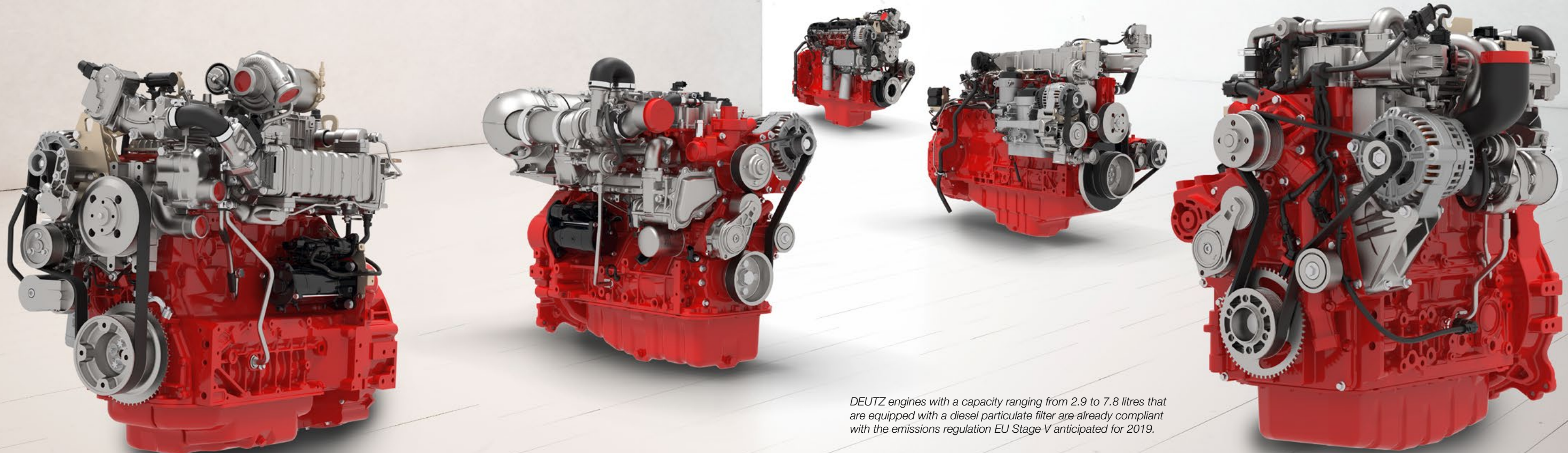


ports directly to the Chairperson of the DEUTZ Board of Management Dr Helmut Leube. After completing his studies in "Materials Sciences" at RWTH Aachen, Dr Markus Schwaderlapp graduated under the tutelage of Prof. Franz Pischinger, Institute for Internal Combustion Engines. Following his graduation, he began his professional career with FEV GmbH, where he assumed various senior positions.



DEUTZ engines have always been ahead of the times and have decisively contributed to the development of the modern diesel engine with numerous patents and innovations. The EU Stage V emissions standard for mobile work machinery poses a new challenge for the industry – one that DEUTZ has met early on.

# STAGE ready **V**



DEUTZ engines with a capacity ranging from 2.9 to 7.8 litres that are equipped with a diesel particulate filter are already compliant with the emissions regulation EU Stage V anticipated for 2019.

## next level

► DEUTZ goes to the

In the recent past, the driving force behind engine development has generally been the introduction of new emissions standards that limit the discharge of environmentally harmful emissions, such as soot particles or nitrous oxides. The efficiency and the emission values of the engines have been gradually optimised, reaching a level that some years ago still appeared unattainable.

For mobile work machinery – the core business of DEUTZ AG – EU Stage IV is currently in force. Since the introduction of EU Stage I in 1999, nitrous oxide and particle emissions have been reduced by over 95 per cent. DEUTZ engines with diesel particulate filters (DPF) have reduced particle emissions by as much as 99 percent. This is particularly beneficial for people and the environment in urban areas where the fine dust pollution that is exacerbated by soot particles is especially high. Here, industry and policy-making bear the responsibility for limiting environmental pollution to a minimum by means of clean technologies. DEUTZ and its customers are proud of not just complying with, but surpassing the statutorily prescribed threshold values, and thus actively conserving the environment. Consider this for comparison: at the highest level of emissions, the exhaust of a modern DEUTZ engine contains no more nitrous oxides or particle mass than the ambient air in many metropolitan centres around the world. This has brought the vision for emission-free internal combustion engines to within reach. ►



► The next emissions standard for mobile work machinery in Europe is expected after January 2019. Depending on actual progress, EU Stage V will then stipulate a reduction in the current 25 mg/kWh particle mass limit to 15 mg/kWh and introduce a particle concentration limit of  $1 \times 10^{12}/\text{kWh}$ . This change to a new emissions level poses a major challenge to the industry. Engine manufacturers must achieve the more stringent values by way of targeted optimisation and introduction of new technologies. This will involve both engine-internal solutions, such as improved fuel injection, and aftertreatment of exhaust gases. It is more complex design of the latter that portends to increase the size of the engine systems, adding to the difficulty of integration into existing customer equipment.

#### DEUTZ engines are Stage-V-ready

With its eyes on the scheduled change to Stage V, DEUTZ is already able to offer customers engines in the 2.9 to 7.8 litre range that are compliant with the future

threshold values, using diesel particulate filters. This assertion is based upon the proposal of the EU Commission with respect to EU Stage V, which was published on 25 September 2014. The regulation is expected to be finalised at the beginning of 2016. Stage V compatibility is also being formulated by DEUTZ in the form of a "Stage V-ready" seal with which the corresponding engines (TCD 2.9, 3.6, 4.1, 6.1 and 7.8) are to be identified, thus ensuring clarity for information in the marketplace.

#### EU Stage V

The next emissions standard for mobile work machinery in Europe is expected after January 2019. Based on the EU Commission proposal for EU Stage V dated 25 September 2014, EU Stage V will stipulate a reduction in the current 25 mg/kWh limit on particle mass to 15 mg/kWh and introduce a particle concentration limit of  $1 \times 10^{12}/\text{kWh}$ . Finalisation of this regulation is currently predicted for the beginning of 2016.

only the use of a diesel oxidation catalyst (DOC). For both engines, a PDF is now available as an option, enabling them to be deployed in even very tightly regulated markets such as Switzerland. All DEUTZ engines equipped with DPFs are EN 1834 certified even without added spark arrestors, which also permits use in areas with increased fire hazards.



DEUTZ already serially offers the diesel particulate filter (DPF) required for EU Stage V in the overall power range of 45 to 291 kW.

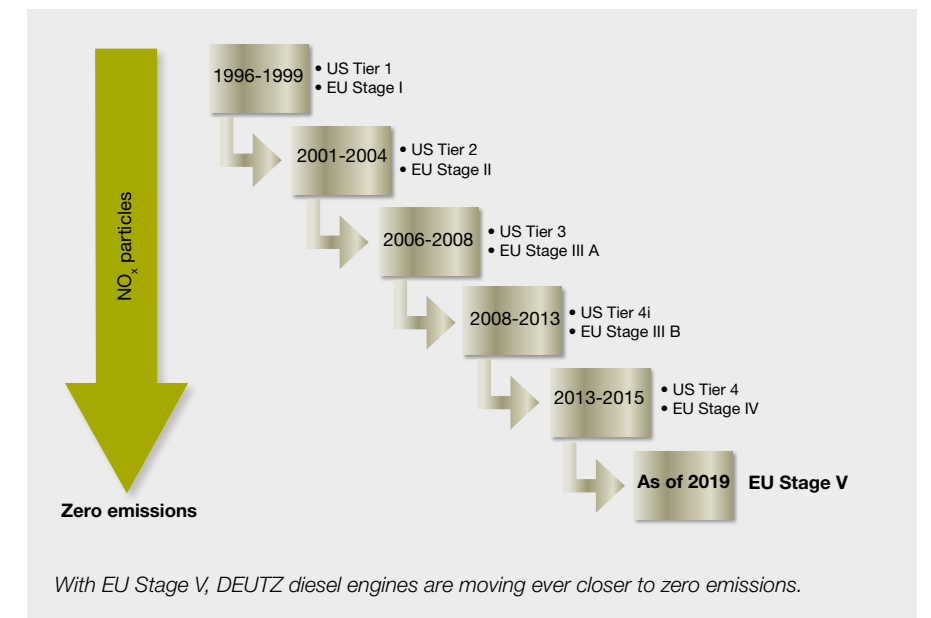
With its engine portfolio, DEUTZ covers the entire performance range from 45 to 291 kW. This brings decisive advantages to customers. By using a Stage-V-ready engine, they receive extended certainty specific to planning for their applications, since even after the change in emissions levels in 2019, the engines will remain identical in terms of size and the design of all components. Expensive adaptation of customer equipment will not be necessary. Furthermore, so-called emission downgrade engines will also be available in less stringently regulated markets, such as China. Thus, it is possible to use a comprehensive engine platform, which significantly reduces outlay for im-

plementation. Moreover, since the Stage-V-ready engines are already available, the time frame for implementation is extremely flexible. Aside from engine integration, certainty in terms of planning also benefits all after-sales processes. Thus, for instance, training modules or service guidelines can be defined over the long term.

The Stage-V-ready engines will also come with the comprehensive service support provided by DEUTZ. With over 800 independent sales and service partners in over 130 countries worldwide, customers can be assured of full, competent support. In addition, DEUTZ offers a broad selection of engineering consultancy services. This encompasses a diversified range of engine-related products and services. From individual application engineering to the retrofitting of useful additional components, DEUTZ offers comprehensive, all-round support before and after engine purchase.

#### Secured technology with manufacturing experience

The further decisive advantage accruing to the customer consists in the high level of product maturity, which DEUTZ draws upon with its engine systems based on experience derived from the current Stage IV. With its eyes on Stage V, DEUTZ has deliberately paved the way for the future with closed filter systems. As it currently stands, the industry is assuming the introduction of a particle concentration limit within the parameters of Stage V that can only be observed with the use of diesel particulate filters. This system is already available in the serial production of all Stage-V-ready engines, with customers thus receiving secured technology. The DPF is integral to the DVERT® (DEUTZ Variable Emissions Reduction Technology) modular system. Virtually all elements of this exhaust gas aftertreatment module can be combined with one another in order to ensure the desired outcome in terms of engine capacity, compliance with emission limits and competitiveness. The basic components of the module are the diesel oxidation catalyst (DOC), diesel particulate filter (DPF) and selective catalytic reduction (SCR). While the DOC focuses on reduction of particle mass, the DPF reduces the actual number of particles. Due to limits imposed by Stage V on the number of particles, the DPF is indispensable to compliance with standards. The SCR system with urea



metering ultimately reduces  $\text{NO}_x$  to the desired level.

With the declaration of Stage V-ready, DEUTZ is presenting itself as a reliable partner for OEMs that recognises their needs early on. "We aim to support cus-



► We aim to support customers in the best possible manner in product planning and the requisite transitioning of their products to Stage V by way of secured technology and temporally flexible implementation.

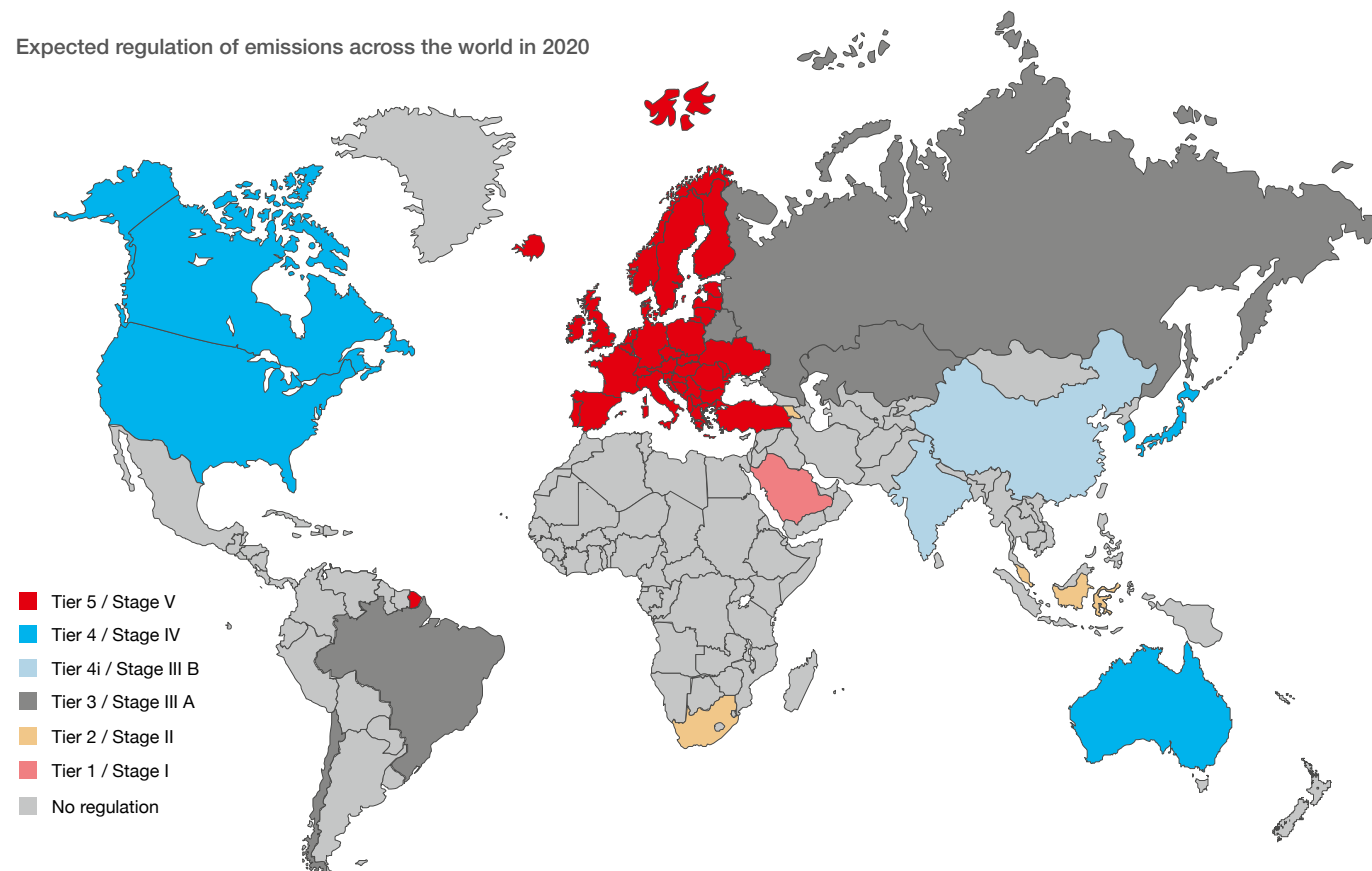
Michael Wellenzohn, DEUTZ Executive Board – Sales / Service & Marketing

tomers in the best possible manner in product planning and the requisite transitioning of their products to Stage V by way of secured technology and temporally flexible implementation. The Stage-V-ready commitment is thus equally synonymous with planning certainty and sustainable technology. Through this, we create substantial benefits for our customers", explains Michael Wellenzohn, the DEUTZ AG Executive Board member for Sales/Service & Marketing. This gives DEUTZ significant competitive advantage with the objective of further cementing its reputation as a technological leader.

**INTERMAT**  
Paris 2015

DEUTZ will launch its Stage-V-ready engines at Intermat 2015 – one of Europe's largest construction fairs. This exhibition will be held in Paris from 20-25 April. On display will be the current product program

Expected regulation of emissions across the world in 2020



for Stage IV exhaust emissions in which engines in the 2.9 to 7.8 litre range will carry a Stage-V-ready seal. The watercooled engines will come with turbocharging, intercooling and cooled external exhaust gas recirculation. Each is an outstanding product in its class, having a very compact design and a customer-friendly, modular system of optional components. This reduces installation costs and expands the range of possible uses. A high-performance common rail injection system and high-efficiency combustion ensures excellent engine performance in tandem with low fuel consumption. Engine and exhaust gas aftertreatment are geared in every point to the optimum efficiency of the overall system, ensuring that operational costs are kept to a minimum. The long intervals between oil changes and simple replacement of engine fluids will also improve engine uptime.

#### We have done our homework

The Stage-V-ready commitment signals to customers that DEUTZ has successfully completed the development work essential to the technology and has now embarked on series production. With experience in the field use, the systems bring a very high level of product maturity and reliability that count for decisive competitive advantage. This security creates space for a comfortable and time-flexible integration of engines into customer applications. To put it briefly: DEUTZ is ready whenever you are!



*In an interview, conducted by DEUTZWORLD, Michael Wellenzohn, DEUTZ Executive Board – Sales / Service & Marketing explains how the company always has its focus on the future when constructing its engines.*

## Focussed on the future



**M**r Wellenzohn, by complying with the EU Stage V exhaust emission standard for mobile working machines as of 2019, DEUTZ is now taking the next step toward attaining the lowest possible exhaust emission with its engines. What is your reaction to the further tightening of the exhaust emission legislation?

**Michael Wellenzohn:** Within the context of our exhaust aftertreatment strategy, we have already taken the step toward serial production early on, thanks to DPF technology. Due to our overall exhaust gas strategy and, first and foremost, owing to the deployment of DPF, our TCD engines in the range of 2.9 to 7.8 litre cylinder capacity

already comply with the next emission level anticipated for 2019 today. Thanks to our technology, we are able to pass through two emission cycles with the same product design, which provides our customers long-term planning security, flexibility and stable technology. With the customer's engine, there will be no changes regarding the compliance with the next emission level, as the engine is identical. By means of this, our customers avoid major investments for the adjustment of their engines that are necessary for the functional optimisation of the machines and, as such, they can focus on gaining market shares. Our customers thus attain secured engine technology in serial production, allowing flexible certification and launch, with regard to the time aspect.

*When the engines were designed for the exhaust emission Stage IV, were you already thinking of Stage V?*

It was clear that the emission spiral will continue and that a subsequent technological development will become necessary. In the course of the past years we have reworked our complete engine portfolio, and all engines of the latest emission level EU Stage IV or US EPA Tier 4 then received the release for serial production in the last years. Back then, we decided to comply with the upper technological limit, and this is paying off now. When compared with our competitors, our new engines are characterised, in particular, by the extremely compact construction size, the high output density, the low fuel consumption, low life-cycle costs and the exhaust gas concepts that are customised to satisfy the customers' requirements. By means of this, we see ourselves in the technological leadership role. The customers acknowledge this, since, apart from numerous orders from existing customers, we are also delighted at a diverse range of new customers, who cover all regions and applications.

*Which additional support do you offer your customers to further simplify the decision for a DEUTZ engine?*

Customer proximity is essential for optimal support and correct product alignment. Apart from a high-performance and reliable product, it is also especially the application and integration support that is important for our customers. We guarantee this with the different regional organisations and our extensive dealer network. In addition to this, we thus also offer the comprehensive provision of information which, in cooperation with the customers, allows us to select the matching engines for their application. For this, we initialised the DEUTZ Technical Information Service in the past year, which currently provides more than 900 users worldwide – including, among others, 120 OEMs – all technical information regarding our products on an internet-based platform. With this new web portal, we endeavour to design the pathways to technical information between the customers and DEUTZ in the shortest and fastest manner possible. This also includes the provision of 3D data. With individual model series, the creation of 3D models has already been realised today, following the selection via the electronic ELTAB pocket book. Thereby, we have planned for the long term, so that – supported by our sales employees – the end customer shall be able to compile his engine online and, simultaneously with the configuration, the 3D model is designed, which the customer can use for his installation. This results in another significant saving of time.

*The products constitute the one part, and the service the other. What new features does DEUTZ offer its customers, dealers and partners with regard to the service aspect?*

Our customers do not only expect us to offer them a product of high quality, but also a comprehensive range of service offers and support. Thus, a comprehensive service offer is an indispensable competitive advantage for us. Here, we have established ourselves on a strong foundation: for instance, our SERPIC spare part documentation in the meantime comprises about 6 million engines with more than 330,000 spare parts and is available internationally in more than 60 countries and in five languages.

Another important point is the training of our dealers and employees. Here, within the framework of our training programme that offers trainings regarding all production series and emission levels that DEUTZ offers, a total of 3,213 persons were trained in the past year – which is 10 per cent more

than in the previous year. The employees that have been trained in the so-called "Train the Trainer" programme can, for instance, offer own trainings in the worldwide DEUTZ field organisations and train the participants in line with the local needs there. For the service mechanics of our worldwide dealer networks, our training programme guarantees a target-oriented training that is aligned to the DEUTZ engine technology.

*What do you undertake to strengthen your distribution and to support the acquisition of new customers?*

We have restructured our organisation according to segments, application fields and regions. Thanks to this matrix organisation, we can work in a target-oriented manner worldwide and serve our customers individually through a global network. Supporting us in this regard, is a new CRM (Customer Relationship Management) system, which we have implemented for our sales and distribution and our field organisations (subsidiaries). This offers us the possibility of working on one mutual platform, compiling and documenting information on our customers, depicting distribution processes and thus to create an added value for the distribution and management as well as for the customers. Our goal is to provide focussed customer work, by means of which we wish to retain the loyalty of our existing customers and turn interested persons into new customers.

*In your opinion, what must an engine manufacturer do to generate growth?*

Firstly, it goes without saying that an engine manufacturer must provide the right technology for the target applications. Our engines are tailored to the individual needs of our customers in different application fields and thus satisfy their performance and quality promise in a broad variety of applications. What is more, it is important to offer a high-quality product at competitive conditions. We would like to grow sustainably by means of focussed target customer development in our strategic application areas, always true to the motto "ultimately, less is more", because the quality of the customer work weighs more heavily than the quantity.



# DEUTZ in the Middle Kingdom

China is one of the world's most important markets for industrial goods. Strong local sales capacity and production facilities are key success factors in satisfying local demand. DEUTZ is ideally positioned for this with its two sales locations in Beijing and Shanghai and its joint venture in Dalian.



DEUTZ has positioned itself globally as a leading independent engine manufacturer – and for global success, that means being where the customer is, regardless of whether that customer is domestic or international OEM. A regional presence provides assurance of quick delivery times, optimal care for engine installation and flexible reaction to changing needs.

In 2007, DEUTZ established the joint venture DEUTZ Dalian Engine Co., Ltd. (DDE) together with First Automotive Works Group (FAW), one of China's lead-

ing automotive manufacturers. Since then, the joint venture has been a veritable success story with tremendous growth achieved in recent years. In 2014 alone, revenues mounted 13 percent, significantly ahead of market growth. DDE produces 4 to 8-litre DEUTZ diesel engines mainly for the Chinese market.

## DEUTZ Dalian Engine

**Established:** 2007

**Location:** Dalian (China)

**Partner:** First Automotive Works Group (FAW)

**CEO:** Duane Symes

**Sales revenue (2014):** 359.8 million EUR

**Workforce:** about 2,200

**Plant area:** 93,160 m<sup>2</sup>

**Volume (2014):** On-Highway 88,771 (84%),  
Off-Highway 16,997 (16%)

With its Chinese joint venture, DEUTZ is able to provide optimum service to its international and local customers in China. DDE is thus an added unit within the global DEUTZ manufacturing network.

DEUTZ has a sales and services company in Beijing and a sales office that opened last year in Shanghai. In these locations, more appli-



cation and service engineers as well as sales staff have been taken on to strengthen customer support. It is precisely in application engineering that DEUTZ has a broad range of resources and is able to provide customers with excellent support from development to delivery of finished applications.

The engines manufactured at DDE comply with the customary exacting standards of DEUTZ. More and more, even engines with highly advanced technology will be produced in China. The most important factor behind this is the increasingly stringent emission standards. On 1 January 2015, the China Stage IV emissions regime came into force in the automotive sector. From October 2015, China Stage III will enter into force in the off-highway sector with standards equivalent to the European EU Stage IIIA. In this, China's government is seeking primarily to combat the often heavy pollution in large cities and has announced more stringent checks on compliance with legal requirements. Thanks to the tightening emission restrictions and the associated rising demand for modern engine technology, DEUTZ with its highly-developed products also has the possibility of acquiring even greater market share. While the automotive sector currently accounts for the largest share of DDE's business in China (about 84%), growth in the off-highway customer base is also envisaged for the future. To this end, the product base will be progressively expanded alongside further improvements in quality.

## Consolidating activities

Following the recent downgrading of growth forecasts for China, it has been essential for the company to accurately assess the existing situation and develop the strategy for the future. DEUTZ is consolidating its activities into DEUTZ Dalian Engine Co. Ltd. (DDE), its Chinese joint venture. At the start of the year, DEUTZ announced that it would not move forward with its planned joint venture with AB Volvo, DEUTZ Engine (China) Co., Ltd. (DEC). Both partners reached a common decision in response to the changing economic climate.

Even with this mild downturn, DEUTZ remains convinced of the long-term potential of the Chinese market and will invest further in the expansion of its local activities and

offering. The goal is to win new customers while simultaneously expanding business with the existing customer base. "We are still keenly interested in meeting the local requirements of AB Volvo and other target customers with Chinese products. For

this end, we will be focussing on our joint venture DEUTZ Dalian Engine Co., Ltd. (DDE)", explains Dr Helmut Leube, CEO of DEUTZ AG. The importance of the region to DEUTZ is evident from total sales turnover. Taken together, DEUTZ and DDE account for a 24.7% share of revenues in the Asia-Pacific region.

## Interview: Bernd Freudenmann

*Vice President Sales & Service Asia*



*China is a price-sensitive market, but also quality-conscious. How has DEUTZ positioned itself here?*

**Bernd Freudenmann:** We keep a clear focus on high value products. As a premium brand, DEUTZ offers the highest quality and service in complex applications at competitive prices. Using this approach in China, we have been extremely successful in such areas as construction machinery, concrete pumps, railway rolling stock and equipment for mining and ground support. Low-budget solutions are not our focus.

*What are the advantages for DEUTZ customers from local deliveries through the DDE joint venture?*

**Bernd Freudenmann:** The most important advantage, of course, is a short supply chain. With regional proximity, we are able to offer customers significantly shorter delivery times and respond flexibly to changes. In addition, DDE products will be developed further with focus on the Chinese market so that they can be tailored even better to customer needs.

*How do you estimate market growth in China as regards DEUTZ?*

**Bernd Freudenmann:** Since the second half of 2011, we have witnessed a major slowdown in China's construction sector that is also reflected in sales of construction machinery. At the same time, there is tremendous opportunity in China for DEUTZ to build a significantly increased market share. First, we are looking at the rapid development in the agricultural sector, as indicated by vigorous demand for high-power engines. In this area, DEUTZ has an exemplary reputation worldwide and offers excellent products enabling us to gain added market share. Furthermore, the Chinese OEMs have a growing international presence and are developing products for export to the USA and Europe. This presents DEUTZ with the opportunity to bring our highly-developed EU Stage IV/US EPA Tier 4 engines to the market. Developments in emissions in China offer excellent possibilities for DEUTZ to seize an increased market share on the local market. DEUTZ has the technology for China Stage III, equivalent to the European EU Stage IIIA, and China Stage IV that we expect to arrive in 2019/2020. To this end, we are now engaged in dialogue with customers to enable us to offer them an optimum product portfolio.

*Which DEUTZ engines have been particularly successful in China?*

**Bernd Freudenmann:** The DEUTZ engine portfolio offered in China spans a complete range. Engines of less than 4 litre capacity have proven highly popular in materials handling, compressors, ground support equipment and generator sets. The TCD 2.9 and 3.6 engines in particular have been very well received. The 4 to 8 litre engines are manufactured primarily by DDE and are targeted among others for use in local and international OEM construction machinery. In the above 8-litre range, we have very successfully built a presence in railway rolling stock, mining equipment and other niche products. During just the last 18 months, we have won many new customers who are using our Stage IV engines for export. Today, we already see that the new engine range has been very well received by OEMs in China.

*Why is concentration on the DEUTZ Dalian Engine joint venture the right strategy?*

**Bernd Freudenmann:** Our DDE joint venture has an excellent production setup equipped with the latest technology. It is also possible for capacity to be expanded along very flexible lines. DDE also has a highly experienced development department that works very closely with our corporate headquarters in Germany. DDE has successfully tailored engines to local requirements and established a reliable supplier network. The latter allows us the capability of quick, uncomplicated introduction of new products. In all this, like anywhere in the world, a quality assurance system operating with effective processes and controls ensures that quality always meets the high DEUTZ standard.







## Strong performance



More than 1,000 generators by Magideutz SA, Casablanca, are working around the clock to secure Morocco's telecommunication.

Magideutz SA, a subsidiary of Deutz France, has delivered more than 700 power generators from the trusted 912/914 and 2011 ranges to Maroc Telecom since the year 2000. These 15/20/30 kVa generators supply power to Maroc Telecom transmitter towers and those of other telephone providers in Morocco, particularly in remote regions without an electric power network. For the sake of nation-wide broadcasting availability, many antennae are located at high altitudes, including mountaintops – even in areas of the Atlas Mountains or the desert that are particularly difficult to access.

Several engines of the 912 series have already run for more than 45,000 hours of operation, while the 2011 series engines have reached 35,000 hours. The engines generally run for 16 hours per day, during

the low-traffic night hours, batteries take over to supply the transmitter towers with energy. But the generators are not running at full load, and are being serviced according to existing maintenance contracts. Magideutz currently has full service contracts for 674 generators: local service companies deliver fuel, oil and service parts to the stations. Approximately 30 generators are being monitored remotely via tele-surveillance due to their secluded locations. The images show that even during extreme weather conditions, the operation of the generators must be secured or restored. Depending on the local situation, four-wheel drive pick-ups, tractors or even donkeys may be necessary. Sometimes, trailer-mounted temporary generators must be employed to bridge downtimes.

The future of the internationally contested telecom market: thanks to the growing

power supply network, Morocco nearly has enough diesel generators. Magideutz also supplies hybrid generators with a "battery bank" (24 x 2 Volt), which can run for up to 17 hours per day without using the diesel generator. Magideutz will be looking particularly towards Africa for its next exporting destinations. Maroc Telecom has set up joint ventures in Burkina Faso, Mali, Mauritania, Madagascar and Gabon, and further countries will follow suit. As an existing supplier of Maroc Telecom, Magideutz has good prospects of delivering generators to these new markets, too. So far, approximately 300 units have been supplied to the telecom sectors of African countries; further telecom projects are being planned. This is why the generator assembly process at Magideutz is being optimised and expanded with the support of colleagues from the Ulm plant.



DEUTZ Corporation participated in World of Concrete, once again this year. The show took place from February 3 until February 6, in Las Vegas. Nearly 56,000 registered attendees came to the show this year, up from just over 48,000 attendees last year. Exhibitor displays covered more than 675,000 net square feet of space, exceeding the expectations of show organizers.

Traditionally, World of Concrete is known as one of the best opportunities to showcase equipment in North America. This is particularly true during years in which CONEXPO-CON/AGG is not held. DEUTZ Corporation generated excitement inside its show space, meeting with a number of distributors, customers, and prospects at its booth in the North Hall. Representatives from several DEUTZ Distributor partners, including Valley Power Products, Stewart & Stevenson, and MECO, stopped by for con-

versations and to assist prospects. Current customers stopped by the DEUTZ booth as well, to share their positive experiences and to talk about the DEUTZ engines they currently own. One booth visitor was heard to say, "The engine I purchased in 1966 continues to run strong! These engines are indestructible!"



► „The World of Concrete provided a valuable opportunity for us again this year, because it allowed us to walk around our various engine displays to highlight key benefits.“

Steve Corley, Head of Sales/Service & Marketing DEUTZ Corporation

The DEUTZ Service Locator, found in the Apple App store, served as a valuable reference in informing prospects about the nearest Distributor or Dealer in each prospect's respective local areas. A coffee station, complete with a barista serving various coffees throughout the day was also featured at the DEUTZ booth. The goal was to create a relaxing atmosphere where prospects could sit down with a member of the DEUTZ team, and "talk torque." DEUTZ Corporation included a mix of engines, so that a wide variety of applications could easily be discussed throughout the show. DEUTZ engine mod-

els represented at the World of Concrete included the following:

- **TCD 2.9L L4:** 75 hp at 2600 rpm
- **TCD 3.6L L4 Power Pack:** 130 hp at 2300 rpm
- **TCD 4.1L L4:** 154 hp at 2300 rpm
- **TCD 7.8 L6:** 335 hp at 2200 rpm

Steve Corley, Head of Sales/Service & Marketing DEUTZ Corporation noted, "The World of Concrete provided a valuable opportunity for us again this year, because it allowed us to walk around our various engine displays to highlight key benefits."





New presence and new ideas: In future, the Service area of DEUTZ AG will be presenting its service offer under the heading of „Life Time Support“. Declared goal: Clear communication, greater customer proximity and future-oriented service solutions.

DEUTZWORLD already provides you with an overview of the most important points now.



# DEUTZ Service in a new Look!

The new engine generation, with its ever more complex hard- and software, increasing demands received from OEM customers and operators regarding service quality and responsiveness – in the past years, a lot has happened at DEUTZ Service to ensure that these developments can be satisfied. For DEUTZ, a business relationship does not end with the sale of an engine; quite the contrary: Forming a part of a successful, cooperative partnership is mutual respect and the ability to find solutions quickly, competently and unbureaucratically – in every stage of the mutual cooperation. Therefore, service means “Life Time Support” for DEUTZ: For the entire service life of the engine and the machine, DEUTZ offers a comprehensive offer of products and services. With a contemporary and clearly-structured presence, the Service area will in future present its versatile service range in seven product lines.

## The role of Service

Nowadays, in addition to the actual products, every engine manufacturer is expected to provide a whole pallet of services and support. This already starts with the application engineering, thus meaning the integration of the engine in the machine of the equipment manufacturer, and ends many years or even decades later with the overhaul in the field. Hence, a comprehensive service offer is an indispensable competitive advantage for DEUTZ.

## The challenges in the service business

The decisive element in Service is found in the engines' increasing technical complexity: Due to the increasing demands posed by the exhaust gas legislation, diesel engines exhibit a whole number of additional systems today: From a technological vantage point, there are light years between an air-cooled DEUTZ of the old generation and a

modern-day, electronically-steered engine. Thus the entire DEUTZ service network is faced with major challenges regarding the global provision and the necessary training of the service partners when considering the maintenance, diagnosis and repairs of the current engine generation.

## The future of Service

The constant advancement of the global DEUTZ Service networks is a continual process. However, the product offer in Service will also develop further at DEUTZ: Especially in the new product segment of Engine Plus, products and services revolving around the engine will gain in importance in future. In the following issues, we will in each case be introducing you to the different product areas of Service. Starting immediately, you can find information on all Service topics and access to the different online services in the new Internet presence at [www.deutz.com/service](http://www.deutz.com/service).



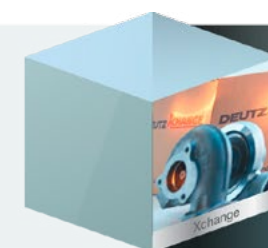
**DEUTZ SPARE PARTS**  
First choice – technically and economically.

Much is demanded of DEUTZ engines. To ensure that the high expectations are also satisfied throughout the entire service life of an engine, the operators should only rely on original spare parts. DEUTZ spare parts are designed, inspected and approved especially for DEUTZ engines, by means of which they ensure maximum performance and service life.



**DEUTZ MAINTENANCE**  
Optimal protection and performance

Diligent and regular maintenance ensures the operational capability and value preservation of an engine. Here, in particular, it depends on the quality of the maintenance parts used and the working materials, such as filters and lubricating oil: Only high-quality DEUTZ products that have been perfectly aligned to the engine allow the optimal protection against wear and engine breakdowns.



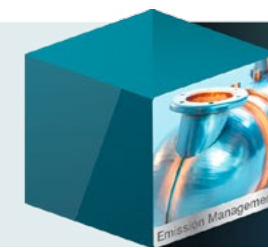
**DEUTZ XCHANGE**  
The speedy and economically viable alternative

New life for old engines – professionally refurbished engines and parts are a speedy, economically viable and environmentally friendly alternative to purchasing a new product. Hereby, DEUTZ Xchange engines and parts correspond with the original to all intents and purposes – this also applies for engines and parts that have been phased-out from the series for years. Compatibility and the proverbial DEUTZ quality are also of paramount importance with all Xchange components. Thereby, also following the refurbishment, it is ensured that the full performance and reliability is attained.



**DEUTZ SERVICE NETWORK**

The global DEUTZ Service network constitutes the cornerstone for comprehensive customer care in the field: 10 sales companies, 9 sales offices, 17 service centres and more than 800 sales and service partners are available in more than 130 countries on earth, day and night. Well-trained and motivated service personnel offers competent consultation and support with all problems.



**DEUTZ EMISSION MANAGEMENT**  
Efficient and flexible

DEUTZ responds to the continually increasing exhaust gas treatment requirements with the greatest possible degree of efficiency and flexibility: Especially in the service field, topics such as the re-conditioning of diesel particulate filters and the so-called emission downgrade – the modification of an engine to a lower exhaust emission level for use in third markets – come to the fore.



**DEUTZ ENGINE PLUS**  
Service revolving around your engine

DEUTZ Engine Plus – this refers to a variety of products and services revolving around your engine. From individual application engineering right up to the retrofitting of a great diversity of additional components: DEUTZ offers comprehensive support prior to and after the engine purchase.



**DEUTZ E-SERVICES**  
Online service, around the clock

In line with the need for information and communication technology, the significance of the internet is continually growing. DEUTZ e-Services offer speedy and direct access to service-relevant information – from the DEUTZ P@rts spare parts online shop, right up to the online registration of the engine.





# The hybrid excavator

Hybrid electric drives – i.e. the combination of an internal combustion and an electric motor – are becoming increasingly popular. As part of the so-called GRID project (Green Industrial Diesel), DEUTZ has now successfully completed the hybridisation of a material handling excavator.

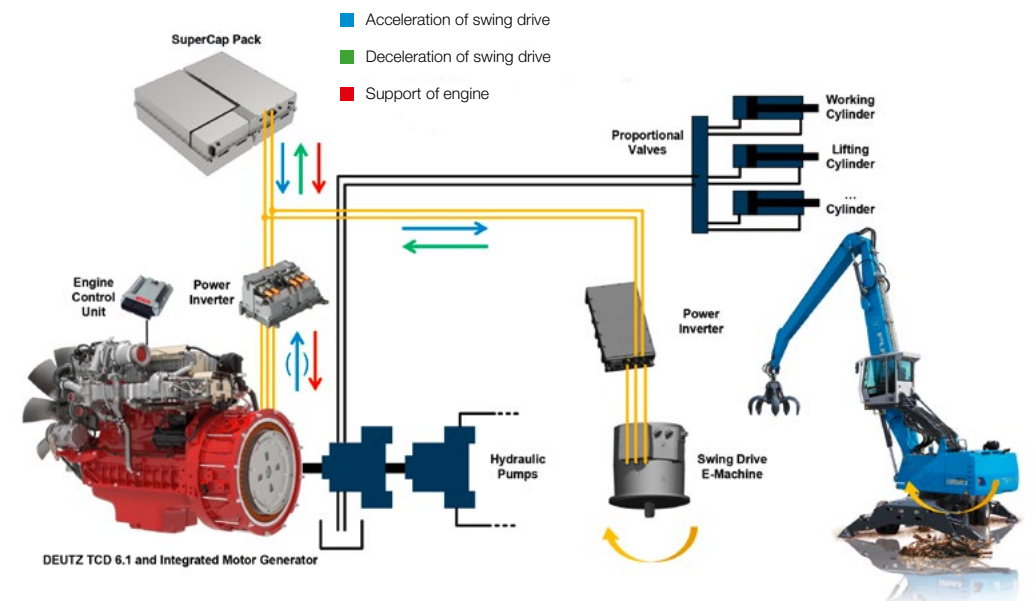
The “Green Industrial Diesel” project supported by the Federal Ministry for Economic Affairs and Energy was started in December 2011, with the focus being on the development of a diesel-electric hybrid system for a TEREX FUCHS MHL 350 material handling excavator. After a few successful intermediate stages, such as the presentation of the prototype by TEREX FUCHS at bauma 2013, the project was completed in November 2014 – with results which impress not only in terms of fuel consumption.

The fundamental mode of operation of the hybrid system that has been developed comprises a DEUTZ TCD 6.1 engine, which uses diesel-electric power to actuate the swing drive of the superstructure of the MHL 350 with the help of an integrated motor-generator. Therefore, a hydraulic system driven directly by the diesel engine is not responsible for the rotary movement, as is usual for this device, but instead an electric motor. This enables the actual hybrid function: the electric swing drive functions equally as a generator, so that it can recuperate electrical energy when brakes are applied to the superstructure. This energy flows into a so-called SuperCap Pack, where it is stored. The SuperCap Pack consists of double-layer capacitors which – due to their high power density – can quickly take up and store the energy, and if necessary deliver it again with equal

speed. This property is ideal for the interaction with the superstructure of the material handling excavator, the typical movements of which consist of short acceleration and braking manoeuvres in order to load a transport container with scrap, for example. “The DEUTZ hybrid system stores and uses the braking energy, so that significant savings in fuel consumption are achieved,” explains Marco Brun, Technical Project Manager for the GRID project at DEUTZ AG. This means that after a braking manoeuvre, the material handling excavator can obtain the energy for subsequent acceleration from the SuperCap Pack. However, the SuperCaps can supply the energy not only to the electric swing drive, but also assist the integrated motor-generator of the DEUTZ TCD 6.1. The hybrid system therefore provides a “power boost” in order to further increase system performance in the case of peak loads or particularly dynamic acceleration processes. “This means that our hybrid solution is not only more efficient than the sole use of an internal combustion engine, but also offers more performance,” adds Marco Brun.

One important milestone of the GRID project was the presentation of the hybridised material handling excavator at the leading international trade fair for construction machinery – bauma 2013 – in Munich. There the prototype in the outdoor area of the DEUTZ customer TEREX FUCHS impressively showed the route which is being taken when it comes to reducing the emissions and fuel consumption of working machines. DEUTZ also provided information about the project as part of its own trade fair presentation.

The last project phase in October 2014 was the final fuel consumption measurement. For this, a realistic test set-up with a defined operational cycle was selected which corresponds to the standard movement and load profile of the device. Within this cycle the material handling excavator used a gripper (weight 1.7 tonnes) to move a test weight made of steel (weight 1 tonne) between two points in a 180-degree radius. A cycle time was approximately 20 seconds. Point A was 13.5 metres and point B 9 metres away from the excavator’s axis of rotation. In order to be able to determine comparable values, the cooling water temperature was pre-conditioned at >80°C and the hydraulic oil temperature at >50°C.



The electrical energy is recuperated by the electric swing drive when the brakes are applied to the superstructure and stored in the SuperCap Pack. This can then be used to accelerate the superstructure again or assist the motor-generator on the TCD 6.1.

## Up to 40 per cent fuel savings

The results of the fuel consumption measurement clearly show the potential of the DEUTZ hybrid system: in comparison to a reference measurement with a conventional drive, it has been possible to reduce the consumption by 20 per cent, which with this device corresponds to savings of 3.2 l/h. To further increase this savings effect, the system also has two additional functions: “Besides the energy return through hybridisation, we have implemented a dynamic reduction in the speed, which with a low power take-off decreases the speed of the diesel engine from a constant 2,000 to 1,500 to 1,800 rpm,” explains Marco Brun. During operation, therefore, the engine can run over long periods at 1,500 rpm. Only when the hydraulically driven components, such as the excavator arm, require more power or a higher volume flow rate, is the speed increased in line with requirements.

The second function is a so-called automatic start-stop system which – similar to that in cars – switches off the diesel engine for as long as the device is at a standstill. If the hybrid system, including the dynamic speed reduction, is combined with this start-stop function, fuel savings totalling 40 per cent or 6.4 litres are achieved within the test cycle. This significantly reduces the operating costs of the device. This is an important aspect for its use in series production, since as a rule it is the overall cost consideration which is the deciding factor and currently there are no subsidies in existence for the use of environmentally-friendly hybrid technologies in the construction machinery field.

In addition to the significant advantage in terms of consumption, the material handling excavator is also very impressive with respect to handling. The test driver at TEREX FUCHS, Christian Rösch, sums up: “With its dynamic speed reduction, the machine is really fun. It is possible to operate it over wide ranges at a speed which reduces fuel consumption and noise levels, but even so you have the usual full power when you need it.”

In addition to the favourable consumption, the DEUTZ GRID project is also making a further contribution to the development of low-emission technologies, thereby actively contributing to environmental protection. In the next step the project results will be presented to the Federal Ministry of Economic Affairs and Energy. With the successful conclusion of the project, DEUTZ are expanding their hybrid expertise and the corresponding development skills. On this basis, customers can be supported individually in future projects. This applies not only to prototypes, but also to production-based projects.

Supported by:



Federal Ministry  
for Economic Affairs  
and Energy

Responsibility for the contents of this publication lies with the author.



Diesel engines and environmental protection – what initially sounds contradictory in theory, is definitely possible in everyday practice. Because, thanks to state-of-the-art technology, DEUTZ engines significantly reduce pollutant emissions around the world.



# For the sake of the environment

Responsible environmental and climate protection is an important business objective for DEUTZ, because emissions that are harmful for humans and the environment are released when combustion engines are operated. On the way toward attaining the lowest possible emissions, the legislation thus prescribes increasingly more stringent regulations that the manufacturers of diesel engines must comply with. In this regard, DEUTZ assumes a leading role in the field of emission reduction and the after-treatment of exhaust gases. And, in the course of the past years, apart from low fuel consumption and the increased power density of its engines, it has included the compliance with the increasingly more stringent exhaust gas limit values as a development goal in its requirement specifications. Here, in the field of emission reduction and the after-treatment

of exhaust gases, the company has established a high level of expertise. Already today, the diesel particulate filter-equipped TCD engines of the emission level EU Stage IV / US EPA Tier 4 in the field of 2.9 to 7.8 litres of cylinder capacity, satisfy the targeted limit values of the next emission standard in the EU that is planned for 2019. Within the context of this further tightening, the permitted limit for the particulate mass will be decreased once again, from 0.025 to 0.015 g/kWh. Still to be added to this is a limitation of the particle count, which will result in another considerable reduction in fine dust pollution. Hence measures are required for the continued reduction of the emissions, already with the smallest raw emissions of the engine, which is achieved by the after-treatment of exhaust gases systems. In this regard, DEUTZ offers its customers the DEUTZ DVERT® System, as flexible kit-optimised EAT installed solutions.

## “As much technology as necessary and not as much as possible”

DVERT® stands for a modularly set-up system that complements the DEUTZ engines in many different, practice-oriented configurations. The key principle in this regard is “As much technology as necessary and not as much as possible.” Virtually all elements of the DVERT® System construction kit can be combined with one another, thus attaining the desired result regarding engine performance, compliance with the emission limit values and competitiveness. Thanks to the flexible modular system, it is ensured that “overtchnification” is avoided, and that only as much technology is actually deployed as is required and sensible. For instance, in the cylinder capacity range under 4 litres, the new Tier 4 engines, are offered with two different exhaust gas after-treatment systems. The customer can se-

lect a system both with and without closed particulate filters. Thus, equally, customers’ preferences for simple, passive systems can be served, and a solution can be offered for markets with special demands. Thereby, the new engines pick up on the trends that predominate in innovative engine construction: consistent alignment to the latest exhaust emission standards, downsizing and high efficiency.

DEUTZ actively supports the trend toward downsizing. Especially in the lower performance range, the engine models could be developed entirely from scratch and display the best power density in their class. With high injection pressures and turbocharging, the DEUTZ engines provide high performance with small cylinder capacity, while simultaneously reducing fuel consumption. Both the customers and environment benefit from this because, by means

of this, significantly less CO<sub>2</sub> is released into the atmosphere.

## DEUTZ further expands its energy and environment management system

At the same time, the company intensively works on continually reducing the operational resource consumption and emissions. For this reason, DEUTZ is consistently expanding its energy and also its environment management system. Thus, with the implementation of a great variety of different organisational measures, additional potentials could be raised. For instance, following production, the testing times of the engines are reduced by approx. 1.5 minutes, so as to save emissions and resources. The reduction of the testing times is particularly important for DEUTZ, because, due to its potential, the testing fields in Cologne have the largest share of emissions company-

wide. Also from an economic and ecological point of view, the reduced testing duration is particularly effective, because not only are the emissions reduced but resources are also saved. In the development area, test benches are increasingly equipped with generators, so that the energy gained from

there can subsequently be fed back into the power grid again. Also in waste management, DEUTZ is doing something for its green conscience and continually substitutes disposable packaging for reusable packaging. The large number of components needed for the engine

production as well as the number of suppliers require that the substitution of disposable packaging for reusable packaging is to be tested and realised on a continual basis. In the past year, DEUTZ invested € 1.1 million in reusable packaging. Dangerous and non-hazardous waste from manufacturing and production are exclusively left to disposal companies that are certified as a disposal business in accordance with the Ordinance on Specialised Waste Management Companies (EfbV). The security organisation of DEUTZ AG randomly and regularly audits the commissioned waste disposers and transporters.

Apart from this, the three management systems Quality, Environment and Energy once again complied with the ISO certification requirements. Here, in the past year, the DNV certification company confirmed that the environment management system of DEUTZ AG complies with the internationally applicable DIN EN ISO 14001 norm. This was preceded by an assessment which lasted a number of days and was conducted by a team of auditors compiled by DNV, so as to evaluate the management systems of Quality, Environment and Energy. By the introduction of energy management and the optimisation of the operating times, the carbon dioxide emissions that are released during the manufacturing procedures could be reduced by 13.5% when compared with the previous year. First and foremost, it is the production plants in Germany and Spain that are responsible for the significant reduction of the CO<sub>2</sub> emissions, particularly the reduced consumption of district heating, natural gas and electricity.

DEUTZ endeavours to satisfy high demands – not only regarding the quality of its products but also with regard to the environment and sustainability. This is the only way to ensure that also a diesel engine manufacturer can keep its carbon footprint as small as possible.

### DEUTZ Group: Emissions per engine in European plants 2014 (2013)

CO<sub>2</sub> emission (in kg) 360 (416)  
Nitrogen oxides (in kg) 0.140 (0.142)  
Dust (in g) 2.7 (2.9)  
Benzol (in mg) 48.6 (49.7)



# „Tailored solutions for customers“

Dr Markus Schwaderlapp in an interview with DEUTZWORLD



Dr Markus Schwaderlapp has headed the Research & Development division at DEUTZ AG since 1 January 2015. After completing his studies in „Materials Sciences“ at RWTH Aachen, Dr Markus Schwaderlapp graduated under the tutelage of Prof. Franz Pischinger, Institute for Internal Combustion Engines. Prior to assuming his position at DEUTZ AG, Dr Schwaderlapp was Managing Director of FEV GmbH, focusing upon engineering, subsidiaries and customers in Europe and South America.

*Dr Schwaderlapp, you have now headed the Research & Development function at DEUTZ for close to 100 days. Which are the most significant impressions you have garnered during this time?*

**Dr Markus Schwaderlapp:** Now in existence for 150 years, DEUTZ has an exemplary heritage within the domain of engine development. Up to now, I have consistently encountered highly competent colleagues who feel at one with this heritage and demonstrate great commitment. What I also find very positive is the consistently close dovetailing between the Sales, Development, Procurement, Production and Customer Service

divisions, as well as global networking, with focal areas within the field of development, which is not only taking place in Germany but also in China and the USA.

*You graduated under the tutelage of Prof. Franz Pischinger, engaged at the Institute for Internal Combustion Engines, and are thus a recognised authority on engines. Wherein do you consider the challenges lie in modern engine manufacture, and how is DEUTZ meeting these requirements?*

**Dr Markus Schwaderlapp:** An engine is as good as it meets the expectations of the customer, while remaining in compliance with statutory requirements. DEUTZ's strength lies in individually customising engines from the extensive product portfolio to meet customers' requirements and in delivering them speedily and offering them at competitive prices. In functional terms, alongside their low emissions, DEUTZ engines especially ensure a favourable fuel consumption profile. Robustness, durability, low maintenance and quality are further key factors for their utility to customers.

*Which particular role do DEUTZ engines assume against the backdrop of increasingly stringent exhaust emission standards?*

**Dr Markus Schwaderlapp:** Differing exhaust emission standards at a global level necessitate tailored solutions for the various

markets and applications. DEUTZ meets these varying requirements with its broad product portfolio. The challenge lies in offering cost-efficient and robust solutions that have a modular structure. What is also important is strategic cooperation with suppliers in view of an increasingly global delivery capability.

*DEUTZ is Stage-V-ready, and is thus on the optimal path to minimal emissions. Which are the advantages that accrue to the customers from this?*

**Dr Markus Schwaderlapp:** You are right: In most engines, we already use Stage IV Final closed particle filters. DEUTZ has developed a sophisticated solution for this, which is however also paying off specific to Stage V because our engines also meet particle count requirements that are prescribed under Stage V. This is an enormous advantage for the OEM who does not have to deal with new installations after opting for DEUTZ engines, but can instead focus upon the further development of its end product. For the customer, this yields not just a cost advantage but also long-term security in terms of planning.

*Show us the technologies of tomorrow: What does the engine of the future look like to you? What must it be able to do and deliver?*

**Dr Markus Schwaderlapp:** I think that after the quantum leaps in emission reduction in recent years, the focus is now on reducing fuel consumption (CO<sub>2</sub>). Fuel injection technology / combustion processes, friction reduction and thermal management are sure to be key topics. Topics such as start/stop and hybridisation will begin to gain ground off-road, too. Aside from this, it is also vital to leverage the potential of alternative fuels. It is also important to utilise the increasing intelligence of engine control units in order to optimise the operation of the engine across its life span and to ensure communication with the vehicle and the fleet management.

DEUTZ AG is working on these issues and is prioritising topics in such a manner that logical product innovations are implemented and are thus made to be of utility to the customer.

## DEUTZ<sup>WORLD</sup>

The engine company. **DEUTZ**

The new DEUTZ magazine for our customers, retailers and partners

Look forward to edition 2 | 2015!

DEUTZ Engine Plus – these are a variety of products and services revolving around your engine. From individual application engineering right up to the retrofitting of useful additional components: DEUTZ offers you comprehensive support prior to and after the purchase of your engine.



You can find DEUTZWORLD online at [www.deutz.com](http://www.deutz.com)

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# Performed by DEUTZ

Each machine is only as good as its engine. Therefore, leading machine manufacturers have chosen the latest cutting-edge technology from DEUTZ, be it in mobile machines, agricultural equipment, ships propulsion or commercial vehicles applications.

For example this means that DEUTZ engines are installed into more than 100,000 new mobile machines worldwide per year and one out of two pieces of airport equipment are installed with DEUTZ engines and one out of three hectares of farm land in Germany is cultivated with DEUTZ powered machines.

DEUTZ is one of the world's largest independent engine producers, with an integrated power range from 25 to 520 kW. From the first installation consultancy to the life-long service support of the engine, we are completely dedicated to our customers. So that you receive products and services to your satisfaction.

**The engine company.**

