

# DEUTZ<sup>®</sup>WORLD

Edition 1 | 2018

The customer magazine of DEUTZ AG



## ELECTRIFYING!

Green light for the new  
E-DEUTZ strategy

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Note: Gender differentiation has not been applied in this document for reasons of improved legibility. The relevant terms apply for both genders in the sense of equal treatment.

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We are aiming for market leadership in the field of innovative off-highway drive systems with the E-DEUTZ strategy. DEUTZ is establishing a competitive position for itself at an early stage.

*Dr Frank Hiller,  
Chief Executive Officer of DEUTZ AG*

**Dear readers,**

Have you noticed? There is a buzz in the air at DEUTZ. A new dynamic is pervading all our business segments. We are especially excited about our electrification solutions, and I am happy to confirm: our E-DEUTZ strategy is gaining momentum! Recently, we presented our first off-highway hybrid demonstrator to the public at Intermat in Paris. It is a combination of a TCD 2.9 diesel engine and a 55 kW e-machine. This highlight has been the first main step towards expanding our project portfolio with innovative drive solutions. As you can see, DEUTZ is moving forward. Driving change and establishing ourselves as technological leaders is important to us. Our company is synonymous with innovative solutions at the cutting edge of technology. Wherever DEUTZ engines are in use, customers have good reason to be confident. DEUTZ is reliable.

We want to meet our clients' high requirements as well as our own and offer efficient, even more environmentally friendly engines to the market. This is why we constantly advance our company and products. This current issue of our customer magazine gives you an insight into how we achieve this and the places where DEUTZ is active.

We hope you enjoy reading this issue!

All the best,

Dr Frank Hiller, CEO





**Dubai**  
**Mobile energy generation – we do it right!**

Under the brand name of DEUTZ POWER SOLUTIONS, DEUTZ presented its latest products in the field of mobile energy generation at Middle East Electricity 2018 in Dubai between 6 and 8 March. The trade fair held at the Dubai World Trade Centre attracts more than 1,500 exhibitors from 126 countries. It is the largest industry event for energy generation, transmission and distribution in the Middle East. DEUTZ presented a wide range of complete genset systems with a power output from 13 to 1,250 kVA. The powerful DEUTZ POWER SOLUTIONS (DPS) series comprises both air-cooled and liquid-cooled versions. The standard models are equipped with integrated fuel tanks, detailed monitoring functions, visual displays and more. Additional features can be chosen optionally, including an emergency power supply or an automatic tank-filling system. This ensures that customers always get a customised solution that is ideal for their specific application.



## Cologne

### Convinced: innovative drive systems impress Andreas Pinkwart

DEUTZ AG got to welcome a special visitor in early May. Prof. Andreas Pinkwart, Minister for the Economy, Digitalisation and Energy of the state of North Rhine-Westphalia, visited the company to find out about the latest technologies and concepts first hand. The conversation between the Minister, Dr Frank Hiller (Chief Executive Officer of DEUTZ) and Dr Andreas Strecker (DEUTZ Chief Financial

Officer) focussed on the topics of innovation and digitalisation.

The DEUTZ management introduced its electrification strategy using its off-highway hybrid demonstrator, which the company had just presented to the public at Intermat in Paris a few days earlier. They explained how the new expertise that DEUTZ gained by acquiring Torqeedo, the specialist for

electric drive systems, will power future developments in the off-highway segment, the core business of DEUTZ. Prof. Pinkwart was impressed with the innovative, environmentally friendly drive systems developed by DEUTZ. He praised the inventive spirit and strong technological foundation of the company, which has its roots in North Rhine-Westphalia. "DEUTZ was one of the drivers of the industrial revolution and among the most successful start-ups of its time. And this time it is one of the pioneers when it comes to digitalisation", says the Minister.

During his visit, the Minister was also shown the various digitalisation concepts that are being developed by DEUTZ. One of them is "DEUTZ Connect", an app-based solution for mobile engine diagnostics. Professor Pinkwart got to test the concept alongside the service portal and the planned innovation centre first hand. The visit of the Minister, who is a sponsor of the organisation "Freunde der Motorensammlung DEUTZ e. V. (Friends of the DEUTZ engine collection)", was a great success for DEUTZ.

"We are very happy that our electrification solutions and digitalisation concepts appealed to Prof. Pinkwart, who has a special professional interest in innovation and digitalisation. His interest in our company is a great honour", Dr Frank Hiller commented.



# 55%

is the export rate of the industrial companies in the economic region of Cologne. This high export activity is thanks to the automotive sector, mechanical construction and the chemical industry, which make up for 80 per cent of foreign trade in the Cologne CCI District.

## Cologne

### BMWi representatives praise the E-DEUTZ strategy



Ramona Frick of the Federal Ministry of Economics and Technology (BMWi) and Dr Johannes Bauerdick of the Ministry of Economics of the Federal State of North Rhine-Westphalia visited DEUTZ AG. They were joined by the CEO of VDMA NRW, Hans-Jürgen Alt. During a guided tour of the assembly facilities, the visitors got to experience the world of DEUTZ products first hand. Afterwards, they learned about the E-DEUTZ strategy in

the R&D department. Ramona Frick and her companions were impressed with the diverse product portfolio of DEUTZ AG. They lauded DEUTZ as an excellent example of the strength of local commercial enterprises.

## Heads at DEUTZ



"Customer feedback will become an even more influential factor in the development of our products."

Dr Markus Müller has been appointed manager of the new "Product Development & Technical Customer Support" department, which will cover research & development and electrification, and will function as the central technical customer interface. One main reason for the merging of development activity is a desire to respond to customer requirements more directly. In future, feedback will be forwarded to the product development team immediately and corresponding changes will be integrated faster. After completing his degree in mechanical engineering, Dr Müller embarked on a very successful career with DEUTZ AG. He has held various positions within the DEUTZ Development department between 2006 and 2016. Most recently, he was a member of the executive committee of a medium-sized automotive supplier and responsible for the Development, Production and Sales departments.



"The Asian region has been a focal point of my career for a long time. I will apply this experience to develop the Asian business of DEUTZ as effectively as possible."

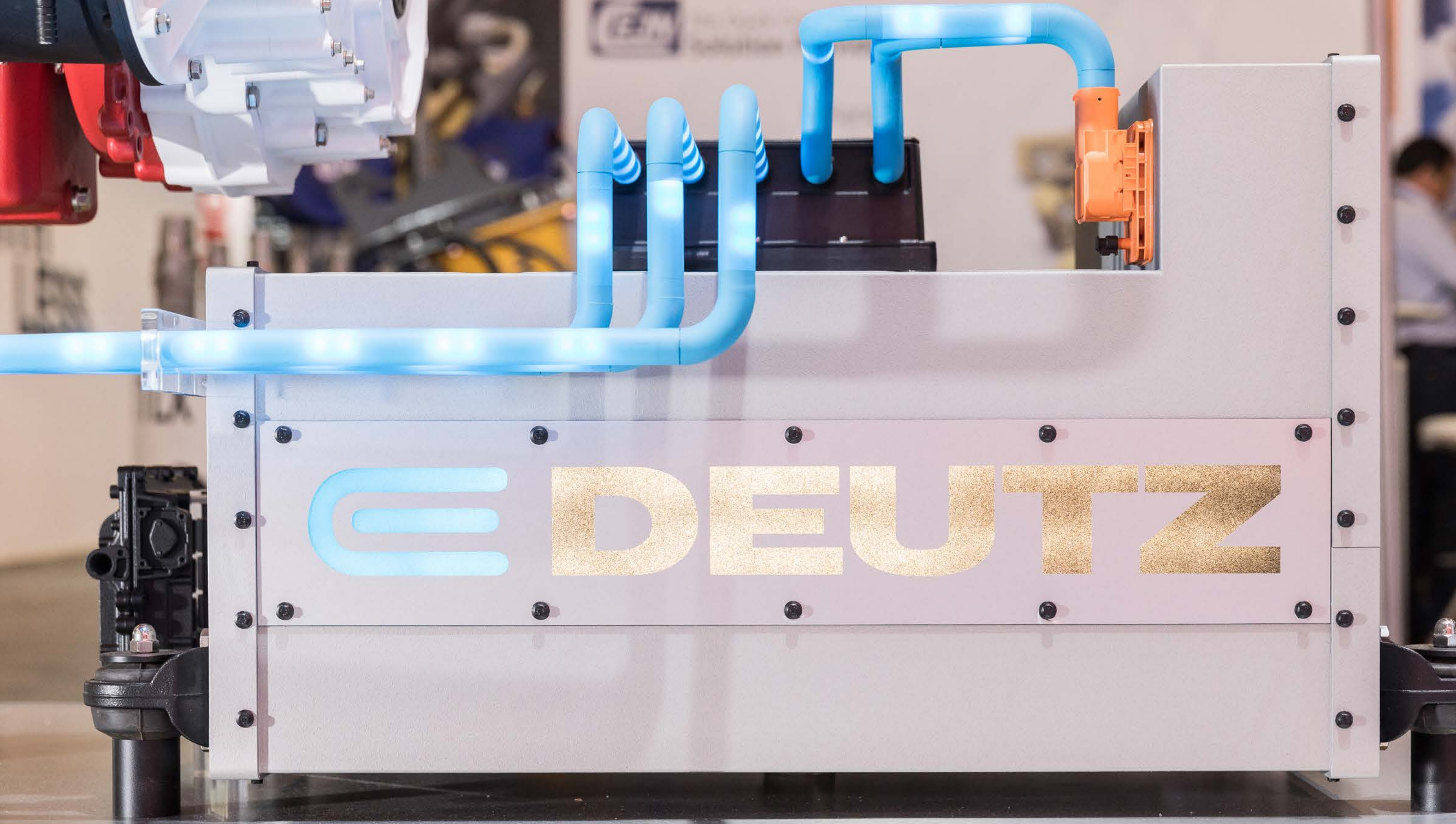
On 1 February 2018, Christian Zürnstein took over the regional management for Asia. After finishing his degree in business administration, Christian Zürnstein first worked for an auditing firm. He spent more than 15 years in different managerial positions at LEONI AG, where he was responsible for the Asian business of the "Wiring Systems" segment from 2006 onwards. Christian Zürnstein will be working from Shanghai and report to Michael Wellenzohn, member of the board of DEUTZ AG in the Distribution/Service & Marketing division.



"Powerful logistics is indispensable for the international manufacturing and sale of engines. I am committed to delivery schedules and efficient processes along the entire DEUTZ value chain."

On 1 December 2017, Stefan Rittershaus took over the management of two departments, Corporate Logistics and Logistics Cologne for the Cologne/Herschbach plant. Stefan Rittershaus has many years of experience as a managing director and operative plant manager of national and international units in various companies.





# ELECTRIFYING!

The E-DEUTZ programme, launched in 2017, picks up the pace with a combination of a TCD 2.9 diesel engine and a 55-kW e-machine. This highlights considerable efficiency potentials in the field of powertrains.



You can easily hear it from afar: noise from diesel engines is a telltale sign that there is a construction site in the area. Excavators, wheel loaders and telehandlers all use powerful diesel engines that can work self-sufficiently for long periods of time. Electric engines are still rarely used in this sector. This is primarily due to the high power density of diesel fuel compared to a battery: one tank filling goes a much longer way in terms of running hours. Fully electric drives are still unsuitable for many construction applications. Combining the two technologies, on the other hand, offers great potential for increasing overall efficiency.

DEUTZ has taken a decisive step in this direction by launching its E-DEUTZ strategy and combining its low-emission engines with electric drives. In September 2017, the group acquired Torqueado GmbH, the global market leader and systems solution specialist for integrated electric and hybrid boat drives. This acquisition has been a catalyst for the electrification of the DEUTZ product range. DEUTZ will be leveraging the extensive expertise acquired to advance future developments in its off-highway core segment.

To illustrate this technology transfer, DEUTZ presented a demonstrator of a modular, scalable, electrified off-highway drive solution at the international construction and infrastructure trade fair Intermat in Paris. The system consists of a TCD 2.9 diesel engine and an e-machine equipped with specially adapted power electronics and a battery pack. The e-machine provides 55 kW at 400 volt; the diesel engine also contributes 55 kW. This brings the maximal system power to 110 kW. The lithium-ion battery has a capacity of 40 kWh at 400 volt. A gearbox with an integrated separating clutch connects the e-machine to the diesel engine mechanically. This makes it possible to disconnect the diesel engines from the electric system to operate the vehicle fully electrically.

Among the potential advantages of this system is the option of downsizing the combustion engine in dynamically balanced applications. If the diesel is in the partial-load range, the generator can be operated to increase the load point of the e-machine. This brings the combustion engine to a more fuel-efficient range. Simultaneously, the generated electrical energy is saved in a lithium-ion battery. During high power requests, the e-drive supports the combustion engine using the previously stored energy. This boost function effectively increases the peak power of the drive and allows you to use a combustion engine that



### THIS IS THE FUTURE

By 2030, hybrid drives are expected to make up between 10% and 20% of all three machine categories – tractors, excavators and wheel loaders – in the performance range from 56 to 150 kW both in Europe and the USA.



has a smaller cubic capacity and a lower maximum power than a pure combustion engine of the same power class. In addition, the machine gains greater dynamism, which makes the machinist's work easier. It also provides extra functions that lower fuel consumption, such as a start-stop system and a crank starter.

Another advantage of hybridisation is the option of running auxiliary drives electrically. This requires an increased on-board voltage of 48 or 400 volt to ensure the safe transfer of the required electric power between the e-machine, lithium-ion battery and the auxiliary drive. Eliminating the continuous mechanical power transfer further improves the efficiency of the machine. While the electrification of auxiliary drives is particularly beneficial in higher performance ranges, smaller applications could be operated with a hybrid or fully electric powertrain.

The individual E-DEUTZ components can be scaled for their power output and capacity according to the needs of the customer. DEUTZ CEO Dr Frank Hiller explains: "We are aiming for market leadership in the field of innovative off-highway drive systems with the E-DEUTZ strategy. DEUTZ is establishing a competitive position for itself at an early stage. Our customers can choose the best-suited combination of conventional and electric drive components for their application and reduce their overall operating costs considerably."

Visitors to the DEUTZ booth got to use a digital product toolbox on a tablet to find their perfect modular E-DEUTZ system configuration. They were especially interested in the option of representing examples of the total cost of ownership (TCO) of the machines. It showed them how long it takes until the cost of the drive system is amortised in the context of a specific application. Depending on the application in question, the amortisation period may be as short as a year. DEUTZ completed its trade fair presentation with an augmented-reality function: the tablet allows its users to take a detailed 3D tour of the E-DEUTZ hybrid exhibits.

### Stage V-certified

Besides its innovations in the field of electrification, DEUTZ also showcased its exhaust gas aftertreatment skills in Paris. The company introduced its "Stage V-ready" seal at Intermat in 2015 as a promise that the current TCD engine range would comply with the EU Stage V emission standard, which will come into force in 2019. DEUTZ



**We support:**  
800 DEUTZ service  
partners in 130  
countries are on  
hand day and night  
to help customers.

has made good on this promise: it is the world's first manufacturer to be certified for EU Stage V. The DEUTZ TTCD 6.1 received the initial certification in September 2017, followed by further models that are now being marketed with the "Stage V-certified" seal. Customers will be happy to know that the changeover from the currently valid EU Stage IV to Stage V does not require any additional installation space: no costly modifications are necessary. By obtaining its first EU Stage V certificate, DEUTZ is fulfilling its promise and reinforcing its status as an environmentally friendly engine manufacturer.

### Extended performance range

For heavy-duty off-highway applications, DEUTZ continues to rely on powerful diesel engines. Right on time for the EU Stage V in 2019, the company will be expanding its bandwidth in the upper output range by introducing four new large-scale serial engines with cubic capacities from 9 to 18 litres. At Intermat, DEUTZ presented its TCD 9.0 four-cylinder engine, which has a power output of 300 kW and a torque of 1,700 Nm. TCD 12.0 and 13.5 refer to six-cylin-

### MOBILE ENGINE DIAGNOSTICS

Is the engine running smoothly?

Is the feed pressure optimal?

Do you need to top up with coolant? The DEUTZ Connect app gives you access to important engine performance parameters directly on your smartphone.

der engines with 400 kW and 2,500 Nm or 450 kW and 2,800 Nm. All three engines are part of a family platform concept. They share a common customer interface and an identical front and back, which simplifies their integration and maintenance.

### Get CONNECTED

DEUTZ also presented two digital products at Intermat. Its free app "DEUTZ Connect" offers mobile engine diagnostics per smartphone or tablet. All relevant engine data and the error memory can be read and sent to the dealer in just one click to facilitate fast, targeted servicing.

Speaking of the DEUTZ service: the company also presented its new online service portal ([www.deutz-serviceportal.com](http://www.deutz-serviceportal.com)). Customers from all over the world can use it to contact their local service partner, register their engine and shop for service parts online, 24/7.



More information about "DEUTZ Connect" is available here.



# Electrification made to measure

In his interview with DEUTZWorld, Dr Frank Hiller, Chief Executive Officer of DEUTZ AG, told us how the DEUTZ modular, scalable hybrid drive system can convince customers in the off-highway segment of the advantages of electromobility.

**DEUTZWorld:** Dr Hiller, the E-DEUTZ strategy is gaining momentum. DEUTZ has presented its first electrified off-highway concept to the public. How is the project start going?

**Dr Hiller:** In the autumn of 2017, we acquired our new partner, Torqeedo – the market leader in the field of electromobility for boats with twelve years of valuable experience. Since then, we have been working on our first solutions for hybrid and electric drives. After only six months of our collaboration we presented our first concept at Intermat 2018. The speed with which our teams have applied their electric expertise to a DEUTZ field is impressive – as is the result.

**DEUTZWorld:** On what technical concept is the project based, and what will the next steps be?

**Dr Hiller:** We are planning to offer a modular, scalable hybrid drive system. As a first step, we built a hybrid drive with a system output of 110 kW, based on a TCD 2.9 diesel engine. Each engine has a separate output of 55 kW. The lithium-ion battery has a capacity of 40 kWh. All components – combustion engine, e-machine and battery – can be provided at a smaller or larger scale to meet any customer requirement. Each application has specific demands in the overall performance, offering different conditions for the use of electric drives. We offer our customers full support in configuring their systems to achieve the greatest possible increase in efficiency. In many cases, the resulting savings in operating expenses already offset the investment after a single year of use. As a next step, we will start developing prototypes together with our clients to approach a serial product.

**DEUTZWorld:** What percentage of the off-highway segment will consist of electrified applications in future?

**DEUTZWorld:** Does this also mean that you will continue to rely on diesel engines for most applications?

**Dr Hiller:** Yes. Especially when it comes to heavy-duty applications, we believe that diesel engines continue to be the best choice. Their efficiency is an important contribution to climate protection. Our EU Stage V-certified engine range offers low-emission engines with highly advanced, effective exhaust gas aftertreatment systems. Considering the advent of alternative fuels, the diesel also has great long-term potential. E-fuels, which are based on renewable energies, even make it possible to operate them fully CO<sub>2</sub>-neutrally.

**Dr Hiller:** We want electrified drives to make up five to ten per cent of our revenue in five years. What happens next will depend on many factors, such as infrastructure, battery development and the preferences of our customers. By investing in innovative drive technologies, DEUTZ contributes to lowering fuel consumption and emissions. Ultimately, we are improving the total operating costs for our customers throughout the life cycle of the machine. For the time being, the drives are best used for small and medium performance ranges and applications with a dynamic balance, such as compact excavators or material handling devices, which usually only need a high output for brief periods of time. Thanks to the support from the e-machine, the combustion engine can be smaller. The system produces electrical energy while idling and stores it in the lithium-ion battery.

Dr Frank Hiller,  
Chief Executive  
Officer of  
DEUTZ AG



The result is impressive. After only six months collaboration with Torqeedo we have already presented our first electrified off-highway concept to the public.

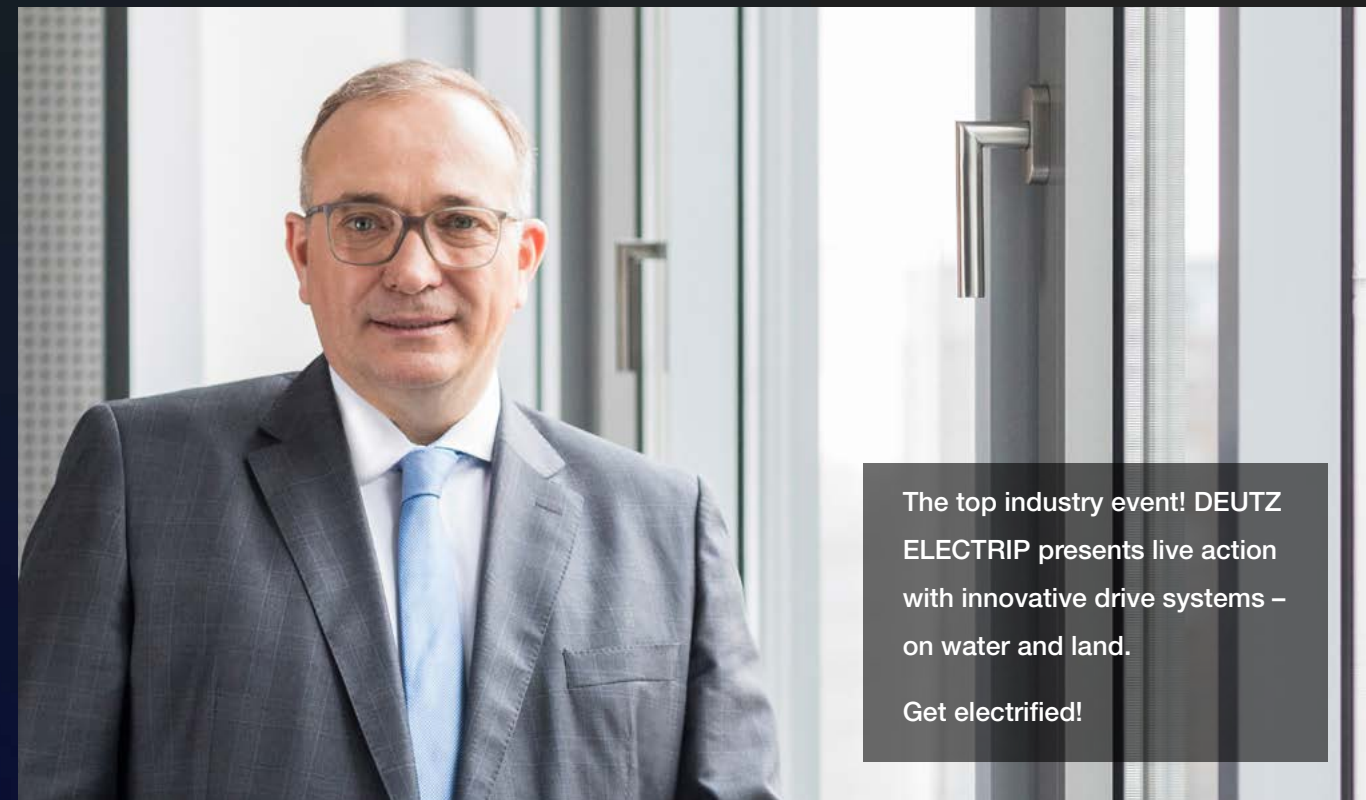
The E-DEUTZ demonstrator consists of a TCD 2.9 diesel engine and an e-machine equipped with specially adapted power electronics and a battery pack.





# ELECTRIP

DEUTZ EVENT WEEK  
18-21 SEP 2018  
COLOGNE GERMANY



The top industry event! DEUTZ  
ELECTRIP presents live action  
with innovative drive systems –  
on water and land.

Get electrified!

The electrification of drive systems is well underway. It has already transformed passenger transport, but the off-highway section is still behind. DEUTZ can help you hybridise or fully electrify your own machines.

This past April, we presented our first off-highway hybrid demonstrator at the INTERMAT trade fair in Paris. The E-DEUTZ programme picks up the pace with this combination of a TCD 2.9 diesel engine and a 55-kW e-machine.

Today, we would like to tell you about our ELECTRIP project – a true highlight that will allow us to illustrate the topic in a tangible, practical way. Join our DEUTZ team

at [www.deutz-electrified.com](http://www.deutz-electrified.com) and take a look at the future. You can watch the entire hybridisation process of a diesel engine, from the initial idea to the development, implementation and integration. Witness the impressive performance of our electric engines on water and look forward to each new season of the series. Our DEUTZ documentary will show you our ELECTRIP in action – both on land and on water.

Head to [www.deutz-electrified.com](http://www.deutz-electrified.com) to find out more about the DEUTZ ELECTRIP. On 18–21 September, we will host an event for our customers and demonstrate our applications to them, using as examples an off-road trip with a converted LIEBHERR demonstrator and a Torqeedo e-boat trip on the Rhine.

Besides our customers and business partners, we are also inviting international investors and trade journalists to the ELECTRIP week of events. On 18 September, we will organise a Capital Markets Day; on 19 September, we will hold a DEUTZ Media Day. With a lot of live action and a VIP dinner, the customer event on 19–21 September will be the highlight of this week.

Get ahead of the game and find out more about the DEUTZ ELECTRIP today:  
[www.deutz-electrified.com](http://www.deutz-electrified.com)

  
Michael Wellenzohn  
Head of Sales/Marketing and Service



This video and further information about ELECTRIP is available from:





# “DEUTZ is a strong brand”

Interview:  
Dr Andreas Strecker,  
Director of Finance, Procurement,  
HR and Information Services

Dr Andreas Strecker is the newest member of the DEUTZ AG executive board. Before joining DEUTZ, the 56-year-old spent many years in leading positions in the bus segment and controlling department of Daimler AG. In the last four years, he held the positions of CFO of the Novoferm Group, CEO of Solaris Bus & Coach and a strategic advisor. In his interview with DEUTZ World, the business economist explained what qualities a good CFO needs to have.

**DEUTZWorld:** Dr Strecker, you have been a member of the board of DEUTZ AG since 1 March 2018. On 1 April, you assumed executive responsibility for Finance, Purchasing, HR and Information Services. What has your career been like up to the present day? What were your most formative experiences?

**Dr Strecker:** Working for a company with a strong brand has always been important to me. This started with my dissertations and my doctoral thesis at Festo. Afterwards, I worked with Daimler/Mercedes Benz, the Novoferm Group and the Polish bus construction company Solaris. I am delighted to continue my career with DEUTZ, another

strong brand with an excellent market position.

Overall, my previous career stations have been exciting and challenging. One early highlight was the purchase of the Ulm-based bus manufacturer Kässbohrer (with the Setra brand) and the fusion with the Mercedes-Benz bus segment into Evobus GmbH. I first joined the newly formed company as a member of the Due Diligence Team and later became the first official employee of Evobus. In North America, I worked as a CEO. This made me responsible for the merger of four legally independent, unprofitable bus companies into Daimler Buses North America. The position brought

standing user of different bus engines, I am intimately familiar with the engine industry. DEUTZ has now entered the field of electromobility with its E-DEUTZ strategy, and I am looking forward to contributing my previous experience in this area.

**DEUTZWorld** What will be your first steps as a member of the board of DEUTZ AG?

**Dr Strecker:** I spent my first weeks intensely familiarising myself with the wide range of topics that now fall under my responsibility. I have already actively supervised some important projects. DEUTZ is currently developing its E-DEUTZ product toolbox, and Purchasing will play an important role in this project. I am sure that I will be able to contribute valuable contacts.

In the last week of March, I attended a discussion about control circuits at our joint venture DDE with my colleagues in China. Personally, I want to know more about the mood and issues of our team. I will talk to the works councils to schedule and plan an employee survey.

**DEUTZWorld** Which points do you think are most interesting to DEUTZ investors at the moment?

**Dr Strecker:** Investors tend to look ahead more than they look back. This means that we cannot idly enjoy the fruits of our successful 2017. We need to demonstrate our product and regional strategies credibly and transparently and implement them soon. The acquisition of Torqeedo certainly sends a clear signal about the E-DEUTZ strategy and highlights that our company is well positioned for the future. But our investors will only truly believe us when they see concrete, new products. I am confident that we can show our shareholders, analysts and employees the first applications in the second half of the year.

The expansion of our product portfolio in the >9l segment has been well received, too. We are already being watched: our investors expect corresponding orders and a confirmation of our growth prognoses. We will be happy to rise to the task.

**DEUTZWorld** In your view, what makes someone a good CFO?

**Dr Strecker:** The CFO role at DEUTZ fulfils quite a wide range of functions: Finance and Controlling, HR, Purchasing and IT. Being able to draw from a lot of experience makes it easier to manage these topics equally well. Transparent management of liquidity, expenses and results are certainly part of the basic toolkit of any CFO. A Finance department must do more than ad-



Of course, achieving the goals I have set myself is very important to me. I expect that my team works efficiently.

monish and caution. It needs to be a business partner that works with other parts of the company and takes risks when dealing with difficult issues.

**DEUTZWorld** Which characteristics describe you most accurately?

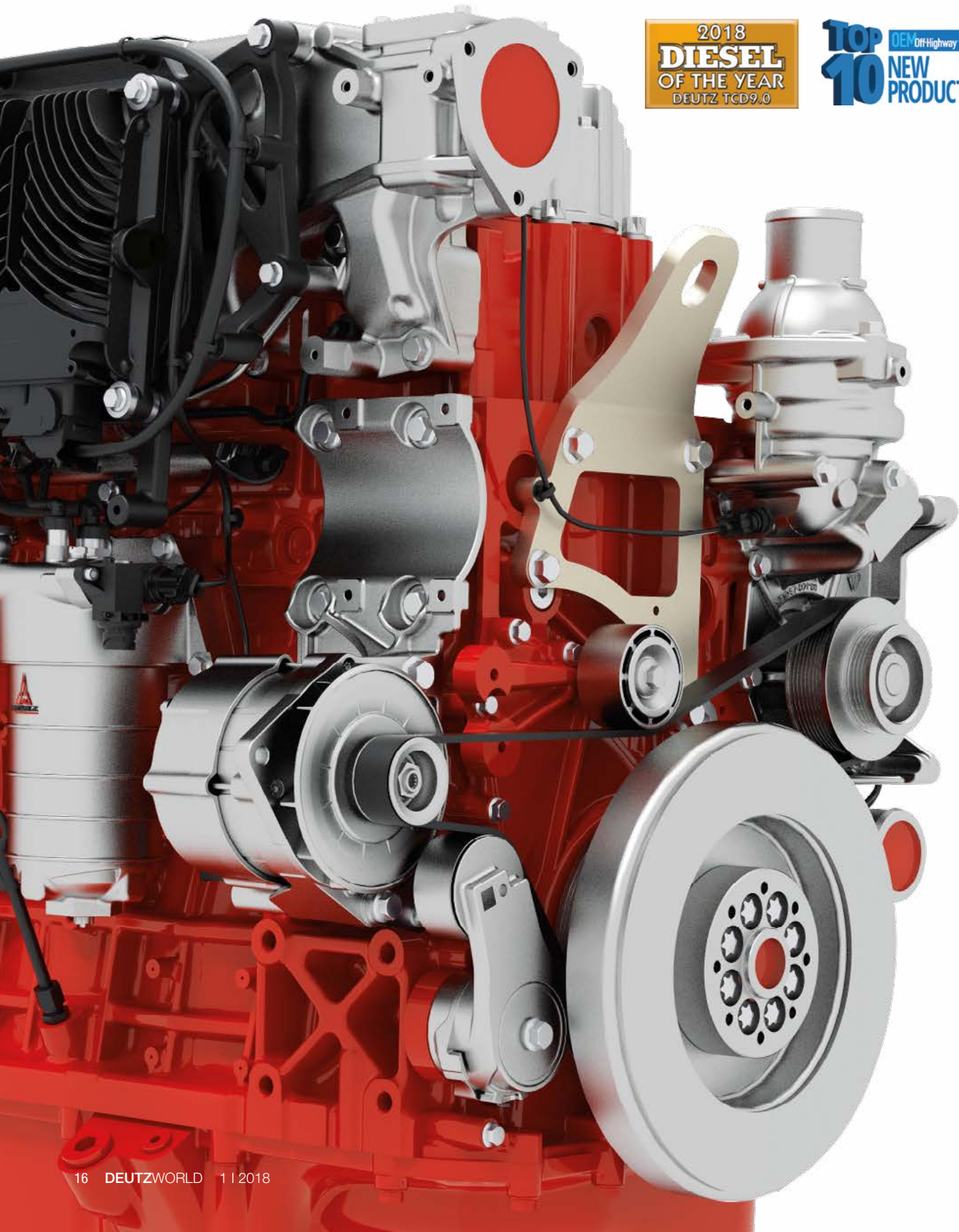
**Dr Strecker:** I love being part of a team. The silo mentality does not resonate with me at all. My office door is usually open, and my colleagues are welcome to come to me unannounced. Of course, achieving the goals I have set myself is very important to me. I expect that my team works efficiently. But I always make an effort to convey to my employees why the required measures are important. I want to make sure that they enjoy their work even when it gets stressful.

**DEUTZWorld** Your days revolve around balance sheets and staffing decisions. How do you unwind?

**Dr Strecker:** In dynamic times like ours, it can be hard to relax. On 1 April, I moved into a flat in Cologne-Porz right by the Rhine. I will use the nearby jogging path as often as possible. And the weekends belong to my family.



# A REAL WINNER



2018  
**DIESEL  
OF THE YEAR**  
DEUTZ TCD 9.0

**TOP 10** OEM Off-Highway  
**NEW  
PRODUCTS**

The new DEUTZ engine TCD 9.0 has been awarded the title of **DIESEL OF THE YEAR** by the specialist journal **DIESEL**. Designed for use in heavy construction and agricultural machines, the four-cylinder model with a cubic capacity of nine litres achieves an output of 300 kW.

Every year, the sought-after **DIESEL OF THE YEAR** award distinguishes an especially innovative engine. The award ceremony was part of Intermat 2018, the international trade fair for the construction industry held in Paris. DEUTZ already won the award in 2010 for its compact TCD 2.9. The **DIESEL** journal is one of Europe's leading specialist journals in its field. For 22 years, it has been reporting on the development, manufacture and application of diesel engines. The newly distinguished TCD 9.0 was also voted one of the "Top 10 new products of 2017" by the "OEM Off-Highway" journal recently.

#### Upward expansion of the performance range

The DEUTZ TCD 9.0 in-line four-cylinder engine with a capacity of 300 kW and 1,700 Nm of torque is part of a new engine family. Together with the TCD 12.0 (400 kW / 2,500 Nm) and 13.5 (450 kW / 2,800 Nm) in-line six-cylinder models, it constitutes another considerable expansion of the DEUTZ performance range. The engine family platform concept has a common customer interface and an identical front and back, which simplifies their integration and maintenance significantly. With around 65 per cent identical parts, they offer reduced complexity and optimal storekeeping. The TCD 18.0 in-line six-cylinder engine with 620 kW and 3,600 Nm will mark the upper end of the DEUTZ performance range. The serial launch of all four engines will start in 2019, on time for EU Stage V. This allows DEUTZ to cater to heavy-duty construction and agricultural machines that need a great deal of power and torque.

The new engines are technically extremely advanced. Their components include cross-flow cylinder heads, a down-speeding

function for reducing fuel consumption and operating noise, and a common-rail system with an injection pressure of 2,200 bar. Both at the belt and the flywheel, a power transfer of up to 100 per cent is possible. Thanks to dynamic equalising weights, the TCD 9.0 four-cylinder engine is just as quiet as the larger six-cylinder models.

#### Conventional and electric drives

Michael Wellenzohn, member of the board of DEUTZ AG in the Distribution/Service & Marketing division: "The **DIESEL OF THE YEAR** award is a great honour. It shows that the concept behind the drive is convincing. We are offering an advanced technical basis that expands our upper performance range considerably to cover new applications."

With its new in-line engines, DEUTZ provides powerful diesel engines at the top of the performance range. Technically and economically, they are the best solution for heavy-duty applications. DEUTZ will also offer electrified drive systems in the lower range soon as part of its E-DEUTZ strategy. This will allow customers to choose the best-suited combination of conventional and electric drive components for their application, resulting in considerably improved emissions and greater efficiency. Aiming for market leadership in the field of innovative off-highway drive systems, DEUTZ is establishing a competitive position for itself at an early stage.



Honoured: Dr Frank Hiller (r.) and Michael Wellenzohn (l.) receive the award for the TCD 9.0 at Intermat.



# Electric energy on the water

Since November 2017, the DEUTZ factory in Ulm has been assembling electric outboard engines by the DEUTZ subsidiary Torqeedo. The assembly line was set up in just six weeks. It can produce up to 8,500 engines per year.



More information\*  
about Torqeedo:



## 8,500

Torqeedo engines will be manufactured at the DEUTZ factory in Ulm in future.



The outboard engines are suitable for dinghies, inflatables and small sailing yachts of up to 1.5 tonnes.

Photo: Torqeedo

In September 2017, the group acquired Torqeedo GmbH, the global market leader in the field of integrated electric and hybrid boat drives. This acquisition has been a catalyst for the electrification of the DEUTZ product range. DEUTZ will be leveraging the extensive expertise acquired

to advance future developments in its off-highway core segment. Torqeedo also benefits from the partnership with DEUTZ: it will be able to reduce its purchasing and assembly costs and leverage a wide range of synergy effects. During the first stage of the partnership, the assembly of electric

outboard engines from the Torqeedo Travel range was moved to the DEUTZ factory in Ulm.

The models 503, 1003 and 1003C have an output of 1.5–3 HP (a propulsive power equivalent to that of a petrol-powered out-

board engine). They are suitable for dinghies, inflatables and small sailing yachts of up to 1.5 tonnes. Their integrated lithium-ion battery has an output of up to 915 Wh. In addition, an on-board computer with a GPS-based calculation system always displays the remaining range.

Including the planning stage, the relocation of the production to Ulm only took six weeks. Production started in the second week of November, 2017. Due to the seasonal business in November, DEUTZ had to start out with six employees who assembled around 30 engines every day. At the moment, the factory is increasing its output for the spring season, and 11 employees are producing almost 60 engines per day.

**A safe assembly process – established in no time flat**

To make this happen, the DEUTZ team had to familiarise itself with the special requirements inherent to electric engines first. The units do not undergo a final cleaning after production, which increases the need for cleanliness during the process. Diesel en-

gines are cleaned and varnished at the end of the process. Electronics are particularly sensitive during assembly. To deal with this issue, DEUTZ has set up a special ESD (electrostatic discharge) area. All employees need to wear protective equipment in this area to prevent electrostatic discharge, which could otherwise damage the electronics.

The relocation of the production impressively demonstrates how fast DEUTZ established a safe assembly process. The Ulm factory is proud to support the growth of the Torqeedo brand by producing 8,500 Torqeedo engines every year.



## DID YOU KNOW?

Torqeedo produces the auxiliary propulsion system of Gloriana, the rowbarge of Queen Elizabeth II. In 2016, Torqeedo was asked to provide new engines for Gloriana: the royal barge was to receive two Deep Blue 40 Saildrive engines and two high-voltage batteries. The 90-foot barge was traditionally manufactured from British wood. It flies the Royal Standard, the traditional flags of the United Kingdom and 16 crests representing the Realms of the Commonwealth.



Assembly of Torqeedo electric engines at the DEUTZ factory in Ulm.

Photo: Sascha Ulmschneider





# CO<sub>2</sub> neutrality with alternative fuels

**DEUTZ has approved the latest generation of its entire TCD engine range for operation with alternative fuels. This will make a further significant reduction to the carbon footprint of combustion engines and even raises the prospect of running such engines on a carbon-neutral basis. For DEUTZ, this represents the next logical step in its efforts to develop sustainable and efficient drive systems.**

The approval covers the engine series TCD 2.9 / 3.6 / 4.1 / 6.1 / 7.8 / 12.0 / 16.0 under the current EU Stage IV / US Tier 4 standard, as well as all older

DEUTZ engines without exhaust aftertreatment, for operation with paraffinic diesel fuels and biodiesel or biodiesel blends. The term paraffinic diesel fuel encompasses a wide range of products. HVOs (hydrogenated vegetable oils), in particular, are currently being produced on a commercial scale from sustainable plant oils and waste

fats. In the future, 'e-fuels' will also become part of the mix that will enable engines to operate on an eco-friendly, carbon-neutral basis using renewable energy. The underlying principle is that in the production process the same amount of CO<sub>2</sub> is taken out as is emitted by the combustion process. Because of its chemical composition, synthetic diesel fuel produced by this method can be mixed and used with fossil-based diesel in any ratio.

The idea behind using biodiesel is also to cut CO<sub>2</sub> emissions. In Europe, biodiesel is primarily based on sustainably and locally produced vegetable oils and waste fats. The approval covers 100 per cent biodiesel for EU Stage IV as well as biodiesel blends, i.e. blended fuels containing biodiesel, for EU Stage IV and US Tier 4 engines.

End customers utilising alternative fuels benefit not only from the knowledge that they are helping the environment but also from tax advantages, which vary from region to region. In Germany and Austria, for example, biodiesel is exempt from tax when it is used for agricultural purposes,

which lowers farmers' overall running costs.

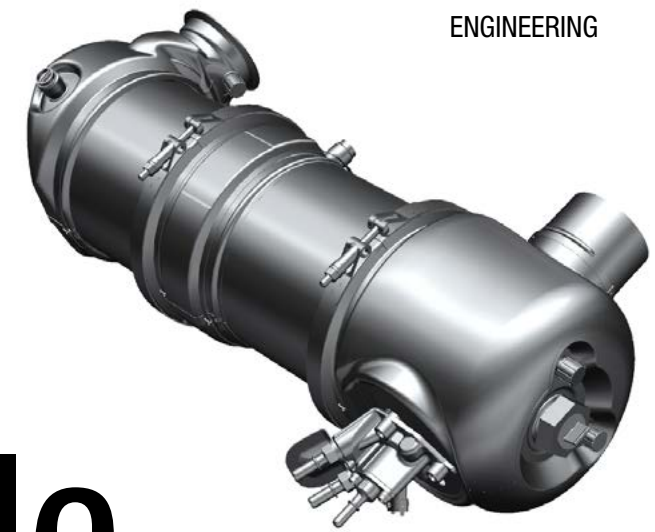
"For us as an engine manufacturer, alternative fuels are a key component in our innovative drive system mix," explains Dr Markus Schwaderlapp, Head of Research and Development at DEUTZ AG. "We believe that e-fuels offer a lot of potential for running combustion engines on a carbon-neutral basis. We are therefore looking to combine the benefits of combustion engines – robustness, mobility and flexibility – with those offered by electric drives."

This fuel approval formed part of technical circular 'Fuels 0199-99-01218/4'.

Technical circular:



# SCR technology: compact and flexible



*The urea dosing module (integrated into the DPF outlet) injects urea into the exhaust gas. The new design supports larger doses of urea. The integrated mixer makes the component particularly compact.*

**Selective catalytic reduction (SCR) lowers the amount of nitric oxides in the exhaust gas of an engine to the legally prescribed level by means of urea injection during the exhaust gas aftertreatment stage. In 2019, DEUTZ will launch a new, more compact mixer design that will be significantly easier to integrate into machines. It also makes the use of SCR more flexible in terms of the amount of urea required, which facilitates a lower exhaust gas recirculation rate.**

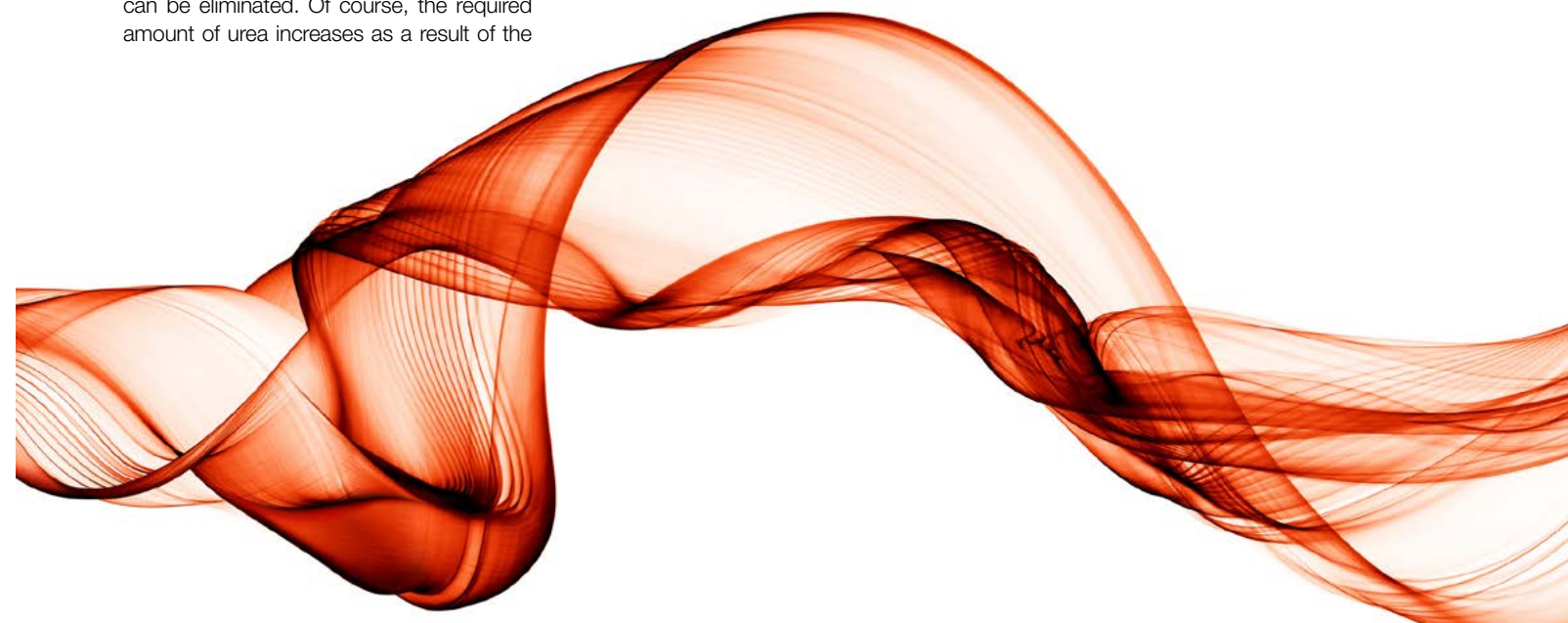
Urea injection reduces the nitric oxide output of the engine by converting the toxic substance into harmless nitrogen and water vapour. The more urea is injected into the exhaust flow through the catalyst system, the more nitric oxides can be eliminated. Of course, the required amount of urea increases as a result of the

tightening emission laws. A higher injection rate can also lower the exhaust gas recirculation rate. This technology circulates part of the engine exhaust gas back to the combustion process to reduce the amount of nitric oxides. It is a popular method but increases system complexity. This makes it especially beneficial to use larger amounts of urea instead.

In 2019, DEUTZ will launch a new mixer design for its EU Stage-V engines. This more compact system has two special features. Firstly, the mixer is directly integrated into the outlet of the diesel particulate filter: a separate mixing system is no longer required. This makes it easier for the customers to install the new system in their equipment. The new design can also inject larger quantities of urea. To make this possible, DEUTZ optimised the geometry of the component so that the drops of urea are distributed evenly across the exhaust flow even when large quantities are being injected. This system

also prevents circulation inside the enclosure and direct contact with the inner walls of the catalyst.

An intelligent software supports the dosing process. The SCR catalyst can store urea, meaning that it is not necessary to input the precise amount of urea along with the exhaust mass flow at all times. Nitric oxide emission peaks can be counteracted partially by the urea stored in the catalyst. When a normal exhaust mass flow is restored, the storage is refilled by way of a slightly higher input rate. By virtue of its in-depth knowledge of the emission behaviour of engines in various applications, DEUTZ is able to achieve an even rate of urea injection. This optimisation of the dosage strategy also reduces urea consumption. The system is considerably more flexible when it comes to managing tightening emission thresholds and reducing the exhaust gas recirculation rate. This, in turn, gives the company greater freedom in designing its engines.





# Välkommen till Sverige

DEUTZ at the low-temperature test in Kiruna

Wherever DEUTZ engines are in use, customers have good reason to be confident. DEUTZ is reliable. Its engines do solid, reliable work all over the world, regardless of the field or latitude. DEUTZ engines even achieve excellence in extreme climate conditions. This is not a matter of course but owed to intense tests, which the company carries out meticulously. Some of them take part in its in-house cold chamber, some in the field.

In addition to validating its engines in the cold chamber, the DEUTZ Field Testing department regularly works with Combustion and Exhaust Gas Aftertreatment to test the engines in the north of Sweden. In Kiruna, a town located approximately 150 km north of the Arctic Circle, frequently sees temperatures drop below -30 °C in the winter. These are perfect conditions for DEUTZ to test the temperature resistance of its engines. The winter test especially focus on the cold-start ability of the engines and the function of the exhaust gas aftertreatment system in extremely low temperatures.

In this year's winter test, TCD 2.9 engines with a DOC/DPF exhaust gas aftertreat-

ment system were tested in temperatures as low as -25 °C. The tested engines comply with the EU Stage V emission standard, which will come into force in the EU in 2019. They were tested in a Wacker Neuson excavator and a Kramer wheel loader. Before the test, the devices were converted to run on TCD 2.9 Stage V prototype engines and equipped with extensive measurement technology: specially prepared and conditioned EAT systems with additional temperature and pressure sensors, an online-based soot measurement system and a mobile exhaust gas measurement system. Fitting these instruments in the limited available space without compromising the functioning of the machines was a particular challenge. Ad-

ditional pressure and temperature sensors were installed in the vehicle hydraulics, cabin heating and engine cooling system. In addition to measurements carried out while stationary (cold starts, particle filter regeneration, cabin heating), the winter test focused on operating the machines under low-load conditions. This process primarily validated the function of the two operating states, "heat mode" 1 and 2. These states make it possible to keep the exhaust gas aftertreatment system at a steady temperature even in extreme cold and ensure that the particles burn down continuously under low-load conditions. Small wheel loaders are often used for simple tasks such as snow removal in winter. The test processes therefore focussed on driving cycles with a low level of utilised

capacity, such as handling pallets with a pallet fork that is attached to the wheel loader. The results show that the "heat mode" allows the EAT system to burn down particles continuously even in low ambient temperatures. Stand-still regeneration is not required in most cases.

Besides low-load cycles, the tests also examined the effectiveness of the stand-still regeneration process. Nearly 100% of soot particles were burned at exhaust gas temperatures of up to 600 °C. The insights gained during the low-temperature tests constitute the basis of further optimisations. They will be incorporated into the developmental process over the course of the next months. Further low-temperature tests are planned for winter 2018/2019.



## EXPERIENCES

The ice hotel in Kiruna

ICEHOTEL 365 is a 2100 square meter ice art hall, which includes ice and snowsuits, bar, ice gallery/event hall – open 365 days of the year and run on solar power from the midnight sun. It combines state-of-the-art architecture and sustainable energy with the ice art that draws winter visitors from over 80 countries every year. ICEHOTEL 365 accommodates 9 Deluxe Suites, 11 Art Suites, an ice gallery and Icebar; all hand carved by select artists from around the globe. The indoor temperature is set on a constant minus five degrees Celsius and the refrigerating plant that makes sure the hotel stays cool during the summer is powered by energy from solar panels. 200 km north above the Arctic Circle, the sun is shining for the equivalent of 100 consecutive days during the summer months. The solar panels harvest this almost constant daylight, which gives an energy surplus that is used for powering other buildings.



# Aiming high with DEUTZ Power

Liebherr relies on the trusted quality of DEUTZ engines for its new generation of telehandlers. Their work is quite a challenge: not only do the machines need to manoeuvre loads at extraordinary heights, the telescopic handlers themselves must also move safely and steadily.

Moving tonnes of load at heights of 6–10 metres requires both skill and strength. Liebherr telescopic handlers master this task impressively. Over the course of 2018, the company will be launching eight new telescopic handlers in 26 different versions. This new generation of telehandlers, which went into production in Telfs (Tyrol) in January, is powered by the trusted DEUTZ diesel engines. Liebherr uses two types of engine: one with a cubic capacity of 3.6 litres and 74 or 100 kW, one with a cubic capacity of 4.1 litres and 115 kW. All units comply with the Stage IV / Tier 4 final emission standard thanks to their diesel oxidation catalyst (DOC) and selective catalytic reduction (SCR). The engines with a cubic capacity of 4.1 litres additionally feature diesel particulate filters, while this feature is optionally available for the 3.6-litre units. At a later stage, Liebherr will also be offering telescopic handlers that comply with emission stage IIIa. These machines will be sold in countries with differing emissions regulations, where the available grade of diesel can affect the operation of the engines.

## Maximum speed of 40 km/h

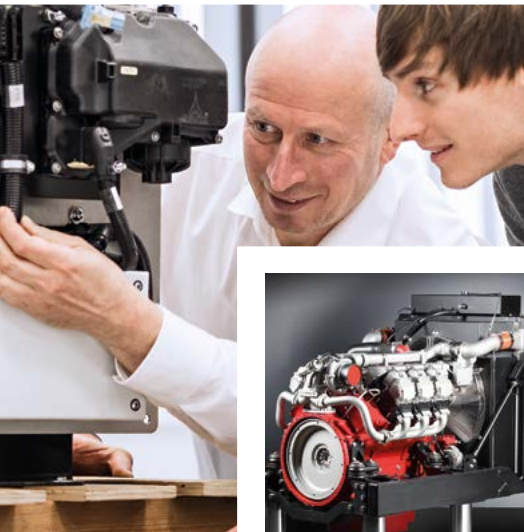
DEUTZ is a reliable partner in this project: you can count on the strong heart from Cologne. After all, there is more to the task than “just” lifting several tonnes of weight to dizzying heights. The telescopic handlers themselves need to stay in motion,

too. The powerful, infinitely variable, highly efficient hydrostatic drive unit of the new telescopic handlers can achieve a maximal speed of 40 km/h. Hydrostatic drives combine a hydraulic pump with one or multiple hydraulic engines. The pump converts the mechanical power of the drive unit into hydraulic power. This energy is then transferred to the drive axles by a differential gear drive. Machines with a hydrostatic transmission unit are easy to manoeuvre and operate. They can generate the power required for heavy-load applications without losses. Depending on the engine output available, the infinitely variable and force-fitting hydrostatic drive unit develops a maximal traction of 70 kN. The complete overhaul of the working hydraulics has also improved the capacity of the machines. As an alternative to the trusted working hydraulics of the value models, Liebherr is equipping its new models with high-flow working hydraulics. A powerful load-sensing working hydraulics pump with an oil flow of 160 l/min and a control block with a load-independent flow distribution facilitate overlapping motions and, in turn, dynamic and fast working cycles.

The new generation of telehandlers is impressively designed, too: their development primarily took customer-specific needs into account. The developers prioritised optimal visual conditions and convenient operation. It paid off: Liebherr received two design awards for its new T46-7 even before the official market launch.



# DEUTZ expands its Engine Plus programme



The Engine Plus programme encompasses a diversified range of engine-related products and services. With the introduction of DEUTZ pre-filled engines and DEUTZ fluids, the company is adding two services for OEM customers to its Engine Plus programme.

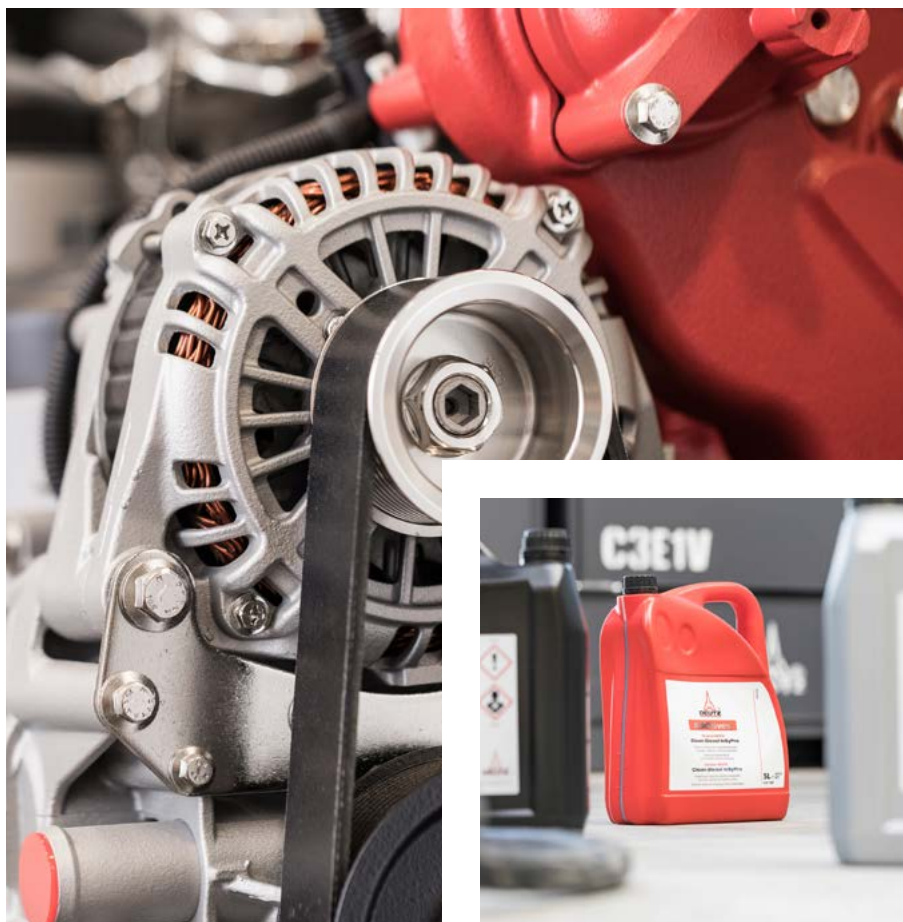
## DEUTZ Pre-Filled Engines

In future, DEUTZ will be offering its OEM customer engines that come pre-filled with high-quality motor oil. "Our pre-filled engines are completely ready to install. They allow our customers to optimise their batch production and avoid large investments in filling and tank plants," Ralf Brümmer, Product Manager for Service Fluids at DEUTZ Service, explained. "This effectively reduces the complexity, cycle times, area and cost of their production process." The new engines also have a positive impact on processes and quality: their precisely defined, constantly controlled filling volumes ex factory prevent errors, such as employees filling the engines with the wrong product or the wrong product quantity. Filling the engines with oil at production further adds an extra layer of preservation to the units, which is a great advantage for stock engines in particular. Preparations for the new products are well underway: DEUTZ pre-filled engines are expected to be ready by the summer of 2018. They

will be available for the G/D/TD/TCD 2.2, G/D/TD/TCD 2.9 and TD/TCD 3.6 series.

## DEUTZ Fluids

OEM customers will soon have access to a wide range of service fluids offered by DEUTZ. The long list of available substances includes engine oil, hydraulic oil, gear oil, coolant and AdBlue®. DEUTZ also delivers the required service fluids directly to the production facilities of its OEM customers. They can be ordered in a compact standard barrel, a 1,000-litre IBC or in any individually required quantity, delivered in a tanker. Equipment manufacturers can benefit from the high purchasing volume of service fluids at DEUTZ by reducing their own acquisition costs. DEUTZ' expertise in the field of service fluids ensures that its customers always receive substances that are perfectly suited for their particular engines. Interested customers can request additional information and a non-binding quote from their designated DEUTZ contact or e-mail fluids-sales@deutz.com directly.



# Xchange Fast Lane

## Remanufactured engines take off

Professionally remanufactured Xchange units are an economical and, more importantly, fast alternative to purchasing a new engine when a replacement is needed. For many years, DEUTZ has been offering replacement engines from its factories in Ulm and Pendergrass (USA). But the DEUTZ Service network knows from experience: one a machine has been set up, there is always a great sense of urgency. This is why DEUTZ is launching its Fast Lane programme for especially pressing cases. Xchange engines for the 1011F, 2011, 2012, 2013 series and the agricultural units from the TCD 4.1, 6.1 and 7.8 series can be made available twice

as fast now. Depending on the specific series, they can be ready in just three or four days. This considerably reduces the

downtime of the customer's machine, which easily amortises the small fee incurred by the express process. For less urgent cases, DEUTZ offers the reverse option – its "Slow Lane", which is more economical but takes a longer time. This system effectively levels the overall cost of replacements and prioritises urgent cases. Nothing changes for the end customers: they continue to work with their local DEUTZ Service partner.



Your direct link to our service.



# The right equipment in any situation

The DEUTZ Service network now offers flexibly configurable kits containing all components required for their specific engine type. Due to the wide range of DEUTZ engines in the field, the individual kits vary wildly. The DEUTZ Service partners can easily put together the right kit for any situation, from a simple filter replacement to targeted repairs of

individual components or a complete engine overhaul. This comes with a great advantage for customers: they can flexibly add individual components to their kit and buy exactly what they need – no more, no less. Depending on the age and condition of their engine, they can repair the unit in whichever way is most economical. Especially owners of old engines have the option of using affordable,

remanufactured Xchange components. Purchasing discounts allow the DEUTZ Service partners to sell the kits at attractive package prices, while the global DEUTZ logistics network ensures that the required parts are available extremely quickly and exactly where they are needed. In the end, the customers enjoy the greatest benefit: they get to repair their engines fast, safely and economically.



Under the watchful eye of the Chinese Minister of Science and Technology, Wan Gang, the China Internal Combustion Engine Industry Association (CICEIA) extended an invitation to the “International Symposium for Technical Transformation and Improvements to Standard Vehicle Drives” held in Beijing on January 15. Michael Wellenzohn, member of the board of DEUTZ AG accepted this invitation.

Wan Gang



# China opts for environmentally friendly engines



The event was representative of the highest decision-making levels in this important growth market, especially since it was also attended by Wan Gang, the Chinese minister for science and technology. The conference also saw participation by forty senior figures, professionals and academics from respected companies, trade associations, research institutes, universities and from the relevant ministries in Germany, Austria and other European countries, as well as Canada and Japan. The aim of the symposium was to further promote international collaboration and to speed up the changeover to and the improvement of efficient and low-emission drive technologies.

In his speech, Michael Wellenzohn first thanked the other symposium participants for allowing him to present DEUTZ's strategy for further developing its drive systems and explained that “it was DEUTZ that had played a definitive role in motorising the world after Nicolaus August Otto, the company's founder, had invented the four-stroke engine. Although the diesel



**Green developments, an ecological culture and achieving both balance and compatibility between people and the natural environment were general trends in business. Reducing emissions and lowering consumption will be the factors which determine the future development of combustion engines. Integrating electric drives is the direction of travel for future drive technologies.**

*Wan Gang, Chinese minister for science and technology.*

engine will continue to be in demand in the heavy-duty sector, thanks to its great energy density and unique range of possible applications, the internal combustion engine stands today at a decisive turning point. There is a steady rise in the requirement for efficient, clean and environmentally friendly drive systems. As the first engine manufacturer to be awarded EU Stage V certification, DEUTZ has already responded to this trend and is now taking the decisive next step. When it comes to innovative drive technologies, we intend to make use of every available option: from alternative fuels from renewable energy sources that will make carbon-neutral mobility a possibility, to hybrid and all-electric drives that reduce carbon emissions and cut running costs. Following its acquisition of Torqeedo, the specialists in electric drive systems, DEUTZ now has extensive know-how in this area that will be translated into standard products as early as two to three years from now. From 2019, we will also be introducing LPG-powered gas engines as well as working on bi-fuel and hydrogen solutions. It's our belief that all these approaches will, sooner or later, be

of relevance to every market; we are, consequently, positioning ourselves early on as suppliers of innovative drive systems.”

In conversation with the symposium attendees, Minister Wan Gang explained “that green developments, an ecological culture and achieving both balance and compatibility between people and the natural environment were general trends in business. Because of the increasing popular demand for good environmental conditions, great attention is being paid by all sectors of society to energy saving and emission reduction. Reducing emissions and lowering consumption will be the factors which determine the future development of combustion engines. Integrating electric drives is the direction of travel for future drive technologies. Great attention should also be paid to the progress made in fuel cell technology and its industrial application – the electrification of drive systems is an unstoppable tide.” DEUTZ's electrification strategy is perfectly in step with this trend, helping to shape developments within the off-highway segment. Together with its further developments in drive systems for alternative fuels, includ-

ing hydrogen, DEUTZ is ideally positioned to meet the needs of tomorrow – whether from China or the rest of the world.



**Our approaches are of relevance to every market. When it comes to innovative drive technologies, we intend to make use of every available option: from alternative fuels from renewable energy sources that will make carbon-neutral mobility a possibility, to hybrid and all-electric drives that reduce carbon emissions and cut running costs.**

*Michael Wellenzohn*



## DEUTZ consolidates its Russian business

The Russian DEUTZ subsidiary DEUTZ Vostok has moved its administration and training centre from central Moscow to the district of Bibirvo.

+ DEUTZ Vostok will also include its own service centre in future.

+ In addition to the classrooms in the training centre, 350 square metres are available for this service centre.

+ DEUTZ Vostok consolidates its activities under one roof to boost customer satisfaction and the scope of its service portfolio.



Visit us in Russia!

## INCREASED PRESENCE IN CHINA



DEUTZ established their presence in China in the 1970s, bringing sales and service support to the local market through close partnership with dealers. In 2010, DEUTZ established a fully-owned sales and service subsidiary in Beijing to place the company closer to its customers and partners and to continuously improve customer service and satisfaction. The presence in China was further reinforced with the establishment of a parts logistic, service and training center at the Beijing Economic-Technological Development Area (BDA).

### Customer satisfaction comes first

Covering an area of 1,200 m<sup>2</sup>, DEUTZ logistic & service center stocks 4,000 various line items and engines. Across China, DEUTZ Beijing has appointed 25 distributors to ensure efficient and competent customer support which ensures ready-supply of spare parts as well as competent on-site engineers. To provide the best service to its clients, DEUTZ ensures that its employees and dealers receive leading-edge training. Over the years, the company has invested in training facilities and programmes covering DEUTZ engine series, EMR and exhaust after-treatment systems. This also ensures that the customers in China receive the same world-class standard of support, as would be provided to the customers in Europe or the US.

**1,200 m<sup>2</sup>**  
is the size of the new  
logistics and service centre





# Quality is the key to success

Bernd Flashar manages the DEUTZ Quality department. In his interview with DEUTZWorld, he told us about the quality assurance measures he has implemented and why his work even took him to Japan.

**DEUTZWorld:** Mr Flashar, you know what they say: "Quality is when the customer returns, not the product." What is DEUTZ doing to provide its customers with the best possible products?

**Flashar:** Customer satisfaction is crucial. Only customers who are happy with DEUTZ will use our trusted products again for their future projects. We can only achieve it by offering reliable products of a consistently high quality, and we work hard and we constantly work hard on it.. This past January, I carried out a strategy workshop together with the department managers in the field of quality management and some employees. We determined the most important factors in quality assurance and, on that basis, developed a quality mission and strategy. Now, our objective is to implement them diligently.

**DEUTZWorld:** What does this strategy look like?

**Flashar:** We increasingly focus on advancing our zero-defect strategy. Most importantly, the quality strategy must cover all departments of DEUTZ AG. Most of our employees have already been trained in this respect, and now, it is time to listen to their feedback and derive measures. We will also implement a Six-Sigma strategy. At the moment, we are training twelve black belts from various departments. The third pillar of our Q-strategy is a focus on processes. We will be monitoring compliance with the described processes more intensely in future. We have purchased a new software to help us improve our process description.

**DEUTZWorld:** What internal processes are in place to ensure the quality of DEUTZ products from start to finish?

**Flashar:** We have introduced a wide range of methods that are intended to ensure high product quality. For the past years, we have been improving our product development process continuously. We are currently running a Six-Sigma project to make the quality requirements an even more central component of our organisation. This will help us ensure that newly developed engines actually do what we and our customers expect: work flawlessly and reliably. Of course, our serial production process includes many security measures that allow us to detect and counteract defects at an early stage: supplier audits, supplier development, inspection of incoming goods, quality gates during production, etc. Our customers can see that we have already installed a wide range of mechanisms to make sure that only the best ends up in their machines.

**DEUTZWorld:** DEUTZ is getting active in the field of electrification as part of its E-DEUTZ strategy. What are the quality implications of this move? Will it increase requirements?

**Flashar:** I do not think that our quality requirements are increasing as a result of E-DEUTZ, but they are changing. Quality is a living thing. Our tasks grow as requirements change. This will probably be similar to the challenges we faced when the sophisticated emissions technology was launched. We have to familiarise ourselves with new production processes. Of course, the installation of the new components is completely different from that of our usual, mechanical components. At present, we are already producing boat drives for Torqeedo in Ulm, which is giving us valuable experience in this area.

**DEUTZWorld:** Which concrete quality assurance measures has DEUTZ implemented?

**Flashar:** In addition to the measures I have already mentioned, we are implementing our zero-defects strategy. Most of our engine components are purchased parts, so we are also focusing on supplier development by means of audits and the 8D system. At our shaft production facilities in Cologne-Porz, we have launched an SPC module to improve the quality of our components even further. I have already

mentioned the quality gates. We have also created an additional quality position for logistics. And the most significant development, as I mentioned earlier, will be the sweeping changes in our DEUTZ quality organisation.

**DEUTZWorld:** Tell us about a day in the life of a quality manager.

**Flashar:** Of course, I take part in many meetings to support the decision-making process. Speaking with employees is important to me, as this helps us keep our quality strategy up to date and adjust it whenever necessary. Visiting our customers is another important part of my work. We determine potential for improvement together. I just came back from Japan, where I presented our new quality strategy and orientation to our local clients and strengthened their trust in us.

**DEUTZWorld:** What does "high quality" mean to you personally?

**Flashar:** This brings us full circle: if our customers, not our products, come back, we have done everything right! We need to fulfil all requirements our customers have. To achieve this, we need to fully understand what they need – not just in terms of engines but also in terms of soft factors, such as document quality, availability of contacts, friendliness, commitment and so on. All of these aspects ultimately define quality.



We have introduced a wide range of methods that are intended to ensure high product quality.

Bernd Flashar



DEUTZ has taken its next decisive step by launching its E-DEUTZ strategy and combining its low-emission engines with electric drives.

This past April, DEUTZ presented its first off-highway hybrid concept at the INTERMAT trade fair in Paris.

Our E-DEUTZ programme focuses on our systems expertise and the potential of the new technologies.

In future, you will be able to configure your integrated hybrid and electrical system solutions using the modular DEUTZ toolbox.

**Get electrified!**



# 



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