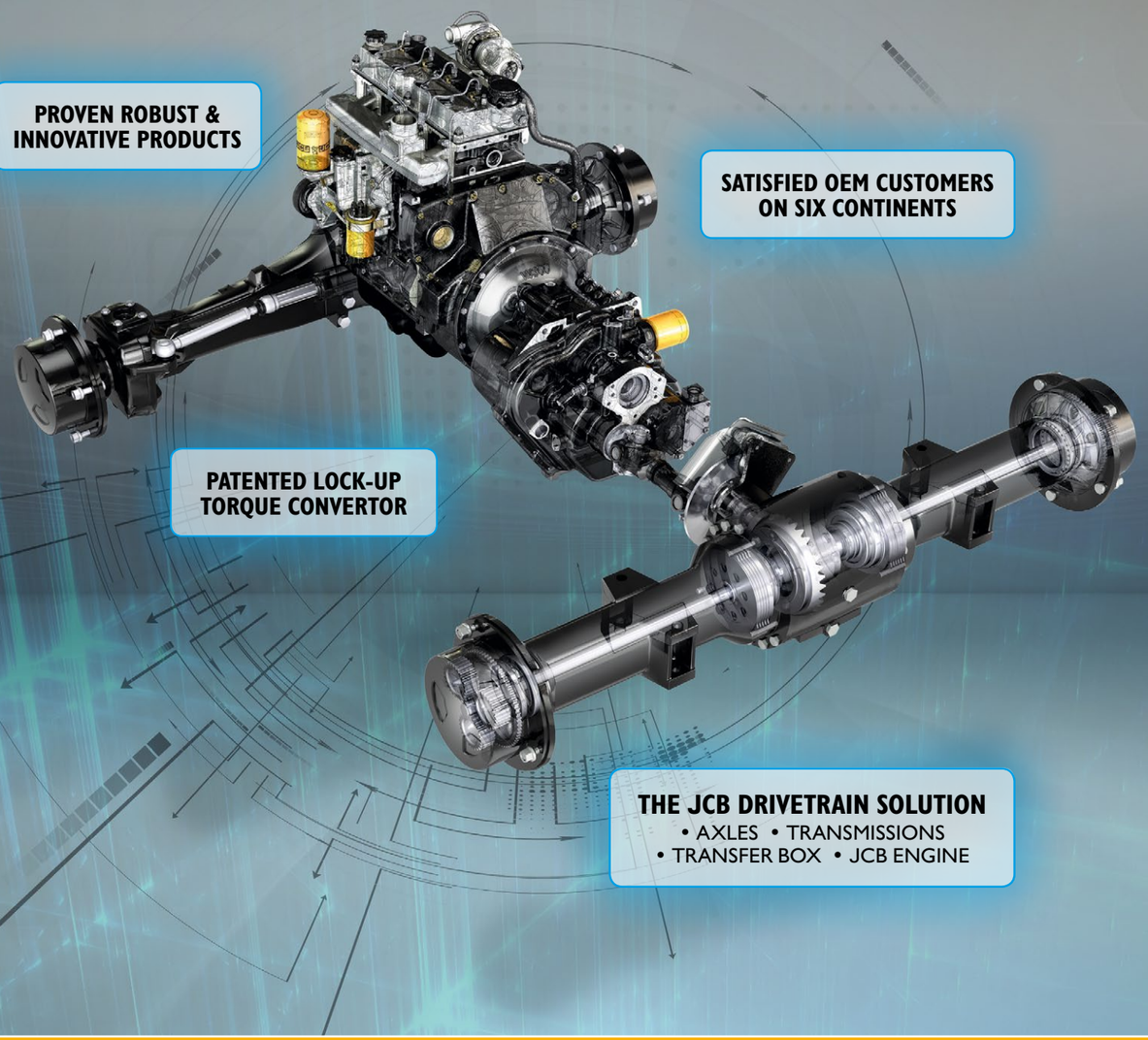
NEXT

JCB POWERTRAIN



JCB POWER SYSTEMS

Your OEM Drivetrain Solutions Provider.



JCB Drivetrain Systems can help you configure any part of the drivetrain including axles or sub-assemblies. Whether you have a current machine or are planning new, we can provide the entire drivetrain solution. Let JCB work for you!

Visit our website www.jcbdrivetrainsystems.com

JCB DRIVETRAIN SYSTEMS

WELCOME TO JCB POWERTRAIN EDITION 4



THE WORLD OF OFF-HIGHWAY DRIVELINE COMPONENTS CONTINUES TO TURN AT A RAPID PACE.

2016 witnessed the 10 year anniversary of breaking the world land speed record with the Dieselmax. It`s been just over 12 years since the original four cylinder engine launch. Following in quick succession has been Tier 3, Tier 4, 6 cylinder and now the very latest in fuel efficient engine design; the new 3.0L platform. With EU Stage V regulations just around the corner, it`s fair to say we`re not a business that rests on its laurels!

Some markets around the world remain fragile but demand for innovative and efficient Powertrain solutions continues to increase. We work hard at developing mutually beneficial relationships with our customers. And with a growing range of products and opportunities arising in developing and mature markets, strong growth in sales continues in 2017.

We hope you continue to enjoy receiving JCB Powertrain. If you have an interesting JCB engine application and would like to feature in the publication, please do not hesitate get in touch.

Rob Payne
OEM Engine Sales & Applications Manager

JCB DRIVETRAIN SYSTEMS

JCB POWER SYSTEMS

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TWO QUEENS AWARDS SEALS SUCCESSFUL YEAR

The team at JCB Power Systems was delighted to be presented with two Queen's Awards during the second half of 2016: the first for innovation and the second for international trade.

Awarded to businesses for outstanding achievement in International Trade, Innovation and Sustainable Development, the awards were accepted on behalf of the team by JCB Group Director of Engines, Alan Tolley, who has overseen the engine development programme from day one.

"This is a milestone for JCB Power Systems because these awards are the first ever to be won by this business. These Queen's Awards are testament to the quality and innovation that goes into manufacturing the JCB engine and are an enormous tribute to every employee involved in their design and manufacture. It's also remarkable to reflect that they were awarded on the same day as the 10th anniversary of JCB Dieselmax car's success. A land speed world record set that still remains unbroken."

The innovation award is for the development of the Ecomax engine family. Incorporating a combustion system utilising the latest technology and sophisticated computer control to meet global emissions legislation, the innovative features enabled reductions in fuel consumption by up to 10% and eliminated the need for after-treatment at EU Stage IIIB/EA Tier 4i.

The international trade award reflects the success of the engine globally. Overseas third party sales grew by more than 325% between 2012 and 2014 and accounted for almost a quarter of engines produced in 2015. JCB engines are working in a wide range of different machines and in environments varying from harsh desert to extreme arctic conditions.







23.08.2016

DIESELMAX RECORD STILL STANDS AFTER 10 YEARS

A record set a decade ago was commemorated recently by Sir Anthony Bamford, Chairman of JCB, along with the team that made it possible. The world diesel land speed record of 350.092 mph was set by the JCB Dieselmax on the Bonneville Salt Flats in the USA in 2006 and remains unbroken. Sir Anthony told his guests;

"I came up with the idea of attempting a land speed record when we decided to get into diesel engines. It was a very serious project and I wanted to make sure that our engine wasn't regarded as being just a digger engine. I wanted to prove that in fact it was state-of-the art."

Today the Dieselmax engine is still part of the formidable line up of JCB engines and has been joined by its Ecomax and Tier 4 compatriots. Dr Tim Leverton was JCB Dieselmax Project Director and agreed that the record bid was a perfect showcase for the company's engineering talent;

"When we embarked on the JCB Dieselmax project, of course it was an exciting opportunity to break a land speed record. More importantly, it gave us a chance to prove the quality and performance of our JCB engine, to demonstrate the amazing engineering talent within the company and to show our commitment to innovation. Our outstanding achievement at Bonneville is one that we hope will continue to inspire for many years to come."

STRONG PRESENCE IN NORTH AMERICA

JCB is committed to providing world-class support in North America for all its customers. In addition to our comprehensive dealer and distribution networks we also have factory teams ensuring that support is delivered right where it's needed.

Our service and technical product support teams are located within our Savannah headquarters. In the field the network is further enhanced by locally based regional and district support managers.

The first line of support is the local dealer network. JCB Power Systems has a dedicated and growing network of specialist engine distributors with years of combined experience located throughout the USA and Canada.

ENGINE POWER SOURCE

Engine Power Source is one of the largest distributors of industrial engines in the United States and began to represent JCB Power Systems in 2015. The distribution and warehousing of engines is just a small portion of the company's full offering. From its base in Rock Hill, Carolina the team works with customers to provide full power solutions including:

- Applications engineering support
- Integrated product development and production support
- EPS remanufactured engines and parts
- EPS overhaul kits
- EPS-engineered components for Original Equipment Manufacturers (OEMs)
- Fuel injection systems
- Auxiliary generators
- Comprehensive long-term product support

The company is responsible for a large area including North Carolina, South Carolina, Tennessee, Virginia and Maryland.



ENGINE POWER INC

Engine Power is our regional distributor for Wisconsin, Illinois, Michigan and the northwest counties in Indiana. Engine Power began distributing engines for use within off-road products in 1981 and has developed a strong customer base that includes Original Equipment Manufacturers, Independent Service Dealers, Self-Servicing Fleets and Government Entities. With a 55,000 square foot headquarters in Oconomowoc, Wisconsin, the Engine Power premises includes warehouse, training rooms, engine test lab, fully fitted workshops, parts counter and offices.



MG BRYAN EQUIPMENT LTD

Established in 1986 by Michael Bryan, Texas based M. G. Bryan Equipment Company was originally established to distribute Kubota engines and Berkeley pumps to OEM`s. As growth continued and customers sought an increased range, the company has expanded its engine offering with the JCB engine line and now covers from 3hp to 700hp.

The company's OEM engine sales territories include Texas, Oklahoma, Arkansas & Mississippi. Recent developments include operations being centralised into a 60,000 square foot facility located in the middle of the DFW Metroplex. Comprising of sales, marketing, applications, tech service and parts.

Tommy Bass Chief operating Officer;

"We became a JCB Power Systems Distributor in 2012. The forward thinking approach to engine design really excited us. We have had success with adapting the JCB engine into various applications, particularly in oil and gas markets as well as the pumping sector."



WESTQUIP

Based in Alberta our Canadian distributor, Westquip Diesel Sales, was established in 1981 as a diesel engine distributor and custom packaging facility. The company specialises in supplying high quality diesel powered equipment and engines into oil and gas, mining, forestry, construction and agricultural industries.

Westquip maintain an extensive inventory of engines, generators, lighting towers, spares and accessories as well as manufacturing custom packaged equipment for a broad range of industries.

The company was appointed as an official distributor of JCB Power Systems in 2012 for Alberta, Saskatchewan and Manitoba and has since successfully incorporated a number of JCB engines into water pumps, hydraulic power unit and specialised mobile tracked equipment applications.



Sales Manager Mark Dumont;

"The JCB products fit our market place well. A lot of our equipment up here operates a long way from base in often challenging environments. We need to be confident that our kit is robust and will provide high levels of utilisation. The engines feature great torque performance particularly at low revs. They have built a great reputation for reliability and the approach to emissions compliance has, in our opinion, been common sense."

ANDERSON INDUSTRIAL ENGINES

The Midwest OEMs are serviced by Anderson Industrial Engines Co (AIE) who was appointed as a JCB Power Systems distributor in 2016 for Nebraska, Iowa, Kansas and Missouri. Established 1974 in Omaha, Nebraska the company has become well known as experts in industrial engines and generator units. The business represents quality products and prides itself on its customer service. The sales and service team has over 100 years of combined experience providing professional knowledge and support for the product line. Sectors serviced by AIE include construction, agricultural and turf equipment and irrigation.

Zach Turner, President of Anderson Industrial Engines;

"We wanted to represent JCB Power Systems because of the unique Tier 4 options they have developed. They provide high quality, reliable products that are particularly well suited to our OEM market."



ANDERSON
INDUSTRIAL ENGINES

MASTRY ENGINE CENTER

Florida based Mastry Engine Centre was founded over 50 years ago to provide sales, engineering, service and parts support for engines and powertrains. The JCB Power Systems range was added in 2011. The company had previously developed considerable engine business in the pumping sector and were looking for a line of engines in the 74hp – 174hp category to complement their existing portfolio. Representing JCB Power Systems has enabled Mastry to offer customers a complete horsepower range from 6 to 173hp.

Arley Bedillion is Industrial Sales Manager and was quickly impressed by the JCB engine solution;

"During our search for another engine line, Tier 4 technology solutions were at the forefront of our consideration for our existing OEM customers. The JCB 74hp engine was able to comply with the regulations without the need for exhaust aftermarket and this definitely caught our eye. The JCB engine is built for heavy duty industrial applications. Day to day dealings with JCB have been a great experience for Mastry. They listen to what customers need and are always asking for our input to make things even better."

Mastry prides itself on supporting it`s OEM's with value added engine solutions and service via their network of dealers across the south eastern United States and Caribbean.



Local customer, Thompson Pump, now specifies the JCB engines in a number of its dry priming pumps and power units. Fifteen of the company's Service Managers from across the USA recently attended a comprehensive JCB training course on the JCB Ecomax Tier 4 engine which is installed in a growing number of their pump sets.

XYLEM'S GODWIN DRI-PRIME PUMPS POWERED BY JCB

As a leading global water technology company focused on 'solving water', Xylem has an extensive portfolio of cutting-edge technologies to move, treat, analyze, monitor and return water to the environment in public utility, industrial, residential, commercial building services and agricultural settings.

With a legacy of more than 100 years, Xylem's Godwin brand provides an innovative approach to pump manufacturing, rental, sales, and service. The brand maintains a global fleet of over 20,000 portable rental pumps and 3,200 pieces of related equipment for dewatering use in construction, mining and quarrying, drinking water supply, wastewater bypasses, municipal, industrial and environmental markets. Customers can choose from different engine sizes and either diesel or electrical drives, ensuring that the most appropriate pump is selected for the specific application need.

JCB Power Systems has been supplying Ecomax engines for a number of Xylem's renowned Godwin diesel-powered pump models since 2014, including both Tier 4 interim and Tier 4 final options. With sustainable, high-efficiency technology at the forefront of Xylem's agenda and JCB's commitment to delivering efficient engines, business between the two companies was a natural fit.

Mike Ramos, Xylem's Director of Engineering for the Godwin pump brand, was instrumental in specifying the JCB engines; ***"There are clear synergies between our brands which is what makes this such a powerful partnership. Through our Godwin brand, Xylem is committed to providing the best pumps in the industry while helping our customers understand new engine standard requirements. JCB is perfectly positioned to complement this vision.***

JCB and Xylem have a shared history of supplying similar sectors including construction, industry, mines and quarrying, wastewater, oil and gas and marine. Because JCB manufactures its own machines for these industries, predominantly using JCB engines, we knew that JCB's off-highway diesel engine range was thoroughly proven in the field. We also admired the company's approach to innovation in developing an engine with a compact footprint while bringing a simplified solution to meeting each new stage of emissions legislation. This has minimized the engineering work required on our own products to ensure they are emissions ready. We now have hundreds of pumps in the field, equipped with JCB engines, with a proven track record of durability, reliability and fuel-efficiency."

In 2015, JCB Power Systems also had the opportunity to supply the engine for the new range of Godwin NC Dri-Prime pumps featuring Xylem's Flygt N-technology. These pumps have highly efficient self-cleaning hydraulics to minimize potential clogging.

"Coupled with JCB's latest fuel-efficient diesel engines these pumps are ideal for any job site, no matter how remote and without the need for a generator.

Working with JCB, we focus on harnessing our creativity and expertise to develop innovative, efficient and sustainable solutions to complex water challenges."



TOP OF THE POPS



In 1979 Jarraff Industries of the USA was approached by a number of utility customers and their contractors to build a machine capable of reaching into the highest trees to prune branches and prevent them from encroaching into power lines. A high production mechanical tree trimmer with telescopic boom and saw attachment was subsequently designed and developed to meet the exacting brief.

Whilst the tree trimmer is manufactured in St Peter, Minnesota a significant proportion of the products are exported to Europe, New Zealand and Australia. For machine supply into the European market, Wisconsin-based Jarraff Industries initially required a Tier 4 interim / Stage IIIB solution. Jake Schmotter, Engineering Manager at Jarraff Industries;

"We carried out primary market research in Europe to see what the ideal machine specification needed to be and began discussions with potential clients. The JCB brand came up time and again; it`s clear that their dealer network is strong and widespread. Further technical research proved to us that the JCB engine had some distinct advantages over other manufacturers particularly in their approach to emissions control systems."

During the development process the JCB factory team and Engine Power Inc.'s own applications engineers from Wisconsin worked hand in hand with Jarraff to ensure all the installation parameters and engineering specifications were sorted ahead of time.

"When it came to product validation we were able to breeze through. JCB and Engine Power Inc. were incredibly supportive throughout the process. We prototyped two machine platforms - a tracked and wheeled version, with the 125hp, EU Stage IIIB/EPA Tier 4i engine.

As far as the assembly process is concerned, the lack of after-treatment means it`s a similar installation to our Tier 3 products. The package we receive comes with pre-installed JCB air induction system and electronics, making installation easier and a clean fit into our existing manufacturing process.

Fuel efficiency of the latest generation products was also a pleasant surprise. The flat power curve and high torque characteristics are an improvement over some of our previous engines as is the transient response under high loads. From a routine maintenance perspective its`s straightforward, allthe service points are located on the cold side of the engine and are conveniently packaged.

I would highly recommend the JCB engine."

TEAM FOCUS
APPLICATIONS ENGINEERING

When you choose an engine from JCB you are not just purchasing the hardware. You are investing in a complete Powertrain solution. An integral part of which is the team responsible for working with OEMs through every stage of the process from concept development to production.

At the very core of our modus operandi is the expertise from our highly regarded Applications Engineering Team. No matter what the application, every new engine integration into a machine is unique and requires the right level of technical guidance and support. The JCB Power Systems Applications team provides the kind of personal service that is usually associated with small businesses, but with all the benefits of a big brand.

Principle Applications Engineer Dan Taylor;

"The earlier we can start with our customers in the installation phase the better. It gives more opportunities to get the best from the engine and deliver a finished piece of equipment that utilises those benefits in ways which customers notice. Increasingly as emissions regulations and technologies have changed so rapidly project timelines get shorter. However that's the way of the world and you have to recognise it, plan for it and make things easier with your products.

It starts out with the sharing of lightweight CAD models for the engine in order to get through the initial "how does it fit" stage. We are continually trying to develop our products with a common footprint in order to provide customers with the ultimate flexibility of switching between different emissions certified engines depending on territory of sale. There`s a lot of thought goes into this, it`s something that we as an equipment manufacturer also make great use of. The next stages are guidance through the installation details and technical testing parameters that various engines need to adhere to in order to ensure correct performance once in a machine. This is a crucial point as the equipment by this stage usually has some pretty rigid parameters of its own that changing could be difficult. It doesn`t end there though. Our philosophy of end to end technical support means customers are supported throughout the cycle. Installations sometimes evolve over time and there`s always the next regulation or new product line to be working on."

As engine technologies have developed the role of the Applications team has also grown. Expertise across multiple disciplines such as electronics, after-treatment, specific testing schedules, duty cycles, certification and market regulatory requirements are not necessarily new but consolidation and sharing of this key knowledge and experience has never been so important.

"Between them the Applications Engineering team has over 75 years of combined experience in almost any application you dare think of. Expectations are high and we deliver solutions not just products, therefore efficiency is critical - that's what we do."



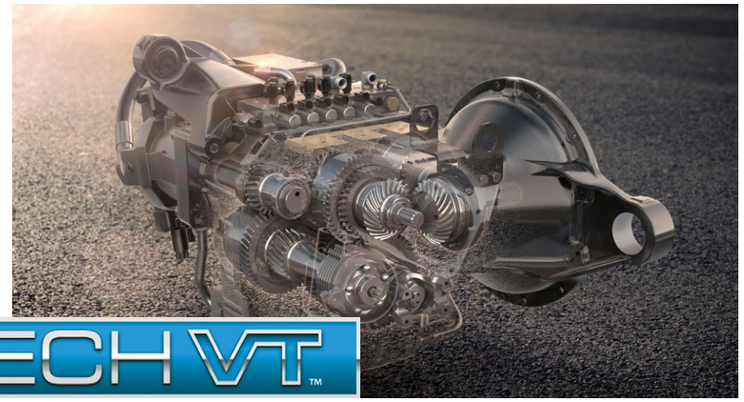
JCB DRIVETRAIN SYSTEMS NEWS
UNIQUE TRANSMISSION RECOGNISED WITH AWARD

Our sister company, JCB Drivetrain Systems, has received a SIMA Silver Medal for Innovation for its new Dualtech VT transmission. The revolutionary transmission is an industry-first that combines the benefits of hydrostatic with powershift for fuel-efficient roading, towing and precise control. Another revolutionary feature is the Direct Drive facility provided through the Powershift transmission.

This new technology has already been incorporated into JCB's own equipment with huge success and is being evaluated and considered for OEM's who would like to provide the best of both worlds for handling, high speed roading and towing duties. Independent tests carried out this year indicated faster loading of a 12 tonne spreader by 26-30% against hydrostatic only competitive models with an impressive 13-16% advantage in a 1km towing task.

Key features of the new DualTech VT transmission include:

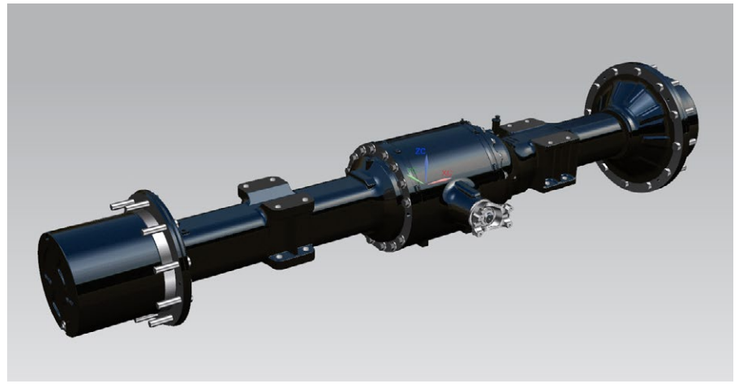
- Full hydrostatic drive providing fine stepless speed control up to 19km/hr from standstill
- Automatic switching to electronically-modulated three-speed powershift above 19km/hr for optimum power efficiency in higher speed work, road travel and towing
- Power and Economy modes to optimise performance, efficiency and minimise running costs
- A Direct Drive feature though the Powershift Transmission at speed
- Flexi mode to provide independent engine speed and ground speed control
- Selectable full-time four-wheel drive or Auto two-wheel drive at more than 19km/hr for optimum driveline efficiency and reduced tyre wear



DUALTECH VT™

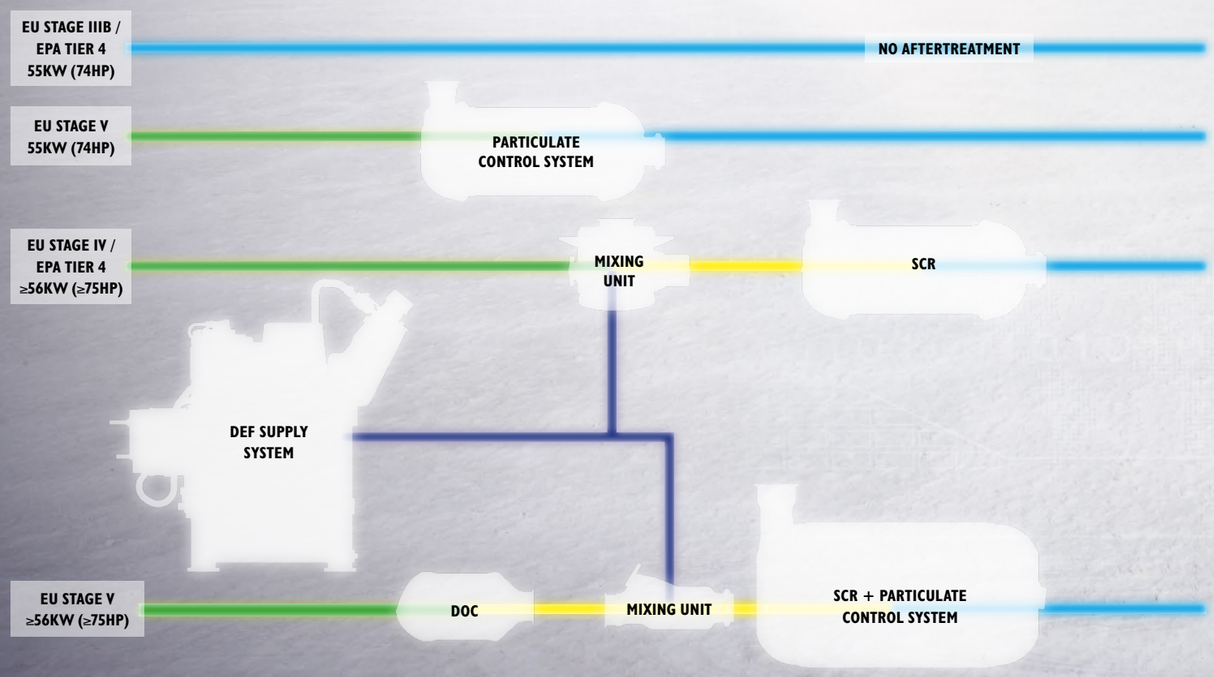
MODULAR AXLE CONCEPT PREVIEW

At Conexpo 2017, JCB DSL is showcasing the new 87 series axle family for the first time. The range can be made available for both rigid and steerdrive applications. JCB DSL's modular concepts are designed for extensive variation, providing a choice of hubs with 435, 335 and 275 PCD and allowing for a choice of mounting options, track widths and differential types to facilitate ultimate design flexibility. The modular approach enables OEM's to have the exact solution they require. Not only solving machine installation needs but also providing elements of product differentiation.



JCB EMISSIONS CONTROL SOLUTIONS

- **Award-winning:** no after-treatment needed across EPA Tier 4 55kW (74hp) and the complete EU Stage IIIB/EPA Tier 4i range
- **Keeping it simple:** compact SCR on EU Stage IV/EPA Tier 4 units over 56kW
- **Innovative:** compact SCR and Particulate Control Technology features on Stage V units are invisible to the end user
- **The long run:** 'fit-for-life' after-treatment minimises cost and servicing
- **Efficient operation:** ultra low fuel consumption and advanced in-cylinder emission control systems
- **Customers first:** we put OEMs and end users at the centre of our product development to deliver real world benefits
- **Versatile design:** identical engine footprint and many common components across different emission levels
- **Tried and tested:** core engine architecture based on world-beating DIESELMAX design
- **Fully supported:** over 2,000 dealer outlets and 16 parts warehouses worldwide put the customer at the heart of JCB support, wherever they are



STAGE V

EU Stage V is the next step in European non-road emissions legislation. And, true to form, the new JCB engine range is an innovative solution to the challenge.

We've built on our award-winning Ecomax low-particulate combustion technology, focusing on minimising in-cylinder emissions. The range incorporates a compact, highly efficient SCR system combined with Particulate Control Technology. This offers a compact unit (negating the need for bulky alterations to machine bodywork and chassis) with none of the downsides traditionally associated with diesel particulate filters (DPFs).

We plan our ranges meticulously from the outset and we understand the unique requirements of both OEMs and end users.

This means we've been able to maintain the engine footprint and key proven design architecture of our range, all the way from 3.0L to 7.2L, and from EU Stage II (Tier 2) to EU Stage V. So you can be assured of quality, reliability, low ownership costs and maximum up-time - all without compromise.

LEGISLATION AND DATES

NRE NRG engine category

Year	2016		2017		2018		2019		2020		2021		2022	
Year quarter	1Q, 2Q	3Q, 4Q	1Q, 2Q	3Q, 4Q	1Q, 2Q	3Q, 4Q	1Q, 2Q	3Q, 4Q	1Q, 2Q	3Q, 4Q	1Q, 2Q	3Q, 4Q	1Q, 2Q	3Q, 4Q
Engine Power 0 - <56kW	97/68/EC compliant engines can be manufactured						Stage V Mandatory for all Newly manufactured Engines							
	Sell off period for 97/68/EC compliant engines from unsold stock. "Transitional Engine" label required													
130 - <560kW & >560kW	97/68/EC transitional engines can be installed in machinery manufactured ≤18 months after Stage V & sold								Stage V engines only					
	Machinery with 97/68/EC transitional engines Sell off period													
Transitional engine	97/98/EC transitional engine label required						New type of transitional engine label & statement of conformity required for 97/68/EC engines							
Replacement engine	97/98/EC replacement engine label required						New type of replacement engine label & statement of conformity required for 97/68/EC engines							

Year	2016		2017		2018		2019		2020		2021		2022	
Year quarter	1Q, 2Q	3Q, 4Q	1Q, 2Q	3Q, 4Q	1Q, 2Q	3Q, 4Q	1Q, 2Q	3Q, 4Q	1Q, 2Q	3Q, 4Q	1Q, 2Q	3Q, 4Q	1Q, 2Q	3Q, 4Q
Engine Power 56 - <130kW	97/68/EC compliant engines can be manufactured								Stage V Mandatory for all Newly manufactured Engines					
	Sell off period for 97/68/EC compliant engines from unsold stock. "Transitional Engine" label required													
	97/68/EC transitional engines can be installed in machinery manufactured ≤18 months after Stage V & sold										Stage V engines only			
	Machinery with 97/68/EC transitional engines Sell off period													
Transitional engine	97/98/EC transitional engine label								New type of transitional engine label & statement of conformity required for 97/68/EC engines					
Replacement engine	97/98/EC replacement engine label								New type of replacement engine label & statement of conformity for 97/68/EC engines					

WHO DOES THE LEGISLATION AFFECT?

Stage V is the evolution of emission standards for engines used within new non-road vehicles and equipment with Europe only.

Significantly the new legislation now also takes into account diesel engines below 37kW (28hp) and above 560kW (418hp), as well as the inclusion of non-stationary constant speed applications, such as generators.

Stationery machinery that is permanently fixed in place and not moved from its first place of installation is exempt.

TRANSITIONAL ENGINES

Other key differences to previous off highway emissions regulation include changes to flexibility allowance schemes. In Europe OEM`s were previously able to "pre-buy" engines that complied with the outgoing emissions level and use them over a period of time. In addition a fixed small volume allowance or percentage volume of annual production could be further applied.

At Stage V this now takes the form of "Transitional Engines"

All engines produced prior to EU Stage V legislation must be placed on the market before implementation dates.

Transitional engines must be placed on the market before the end of the transitional period. Each transition engine will be specially labelled by the engine manufacturer.

- Only engines manufactured before the Stage V mandatory dates can become transition engines
- Machinery intended for 97/68 engines must be manufactured within 18 months of implementation dates and these machines must be placed on the market within 24 months after implementation dates
- Machinery with transition engines must be placed on the market before 2021 or 2022 depending on engine power category
- Low volume manufacturers (<100 total units per year) have an additional 12 months for the 'manufactured after' and 'placed on market' dates

NEW THREE LITRE JCB ENGINE
OFFERS HUGE FUEL EFFICIENCY SAVINGS

Production is set to get underway of a brand-new fuel-efficient JCB engine following the culmination of a £31 million investment programme.

JCB announced in 2011 that it was launching a new engine development project with the help of £4.5 million from the Government's Regional Growth Fund.

We can now unveil the results of that investment – a brand new 3.0 litre engine. It is the third engine line to be launched by JCB since production first started in 2004 at JCB Power Systems in Derbyshire and joins the 4.4, 4.8 and 7.2 litre models.

The brand new 3.0 litre JCB430 Dieselmax engine builds on the success of the JCB Power Systems business and takes the productivity and environmental performance of our engines to a completely new level, particularly on fuel efficiency.

One of the most impressive features of the new three litre JCB Dieselmax engine is its fuel consumption – using up to 8% less fuel than the already very fuel efficient 4.4 litre JCB engine.

The totally new 3.0 litre fuel-efficient JCB430 Dieselmax engine is also 30% lighter than JCB's popular 4.4 litre Ecomax engine and has been designed specifically for mid-range construction and industrial equipment operating cycles.

Other key features include:

- High torque, heavy duty design, for maximum durability
- Launched at Stage IIIB/Tier 4 Final emissions standard
- Automatic valve adjustors require no regular maintenance
- No DOC, DPF or SCR (no requirement for DEF)
- Heavy duty PTO

Driving force

JCB's third engine line, alongside the four cylinder 4.4/4.8 litre Ecomax and the six-cylinder 7.2 litre Dieselmax, is a four-cylinder design with a displacement of 3.0 litres. Designed for maximum durability, the heavy-duty engine features a cast iron bedplate structure and a rear mounted geartrain, for long service life and low operating noise.

Launched initially with 55kW (74hp), at Stage IIIB/Tier 4 Final, the 3.0 litre engine produces an impressive 400Nm of torque from just 1300rpm. The engine meets the relevant emissions legislation without any requirement for Diesel Particulate Filter (DPF), Selective Catalytic Reduction (SCR) or any form of exhaust additive or aftertreatment. This makes it an ideal powerplant for a wide range of mid-weight construction and industrial equipment.

The engine has been designed to be ready for Stage V emissions standards and it will be available with additional power ratings in the future. The 430 Dieselmax uses automatic valve adjustors for the first time. This means that there is no requirement for any form of regular valve train adjustment, reducing downtime for customers and boosting productivity. The 3.0 litre unit also features integrated glow plugs, for faster cold starting.

The engine's Mass Air Flow meter system, which allows the ECU to balance and deliver the correct fuel mass to the engine regardless of temperature, altitude and air density, has been integrated into the engine itself, minimising the amount of air inlet system development and engine set-up work required for different machine configurations. Mounting interfaces are shared with those of the larger and 4.8 litre engines, making installation in existing equipment easier. The engine also retains the HD PTO capabilities of it the larger JCB engines

The new engine has 45° gradeability as standard - a 10 degree increase - which allows it to be used in a wide range of machinery and off-highway equipment. It can be equipped with an engine or chassis mounted ECU, to suit a wide variety of applications. With no requirement for special oils, no DPF and no DEF, this latest addition to the Dieselmax engine family offers a robust, high torque, compact engine solution.

STAGE V READY



INNOVADO ENGINES

Schuitemaker Machines was established in 1919 in Rijssen, Netherlands. The Dutch company has been producing and selling agricultural machinery for fodder production, animal feeding and manure spreading for over 95 years. Increases in scale and automation within modern dairy farming led Schuitemaker to develop its 'Innovado' self-propelled, automatic feed system.

The only machine of its kind on the market the Innovado travels to the silage clamp, cuts the feed, automatically cleans, mixes, transports and delivers to point of use - completely autonomously.

The unique vehicle has been presented with a gold medal from the German Agricultural Society during one of the world`s leading exhibitions of animal production and management.

In 2014 when the company was looking for an emissions compliant engine solution to meet the next level of legislation, they approached JCB Power Systems Benelux Distributor Brinkmann & Niemeijer.

The prime mover for the machine is the JCB Ecomax 55KW, no DPF engine. In combination with the electric-hydraulic system, the motor powers all components on board.

Product Manager, Seine van der Velde, worked on the integration of the JCB unit into the machine;

"We opted for JCB because the technical specifications fit particularly well with the power demands of the Innovado. JCB is also a business with a good reputation and excellent service support here in the Netherlands. The brand fits well with our own dealer network which was also a key consideration in engine choice.

The unit runs a lot of hours each day, every day of the year and with peak torque delivered at low RPM and continuous 55kW power available to as low as 1300 RPM, we have been able to reduce noise levels considerably for both livestock and the local environment."



BRINKMANN & NIEMEIJER MOTOREN B.V.

Originally founded in 1828 as a supplier to the agricultural market, Brinkmann gained a strong reputation in the industry. However since as early as 1910 the company also began to represent engine brands for a variety of market segments.

The introduction of legislation over the last decade and demand for more modern and efficient diesel engines resulted in collaboration between the two companies. In 2011 B&N was officially appointed as the OEM engine Distributor for the Benelux countries. It has since sold, installed and supported hundreds of JCB engines in the market across a broad range of applications.

Brinkmann & Niemeijer Commercial Director, Frits Lubberts;

"The JCB Dieselmax and Ecomax ranges have proven to be high quality and incredibly robust products. Working with JCB Power Systems has given us a big boost. Our knowledge in combination with the excellent support from JCB enables us to work hand in hand with innovative equipment manufacturers like Schuitemaker."

BRINKMANN & NIEMEIJER MOTOREN BV

FROST FREE RAIL TRACKS ALL WINTER



The perennial challenge of keeping the UK's rail network up and running during the coldest weather is part of the job for Network Rail. The organisation understands the importance of getting train travellers to their destinations safely and on-time even in sub-zero temperatures. In 2014 Network Rail engaged HGI Generators of Wirksworth, Derbyshire to develop a solution to overcome the issue of icy tracks. The specialist generator manufacturer has significant rail industry expertise and responded to the brief with an innovative answer; a towable unit that could blow hot air to melt the ice whilst deploying a scraper across the top of the tracks to scrape away any residue.

To power the unit the company selected a JCB G-Drive and worked closely with the team at PowerTorque, one of JCB's UK engine distributors based in Coventry.

Dan Clay is Marketing Manager for HGI and was pleased that the British designed and built engine was more than up to the job.

"Our business has been built with similar credentials to JCB in that we pride ourselves on our innovation, quality of manufacture and excellence in aftersales. JCB engines are exceptionally well-proven in their iconic earthmoving machines and JCB is a trusted global brand name. Their G Drive products met our brief perfectly and comply with all current emissions legislation for the rail sector. We have worked with Power Torque on other generator projects and they have displayed excellent knowledge of the sectors we operate in. Both their service and after-sales is spot-on, which is critical for us in this industry."

Four of the Snow Trains, as they are commonly called, are now in operation throughout the UK powered by JCB 4.4 litre engines. The bespoke design generators are placed on top of railway bogies and can be quickly coupled to a locomotive and put into immediate action – usually overnight – to ensure early trains can depart on time and to schedule even in inclement weather conditions.



RAILCAR POWERED BY JCB

HGI Generators specified JCB again for another innovative rail project this time for Severn Lamb; a UK based manufacturer of light urban, resort and leisure transportation systems that are exported around the world. An ultra-light rail car, the ULR Express, is powered by a bespoke HGI generator fitted with a JCB G Drive. The initial project, destined for operation in Turkey, has subsequently won the 2016 Global Light Rail Award for 'Outstanding Engineering Achievement'.

Drawing from both the aerospace and automotive industries, the ULR Express is 40% lighter and up to 50% cheaper than a comparable 120-passenger vehicle and incorporates intelligent hybrid traction technology in a package that is almost infinitely configurable. The award judges recognised the flexibility of its modular design and its potential for everything from rural branch lines to city circulators. HGI, Powertorque and JCB worked together to finalise the integration of the power unit and were proud to have been involved in such a forward-thinking project.



RAPISCAN A POWERFUL DETECTION TOOL

As the world's leading security screening provider, Rapiscan Systems provides state of the art products, solutions and services that meet every level of threat detection. Operating in a myriad of sectors, including aviation, defence, border protection, ports and event security, the company produces screening systems for baggage, parcels, cargo and vehicles, people and radiation, to name a few.

One of the company's major defence contracts in recent years led to the development of a specialist trailer for border security. The unit is used to scan vehicle contents before entering sensitive areas. The powerful scanning equipment is powered by a HGI generator fitted with a JCB engine. A total of fifty continue to provide power for this critical application.



TRIO OF USES FOR MARINISED JCB ENGINE

Mermaid Marine is one of the UK's leading marine diesel engine marinisers and distributors. Based on the south coast the company customises engines for marine applications and continues to choose JCB. Mermaid supplies engines for both new and existing vessels; three of which were completed at the end of 2016.

OTHNIEL OYSTERS CHOOSES TWIN JCB ENGINES

Twin Mermaid JCB engines have again been chosen to power a new workboat – this time for Poole based Othniel Oysters.

The 15m x 6m barge MV Triploid has a draught of 0.6m and was built as a second boat for the company. It is Othniel Oysters' first harvesting barge to be powered by in-board diesel engines where previously petrol outboards had been used.

Gary Wordsworth from who heads up the company commented.

"Over the last 30 years we've built various boats in different locations around the world. The sales guys at Mermaid Marine are very experienced and incredibly helpful. We have worked closely with them to specify the engines. For us diesel is much easier to get hold of than petrol. It's a complete departure from our usual design but we're very pleased. The efficient engine and vessel design saves us having to go to the petrol station every day to fill up our cans.

JCB engines have a good reputation and there's an increasing amount around in local fishing boats. Due to the nature of our work many of them now how very high hours. But when fisherman replace them with the same model it`s always a good sign.

We're running hydraulics off both engines; a crane from one and winch and carvers off the other. The engines are quiet and don't consume much fuel"



JCB FITS THE SELSEY BILL

Having dealt with Mermaid Marine for many years, Chris and Richard Harvey were keen to continue the relationship when the time came to repower their 9m fishing boat Predator.

The two brothers had the Gemini catamaran built ten years ago and initially installed two six cylinder Mermaid Manta IIs that were de-rated to comply with licencing conditions.

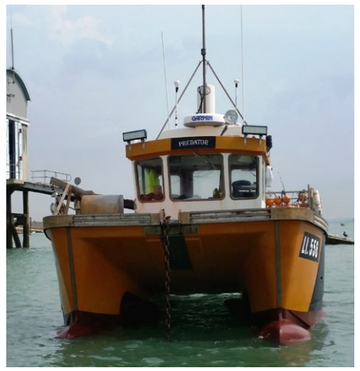
After 16,000 hours, the Harvey's decided it was time to repower and have now had twin four cylinder JCB Dieselmax engines installed;

"The Mantas were very reliable but we've had them for ten years and small things were starting to go wrong. We rely on them every day so decided to go with the Dieselmax. We haven't looked back since. We love the JCB's; they've been excellent."

Before buying the engines the brothers did their own word-of-mouth research; asking other fishermen about their experiences with JCB engines.

"We'd seen the JCB around and asked a few questions. Mermaid Marine was a big help. We've dealt with them for the last ten years and really value their opinion. The JCB engines fit our power requirements and have exceptionally good fuel economy. They are durable and simple to maintain."

Chris and Richard fish out of Selsey Bill and mainly pot for lobster, crab and whelks.





COUGAR DISPLACEMENT CATAMARAN DEBRA MARIA IS POWERED BY JCB

Twin Mermaid JCB engines have been chosen to power new vessel for fisherman Robert Mole.

Debra Maria is a 10m Cougar displacement catamaran built by Ramsgate- based Audacious Marine and fitted out for netting and oystering out of West Mersea.

The vessel has a slightly larger propeller and stern gear than usual for towing. In addition, the stern section and deck are strengthened to provide protection from the oyster dredges as they are hauled and emptied. The fibreglass craft has a top speed of 10 – 11 knots meaning the four cylinder Mermaid JCB engines have plenty in reserve and for normal working can be operated in the most efficient zone.

The engines are fitted with a sea water cooling system featuring a high capacity heat exchanger and gear driven raw water pump.



LET JCB WORK FOR YOU



The JCB EcoMAX Industrial Power Unit: OEM-ready, engineered package solution. The JCB Industrial and agricultural power units give customers the opportunity to take advantage of what is already a world beating engine and add a complete JCB engineered installation package. **Let JCB work for you!**

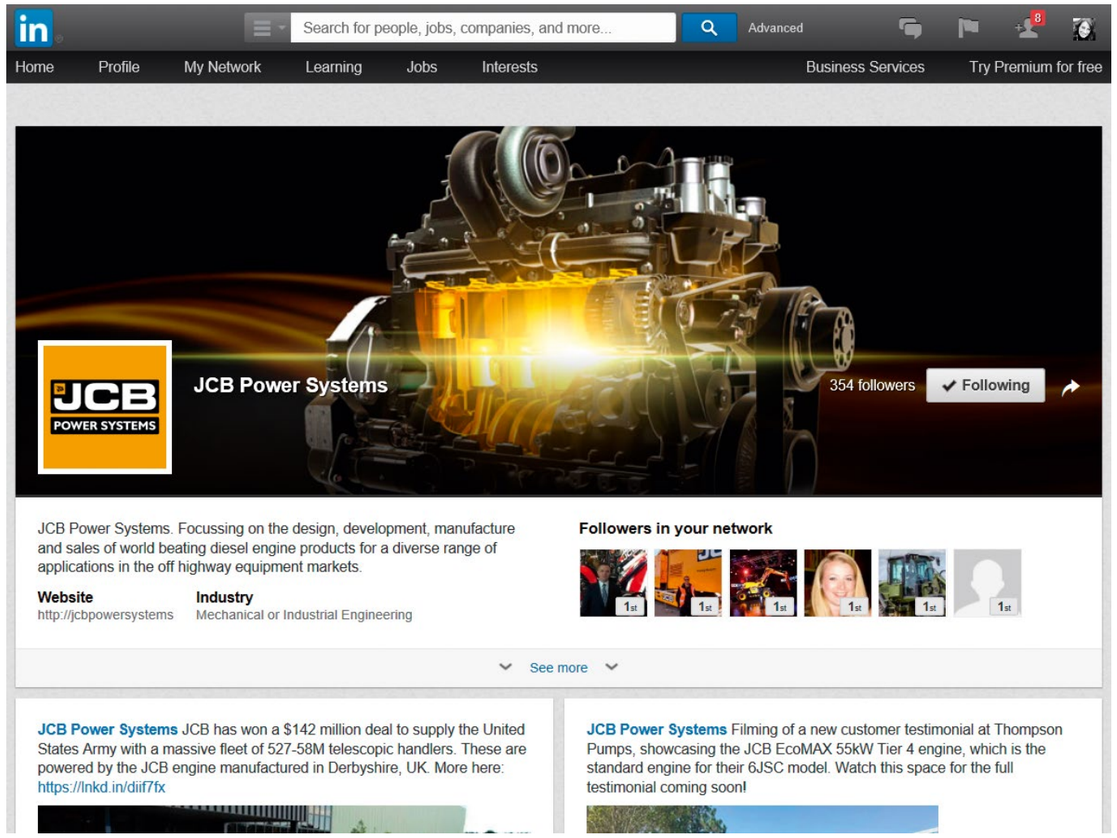
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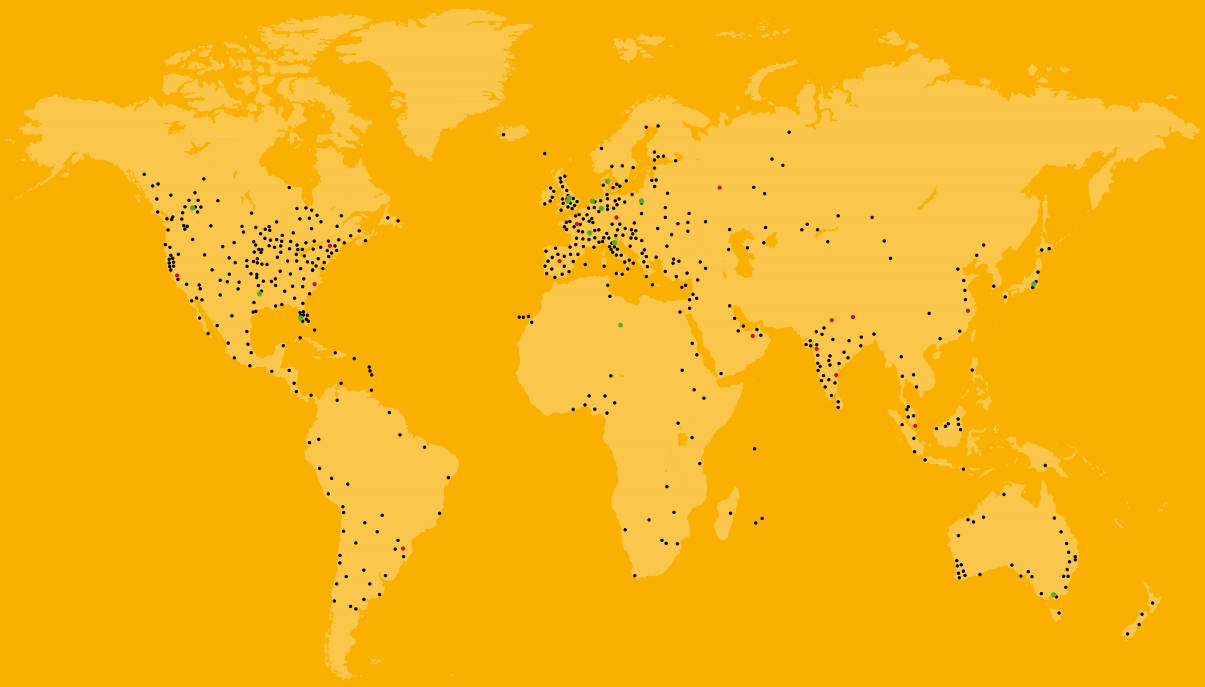
TWITTER POWER

If you are the proud owner of a JCB engine, why not send us a picture via Twitter. One of our key customers, the Environment Agency recently tweeted a host of images during a demonstration of its 20" ultra-high volume pump which is powered by JCB engines



Our customers' are at the very heart of our business – we aim to provide world-class support and deliver 100% customer satisfaction 24/7 365 days a year. For us it's about bringing global industry expertise at a local level and giving our customers the assurance that wherever they are in the world, we are there and ready to support their needs.

- State-of-the-art JCB World Parts Centre shipping 30,000+ lines per week
- 16 regional parts warehouses providing 24/7 global support 365 days a year
- Integrated service and maintenance asset care packages to maximise uptime and engine performance
- JCB LiveLink telematics that enables complete machine management and security
- Unique customer experience hub that utilises JCB LiveLink to monitor our customers' machines
- 750 dealers, spanning 120 countries across five continents with over 2,000 dealer depots, 95% parts availability with over 240,000 managed parts
- Experienced and fully trained JCB technicians throughout our dealer network
- Fully equipped service vans that provide on-site support wherever, whenever



JCB POWER SYSTEMS

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