



**Your Innovative Partner for
Drivetrain Solutions**

www.AutocraftDS.com

The Company



Autocraft Drivetrain Solutions Limited is Europe's largest independent engine remanufacturer and assembler, supplying OE manufacturers such as Ford, Jaguar Land Rover, Volvo, Aston Martin and JCB. It is part of the Autocraft Solutions Group which also specialises in EV battery assembly and remanufacture, machined components, and future propulsion solutions to a global market.

Since the company was formed in the 1970s (formerly South Lincs Engineering, Autocraft Industries and ATC Drivetrain), Autocraft has grown to be a leading provider of engine related manufacturing and engineering services, including the assembly and modification of new engines for special and niche engine applications.

With a capacity of 24,000 engines each year, 75% of our engines are exported outside of the UK to the global market.

Autocraft is a pioneer of PTWA/RSW Plasma Spray technology, and cylinder head and block machining. Over £6m has been invested in the facility ensuring we have the latest technology and processes to further enhance our class-leading market offering.

Autocraft has been privately owned by the senior management team since 2010, and has a strong balance sheet. The company has seen massive growth in the past few years, our workforce has doubled to over 200 people and our turnover has trebled in the past 10 years.

We are committed to developing new technologies for engine reclamation and environmental sustainability, and we continue to re-invest our profits into finding new ways to further improve quality, material recovery and customer service.

What We Do



- » Engine remanufacturing to OEM quality standards
- » New engine assembly, modification & conversion
- » Hybrid Powertrain systems
- » PTWA/RSW "Plasma" cylinder bore spray technology & consultancy
- » Machined & assembled drivetrain components
- » Engine auditing, durability & COP testing, warranty analysis
- » EV Propulsion Systems

Autocraft is a Partner to the leading automotive OEMs



New Engine Assembly



Autocraft has invested in world leading facilities for the assembly of new engines for OEM service requirements, and conversion and modification of niche high-performance engine ranges.

Our new assembly halls replicate OEM processes on a more flexible and more responsive scale.

A moving trolley build process is used to aid variations in model and throughput. 'No fault forward DC tooling' is installed throughout the area and all data is collected using our Industry 4.0 systems to provide full process control and traceability.

Full Supply Chain Management is also offered with Autocraft sourcing, managing stocks and negotiating on your behalf. We manage suppliers worldwide and source from a wide range of vendors, from small specialists in Europe to major Tier 1s situated globally in China, North & South America, India and Japan.

Quality and performance is measured and assured through our rigorous testing and engine auditing processes. We have on-site test capability including:

- » 5 latest technology Hot-Test dynamometer beds
- » 2 high specification durability dyno test cells
- » 5 highly capable Cold-Test facilities
- » Modern and extensive metrology equipment
- » Dedicated tear down and quality auditing facility fully equipped to OEM standards
- » Specialist crank and camshaft measuring equipment
- » Cleanliness analysis

Engine Conversion & Modification



Autocraft has over 40 years experience in modifying engines for niche vehicles and markets. This includes engines for sports cars, commercial vehicles, taxis, power generator sets, military vehicles, off-highway and marine.

We provide this service either directly to the major OEMs, or to the niche vehicle assembler. Our strong strategic partnerships with leading OEMs allow us to source a wide range of engines to suit niche volume applications.

We have extensive experience in providing the complete powertrain package including transmissions, transfer cases and axles so that you have the option of a 'one-stop-shop' for your powertrain supply.

We are investing heavily in new processes and equipment to ensure we remain No. 1 for many years to come.



Engine Remanufacturing



The Reman Process



Autocraft offers a complete engineering and remanufacturing service including feasibility studies, defining the reman specification, ongoing product development, engine validation and warranty.

Autocraft works in partnership with OEMs when they design new engines with end-of-life “**Design for Reman**” in mind. We support the OEM from initial engine design through prototype phases into serial production.

We assist the engine designers by transferring our knowledge of historical engine failures to improve their product quality. The experience we gain during the design and serial production phases allows us to develop remanufacturing solutions for our customers that make our reman engines better than new!

We support our customers for up to 20 years after serial engine production has ended. To date, we have remanufactured over 1,000,000 engines!

Autocraft remanufactures:

- » 3 to 6 cylinder inline, and V6 to V12 engine configurations
- » Gasoline, diesel and hybrid system engines
- » Automotive, off-highway and aviation applications



The core (failed) engine is received and dismantled completely. Components are cleaned, inspected, remachined or replaced (depending on the agreed specification) and quality checked.

Autocraft utilises up to 85% of the core engine, through intelligent reclaim techniques. We are continuously improving our flexible remanufacturing processes which are matched to customers’ volumes.

To ensure optimum quality, some parts are injected into the remanufactured unit as new. All critical fastenings, gaskets, seals, pistons and bearings are always replaced.

At our Grantham site, we have extensive on-site core management and storage, meaning we can provide you with a total solution for your remanufactured engine requirements.



PTWA/RSW Plasma Spray Technology



Engine technology is moving to more compact and lighter engine blocks. This limits the ability to reuse or remanufacture these with traditional techniques such as boring oversized and using a larger piston or fitting a cylinder liner.

PTWA/RSW (Plasma Transferred Wire Arc / Rotating Single Wire) involves machining a small amount of metal off the cylinder bore then replacing it by spraying molten metal in a rotary motion down the bore.

The technology is not limited to remanufacturing of cylinder blocks. It is also being used in the very latest new Euro 6 engines instead of cylinder liners because it has many advantages, such as weight reduction, friction reduction, material cost savings, reduced emissions and oil and fuel economy improvements.

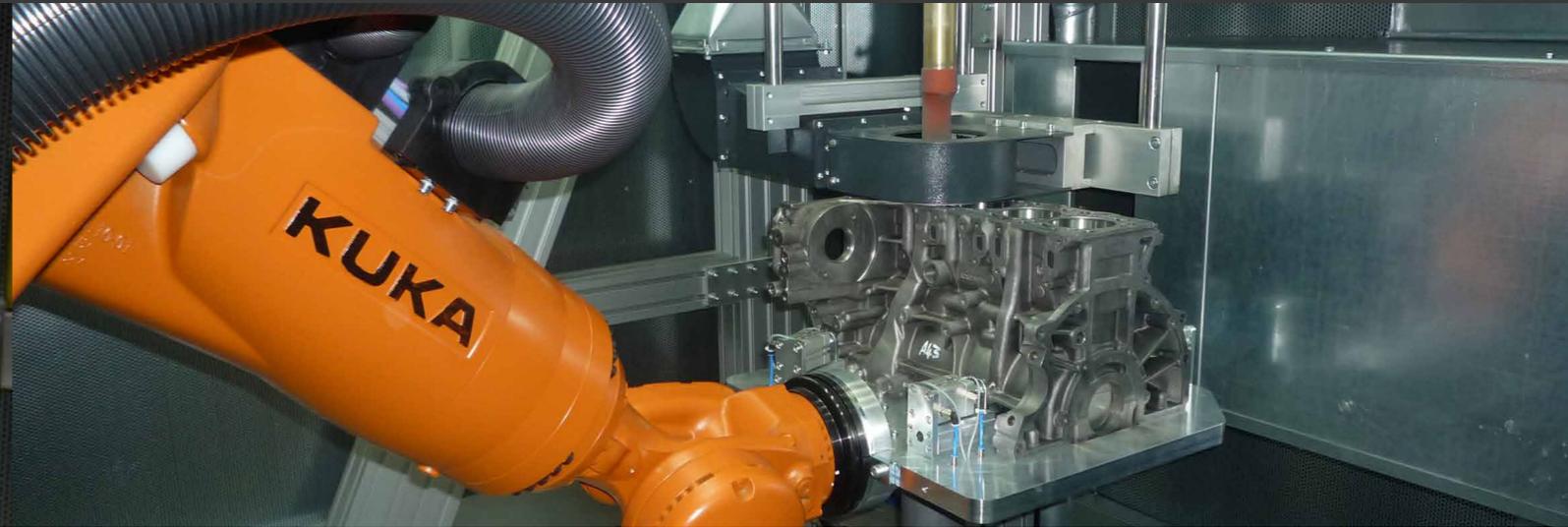
The PTWA/RSW process results in improved efficiency of the engine due to the defined porosity coating

providing additional oil retention volume, especially in the highly loaded areas of top and bottom dead centres. This leads to reduced friction and improved heat transfer from the cylinder wall into the cooling water circuit. The cylinder surface temperature is reduced by up to 30°C, improving combustion and reducing unwanted emissions.

We have invested over £3.85m in PTWA/RSW equipment, development and research to create and optimise our processes. We have capacity to spray over 80,000 cylinder bores per annum. We can also spray and hone cylinder bores or cylinder liners from 65mm to 250mm in diameter.

You can benefit from our knowledge, expertise and technology by making Autocraft your PTWA/RSW partner.

Our Process: Cylinder Bore Coating



Autocraft's development of the Thermal Spray process has taken over 10 years. We have a highly capable and flexible facility to use the PTWA/RSW processes for all our customers in both **new** and **remanufactured** engines.

We have designed our facility to produce prototypes as well as high volume production, with robotic loading for total flexibility and accuracy.

We prepare, spray and hone blocks for foundries and OEMs. Autocraft's unique Twin-Torch system enables us to coat cast iron liners or blocks with a base coat then apply the top coat. We can also spray directly onto aluminium cylinder blocks with up to 150 Amps giving maximum deposition rates for high levels of productivity.

PTWA/RSW is becoming the preferred solution for cylinder bores in new engine production.

Autocraft has pioneered the technology for over 10 years for both new and remanufactured cylinder blocks.



Engine Auditing, COP Testing & Warranty Analysis

Engineering Services



Engine Auditing

Autocraft offers auditing and test services for OEMs. We audit newly assembled engines by fully stripping them, measuring every torque, clearance and critical dimension. This provides our customers with independent quality assurance, proactively identifying and rectifying faults on either a 'batch-and-hold' or a perpetual audit basis.

We collate data on an ongoing basis so that we can track any concerns, trends and validate ongoing quality improvements have been successful. This can include durability hot testing in our new Dynamometer cells.

Durability & COP Testing

Autocraft has recently invested in two new Dynamometer test rigs that enables us to complete durability, high speed and Confirmation of Performance (COP) testing to OEM standards. We use our Dynos

to support our own engine development projects as well as additional outsource capacity for our OEM customers to support their product development and manufacturing activities. We can help you to validate that your engines are meeting your specifications. Our Dynamometer testing capability is supported by our highly experienced team of technicians and engineers who complete extensive teardowns to assist you with ongoing development.

Warranty Analysis

To complete the full circle we also undertake warranty analysis. Our 40 years of remanufacturing failed engines puts us in a unique position to identify engine weaknesses and root causes of failure. We recommend changes and improvements to engine design and manufacturing processes to the OEM, for continuous improvement.

CMM Measurement Service

Autocraft has invested over £500,000 in CMM and measuring equipment to further enhance our class-leading metrology capability. Our Mitutoyo CMMs and roundness testing machines enable us to quickly and accurately measure engine blocks, heads, crankshafts and other engine parts used in our new build, remanufacturing and auditing processes.

We also offer a sub-contract metrology service with specialist measurement support.

Design for Remanufacture

Autocraft works in partnership with the OEM's product development departments to ensure parts are designed for optimal remanufacture. By assisting their engineers at the design stage, component costs can be reduced and remanufacturing quality built into the initial design. Our use of Simultaneous Engineering

techniques and CAD/CAM combined with our technical knowledge and experience enables us to achieve shorter lead-times. Autocraft will often modify designs for customers and even create their drawings and specifications for them.





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