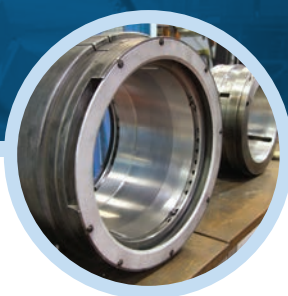
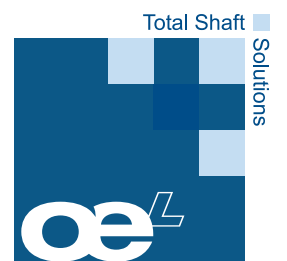


œ group



Experience. Expertise. Excellence



Introduction

Founded in 1984, Osborne Engineering Limited (OEL) is part of the OEL Group, specialising in the repair and manufacture of white metal bearings, seals, deflectors, vertical thrust and guide bearings, rotating equipment components and overhaul of gas turbine fuel systems & compressors. OEL Group can also offer comprehensive industry specific training courses, tailored to meet the individual needs of its customers.

With facilities located in the UK, Poland, UAE and US, OEL operates successfully on a global scale. Working with major Original Equipment Manufacturers, Service companies and end users in the Oil and Gas, Petrochemical and Power Generation industries.

OEL facilities include a specialist design and engineering department, extensive CNC machine shop, dedicated service and repair cell and state of the art training facilities. We also have dedicated localised repair cells, so that our customers know help is never too far away when they need it most.

OEL have obtained and maintained a reputation for assisting clients by meeting urgent demands for services, arising from plant breakdown and other unplanned outages.

With the acquisition of Turbo Power Services (TPS) in 2004, OEL was able to enhance its gas turbine and fuel systems product portfolio and expertise.

Osborne Training Services (OTS) was formed in 2007 to expand the delivery capabilities of OEL's training services, delivering training excellence to the Oil and Gas, Petrochemical and Power Generation Industries.



OEL Group Global Capacity

OEL Bearing Technology support rotating equipment manufacturers and end users, providing complete life cycle management for hydrodynamic bearings. Our in house design expertise coupled with flexible manufacturing approach allows OEL to respond to urgent and routine requirements with equal levels of excellence, ensuring critical rotating equipment is available when needed.

UK Manufacturing and Engineering Services

At the UK site in Cramlington, OEL operate a state of the art CNC manufacturing facility, fully supported by a specialist design and engineering team. OEL engineers are able to analyse and predict hydrostatic bearing performance to ensure that our products always perform at their best during service and to enable us to suggest possible bearing upgrades where necessary to extend bearing life and minimise down time.

OEL are also able to offer a comprehensive reverse engineering service to offer continued support to both OEMs and end users where components may be obsolete or require remanufacture. Using state of the art laser scanning technology OEL engineers are able to digitally capture and manipulate large amounts of data in a short time compared to traditional reverse engineering techniques.

Dedicated European Manufacturing Base

To supplement the UK manufacturing base and to help better support our European customers, OEL operate a fully functioning manufacturing facility in Wroclaw, Poland. This manufacturing facility has its own dedicated quality and sales teams to assist customers when required. With a direct link to UK engineering resources our Poland facility is a major part of our strategy moving forward.

Manufacturing and Training Services in the Middle East

Our facilities in Dubai and Abu Dhabi are ideally placed to serve the oil fields of the Middle East and beyond with dedicated manufacturing and training services. We are able to offer localised repair and manufacture of a variety of rotating equipment, including bearings, shrouds and other gas turbine components. All fully supported by our specialist teams in the UK.

Providing solutions in the US

OEL have acquired the legacy of the well known and respected Centritech & Centrimarc bearing brands in the US. Situated in Houston Texas, we are ideally located to support major Oil and Gas ventures, both from a repair and service & new manufacture perspective. We are able to offer couplings to suit a wide variety of applications, with unrivalled aftercare and support.





Service and Repair

With 30 years experience in the industry OEL originally specialised in the repair and manufacture of all types of whitmetal bearings. Following considerable investment we can now offer much more than the standard rebabbiting service.

At OEL we are devoted to providing excellent aftermarket service and optimising the performance of our clients machines. Our fast and reliable refurbishment services reduces downtime in the event of unscheduled maintenance or unavailability of spare parts.

If required we can offer complete equipment support kits, consisting of bearings, seals and any other associated components. Supported by our specialised engineering team and experienced trainers we can help facilitate machine performance upgrades and identify and eliminate common causes of machine and bearing failure.

Support and Upgrades

- Ultrasonic, dye penetrant and magnetic particle inspection
- Retrofitting of high pressure oil lift systems
- Cooling system upgrades
- Failure analysis reports
- Sealing upgrades



- 24 Hour emergency re-lining available for unplanned shutdowns
- Spare bearings repaired or recertified ahead of scheduled outages
- 24 Hour engineering assistance
- Dedicated repair teams in the UK, Poland and UAE
- Rapid diagnosis and repair in Aberdeen UK to serve the North Sea oil platforms



Engineering Services



Bearing Performance Prediction

Using specialist bearing performance prediction software, OEL engineers can perform comprehensive evaluations of all types of hydrodynamically lubricated fluid film bearings, including fixed profile bearings and tilting pad assemblies, to determine how each bearing shall operate at various loads and speeds. These results are used on a daily basis throughout the design stages, this not only allows OEL to analyse both new and existing designs, but also assists with bearing failure analysis and general troubleshooting.

Simulation results include

- Minimum film thickness
- Bearing power loss
- Bearing eccentricity
- Maximum pressure
- Maximum operating temperature
- Lubricant viscosity
- Lubricant flow rate
- Sommerfeld number
- Reynolds number
- Stiffness and damping co-efficient



Reverse Engineering

OEL offer 3D laser scanning solutions for reverse engineering of obsolete components and inspection. Using a FARO Platinum

Arm fitted with an additional non contact laser line probe, OEL engineers are able to digitally capture complex freeform components and create accurate models in a relatively short period of time compared to traditional techniques.

Laser scan data can be compared back to CAD data using Geomagic Quality to verify the dimensional accuracy of manufactured parts and quickly identify any areas of concern via the use of customisable automated reporting techniques, including GD&T evaluation. This helps reduce the need for human interaction during the inspection process, decreasing measurement time and improving efficiency.

With a combined accuracy of $\pm 0.060\text{mm}$ over its 4 metre working envelope the FARO Platinum arm and laser scanner provides all the functionality of a traditional CMM, whilst remaining totally portable. Allowing OEL engineers to carry out precise measurement and analysis on site if required.



Quality

It is the policy of OEL Group to manufacture and supply products that are fit for purpose and consistent with customer specified requirements by an active and co-ordinated programme of defect prevention and quality improvement using the relevant quality standards.

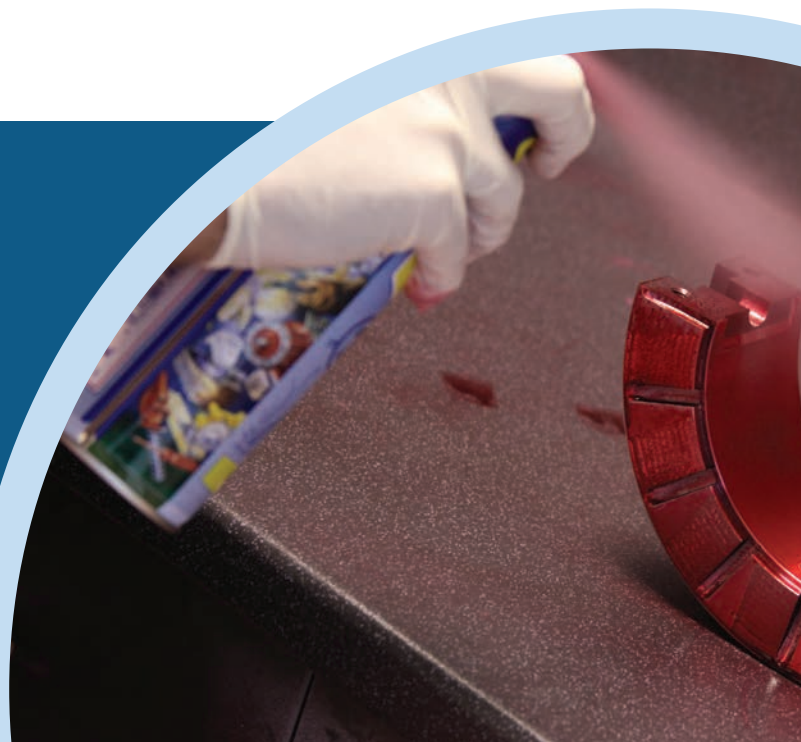
Procedures and improvements are cascaded throughout the Group to ensure the same level of service is available on a global scale.

ISO 9001:2008 Multi-site Certification

Quality has always formed the cornerstone of our company policies and procedures. In 1986 OEL were one of the very first engineering companies in the UK to achieve ISO 9000 certification.

In 2009 OEL successfully made the transition to ISO 9001:2008 certified by a reputable UKAS accredited third party. The UK Headquarters hold a multi-site scheme certificate which encapsulates the rest of the Group. All of the satellite sites and facilities work to the same ISO certification and certification body.

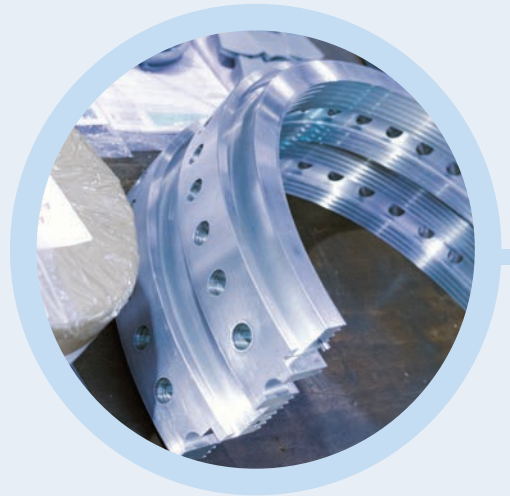
Quality objectives are integral to our business objectives and are cascaded down through all levels of the organisation. Daily production meetings allow us to identify any issues early on in the manufacture process and provide any updates to our customers without delay. Our dedicated business support teams remain in contact with our customers and continuously monitor orders to give our customers confidence and build a rapport with the people who matter to us most.

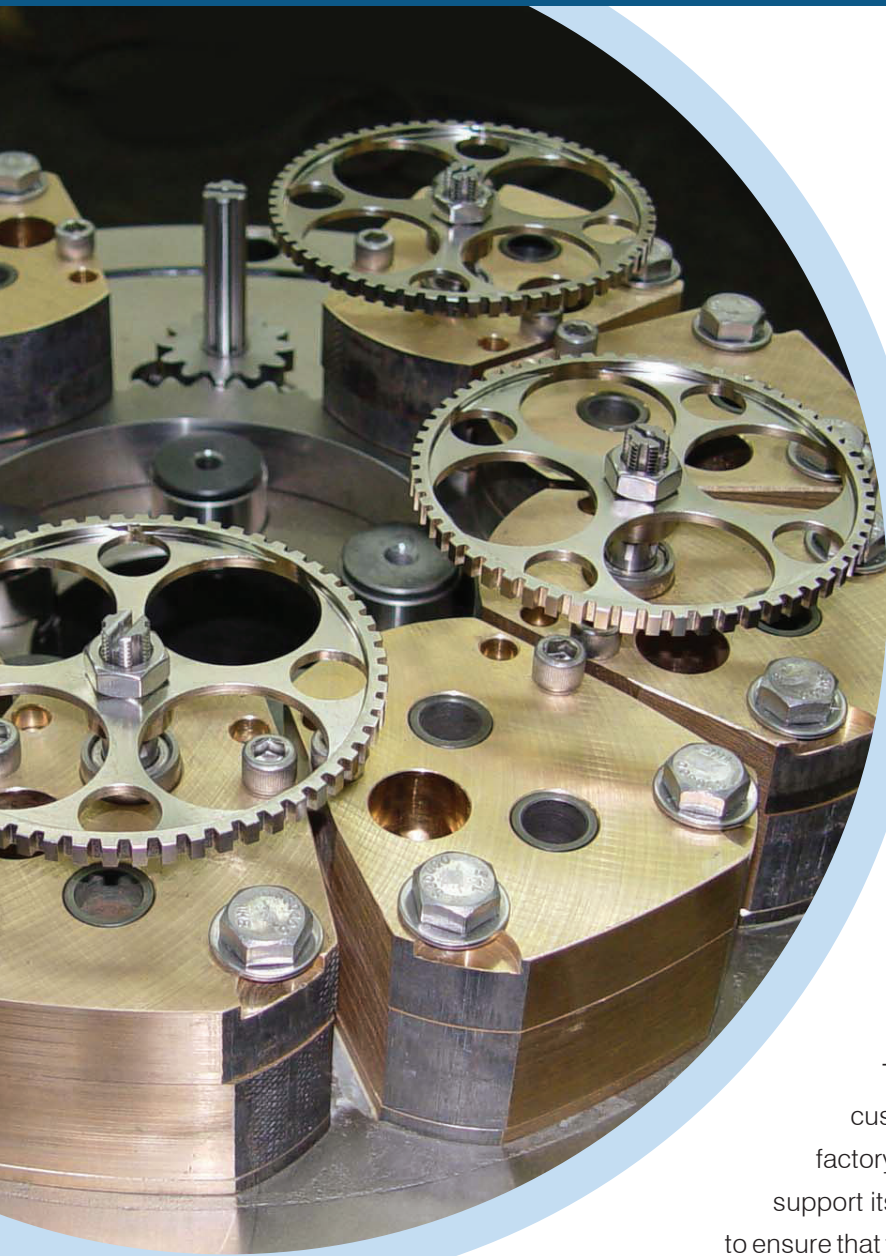


Inspection

We pride ourselves in carrying out 100% inspection prior to dispatch to ensure that any goods shipped to customers meets both specification and expectation. Custom test plans and procedures can be incorporated to meet the most exacting of standards.

OEL have a wide range of measuring equipment which can measure accurately within microns. This includes two CNC co-ordinate measuring machines (CMM) up to 1200 x 1500 x 1000mm and FARO arm with non contacting laser line probe for portable measurement.





Turbo Power Services

Established in 1985, Turbo Power Services (TPS) has firmly established itself as a market leader in the supply and refurbishment of gas turbine components. Working with OEMs, service companies and end users directly, OEL is proud of its unique portfolio of services.

Through our established relationships with OEMs, we can offer repair, calibration, and supply of all gas turbine ancillary components. Our partnerships give us exclusive access to OEM training, documentation and specifications. TPS is the authorized European sales and repair centre for Roper Pumps USA and Jansen Aircraft Systems (JASC) components.

TPS is able to support the changing needs of our customers, overhauling existing equipment to original factory standards. TPS strives to work alongside and support its customers throughout the repair process. In order to ensure that timeframes are met, TPS provides full support during the planning, carrying out, and following on from the repair. Through its technical, engineering, and procurement centres, TPS can offer unrivalled lead times and options in comparison to new manufacture.

Through our continuous development approach, TPS has become the perfect facility for not only the repair of components, but through the use of its comprehensive testing facilities, can offer full support in conducting investigation into component faults and failures.



Refurbishment and repair of gas turbine auxiliary components

Our knowledge and engineering expertise, in tandem with our partnerships with OEMs enables TPS to advise on, and offer appropriate and bespoke upgrades, ensuring that machines are operating at maximum capacity through improved reliability. Often these services are incorporated into the repair process.

TPS operates a fully integrated quality management system accredited to ISO 9001:2008. Our system maintains control and provides records of each phase of production and testing, enabling us to consistently deliver high quality service to our customers.



Osborne Training Services

Osborne Engineering Limited has facilitated successful training programmes for over fifteen years and are fully committed to delivering quality training. Our dedicated training division, Osborne Training Services (OTS) is able to draw from a wide range of instructional expertise to supply high quality theoretical and practical training.

We believe that in order for organisations to evolve successfully then the continued development of their staff is essential. In this ever-changing environment it is the ability of the individuals within the organisations to learn and develop their skills

that will determine their on going success. For the learning to be as effective as possible it must meet with the business objectives of the individual organisation.

All OTS Courses can be modified to suit individual customer requirements. OTS can offer a complete training service firstly communicating with the customer to establish their needs and then develop and deliver the course in partnership with customer requirements.

OTS believe in a continuous Improvement process for all of our courses. Students can evaluate their course on completion and offer us feedback in all areas. We use this information to ensure that our standards of instruction, equipment and presentation are always ahead of the competition. All our courses are backed up with high quality training manuals and materials.

Our instructional capability includes experts in the fields of Gas Turbine Engineering, Machine Tribology, Failure Analysis, Rotating Equipment, Vibration, Alignment, Control and Instrumentation, Electrical Systems, Management Training and Health and Safety. All of our highly qualified instructors have considerable practical experience in the field in which they teach.

Technical Training Solutions

- Power Generation
- Mechanical
- Electrical
- Instrumentation & Control
- Management
- Health & Safety



Flexible workspaces

Our newly refurbished training centre is ideal for holding one to one interviews and meetings as well as training days for larger groups. Benefit from our superb centre and meeting facilities, for your events. Offering flexible and spacious meeting rooms, available to hire in a variety of sizes and layouts, with a modern reception area and spacious canteen, you're sure to make a lasting impression on your clients.

- Meetings
- Interviews
- Training sessions
- Board meetings/ Conferences
- Presentations

Business Support Services Available

Our dedicated team, including meeting coordinator, are on hand to make your event a success. We'll take care of your meeting room layout, furniture and any special IT requirements you may have. We can also organise catering for your meeting or training event.



Machinery Monitoring Solutions

Working closely with our industry partners OEL Group are able to offer a comprehensive range of machinery monitoring solutions for both onshore and offshore applications.

With over 80 years of rotating equipment experience our network of global suppliers are dedicated to helping our customers troubleshoot their toughest challenges. We can provide a comprehensive services portfolio to improve the reliability and performance of your machinery by partnering with some of the biggest players in the industry.

Let our wide range of products keep your plant running safely, reliably and cost effectively. Our systems are scalable so we can supply a cost effective single system for one machine or for many.

- Condition Monitoring
- Vibration Analysis
- Data Visualisation
- Data Acquisition Systems
- Continuous Monitoring



Discover a world of excellence

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Calls cost 5p per minute, calls from
outside of the UK or from a mobile
network may vary.