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OLDHAM SEALS GROUP



Global leaders in specialist rubber pipe systems for the Naval industry



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Introduction

When our Grandfather Charles Oldham started our business in 1947, he established guiding principles for developing and delivering effective products for an ever changing Naval submarine and shipbuilding business.

In the mid 1970's, our Father Tony Oldham took over and continued to build our involvement in Naval engineering projects focussing on supplying quality products.

Today we continue their vision and those same principles of innovation and manufacturing excellence has established Oldham Seals as the leading designer and manufacturer of polymer engineered products for submarines and Naval ships around the world.

Christopher Oldham Nicholas Oldham

Joint Managing Directors



About Oldham Seals Group

In today's complex Naval ship and submarine construction, the demand for safe, proven, cost efficient and reliable components has grown ever stronger. When it comes to specialist rubber pipe systems, Oldham Seals' Jetpac® brand stands out as the product of choice.

For 70 years our constantly improving and widening product range, driven through rigorous in-house testing and development of innovative solutions, has delivered optimum performance and reliability and can be found in naval ships and submarines around the world.

We design, test and manufacture advanced elastomeric pipe systems and our trusted Jetpac® products bring a range of benefits:

- Major cost savings through longer reliable operating performance resulting in less expensive downtime
- A wide range of configurations to suit every application
- Reduction in vibration levels
- Reduction in pipe related noise attenuation
- Significant weight savings over traditional metallic pipe work arrangements.
- Internationally Type approved and accredited

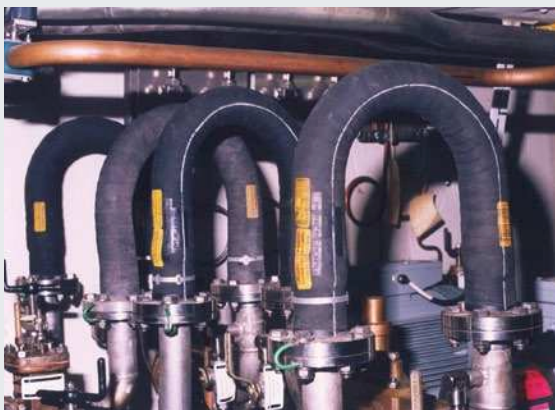
Core Products

Our existing wide-range of Jetpac[®] products can be installed in all vessel types for both high and low pressure applications.



Flexible preformed 90° Elbow Assemblies

- Available (but not limited to) bore sizes from 1" (25 mm) up to and including 14" (350 mm).
- Leg lengths can vary to suit movement in all three planes depending on combination of leg length and bore size.
- Suitable for a range of working pressures to suit the application.
- Integrally fire resistant.



Flexible 180° Preform Assemblies

- Available (but not limited to) bore sizes from 1" (25 mm) up to and including 14" (350 mm).
- Leg lengths can vary to suit movement in all three planes depending on combination of leg length and bore size.
- Suitable for a range of working pressures to suit the application.
- Integrally fire resistant.



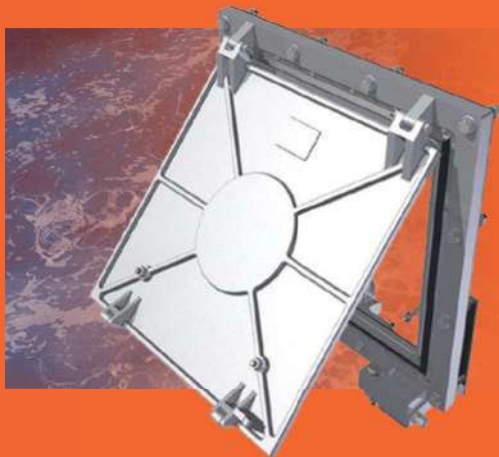
Flexible Straight Hose Assemblies

- Available (but not limited to) bore sizes from 1" (25 mm) up to and including 14" (350 mm).
- Leg lengths can vary to suit movement in all three planes depending on combination of leg length and bore size.
- Suitable for a range of working pressures to suit the application.
- Integrally fire resistant.



Flexible Rubber Bellows

- Available (but not limited to) bore sizes from 1 1/4" (32 mm) up to and including 14" (350 mm) nominal bore.
- Capable of varying movements in all three planes dependant on bore size.
- Suitable for a range of working pressures to suit the application.
- Integrally fire resistant.



By-pass valves

- The unit operates automatically to provide an emergency air intake. The hinged door opens automatically when the pressure in the main air intake system falls to a predetermined level due to a blockage in the main air filters.
- In normal conditions, the door is tightly closed against a seal which prevents the ingress of water, salt particles and dirt.



Ducting

- Extensive range of various shapes and sizes of flexible ducting used to convey air, fumes etc.



Suction Entry Feet

- Supplied on international Naval ships and submarines for use on fuel, ballast and bilge tanks to increase the efficiency of evacuating fluids.
- Decrease in suction loss.
- Minimises damage to tank bottoms caused by metallic pipes.
- Reduces the likelihood of contaminating empty fluid tanks when refilling ballast from sea water.

Bespoke custom designed products are available.



Our success is based on an ongoing commitment and investment in product development, improvement and enhancement.

The highly-skilled and experienced research and development team constantly focuses on new materials and design refinements that will meet the demands of the most arduous working environments.

Research is now taking us towards automation and advanced manufacturing which will give consistent quality and the capability to deliver products with superior performance characteristics.

Through recognising the importance to our customers of an evolving product range that meet the technical challenges of today and tomorrow, we continue to lead the way in reliable rubber pipe systems that are used worldwide.

Our continued drive for innovation has led to the introduction of the Jetpac® Rotary Flange which provides:

- **An efficient time-saving solution on installation**
- **Fully integral to the hose or expansion joint to improve sealing faces with its natural rubber seal.**
- **Cuts down inconvenience when pipework is misaligned, preventing unnecessary pressure on the hose itself.**
- **Eliminates the need for gaskets when mating to flat-faced flanges.**
- **Currently supplied to all types of industries including: maritime; industrial; chemical; pump; offshore oil and defence.**



Oldham Seals' talented design team works directly with customers to specify and fulfil their requirements for future builds and refits. Depending on the application, the design team can create innovative solutions for ever smaller machinery spaces where standard products are not suitable, in conjunction with higher pressures needing to be catered for.

3D and 2D technical drawings with bespoke pressures, length fittings etc can be supported with 3D models as required. Fittings are designed and manufactured in exotic materials, such as Copper Nickel 70/30, Copper Nickel 90/10, Nickel Aluminium Bronze, Phosphor Bronze and Super Austenitic Stainless Steels and many others.

The design team work closely with our Technical Department to develop test facilities that meet the customer's standards for a range of physical testing including pressure, deflection, impulse, endurance and fire testing.



Quality is in our DNA

Our Quality Management System (QMS) lies at the heart of what we do. It is applicable to the design and manufacture of synthetic rubber flexible fire and non-fire resistant preformed hoses and bellows including synthetic rubber seals, gaskets and mouldings, by-pass valves, air intake diaphragms and rubber reinforced ducting. The QMS is approved by Lloyds. Certificate available upon request.

Consider...

- All products are hydrostatically pressure tested before release and full release certification supplied to meet our customer's requirements if requested.

International Type Approval

Jetpac® rubber flexible hoses and expansion bellows have been Type approved by:

- Lloyds Navy Rules
- DNV GL
- American Bureau of Shipping
- UK MOD Def Stan 02-345

Going beyond the standards

Our products are Type Tested to a number of defence standards including the UK Def STAN 02-345 which has a requirement of a fire test with a minimum of 15 minutes fire resistance at 1100° C when the product is pressurised and vibrated simultaneously. However, our on-going development has now allowed us to surpass the Def STAN requirement to give greater enhancement and benefit to meet the raised fire resistant standards globally.

Manufacturing is led by our customer's demands for high standard, on time deliveries in an environment of shortened refit periods.

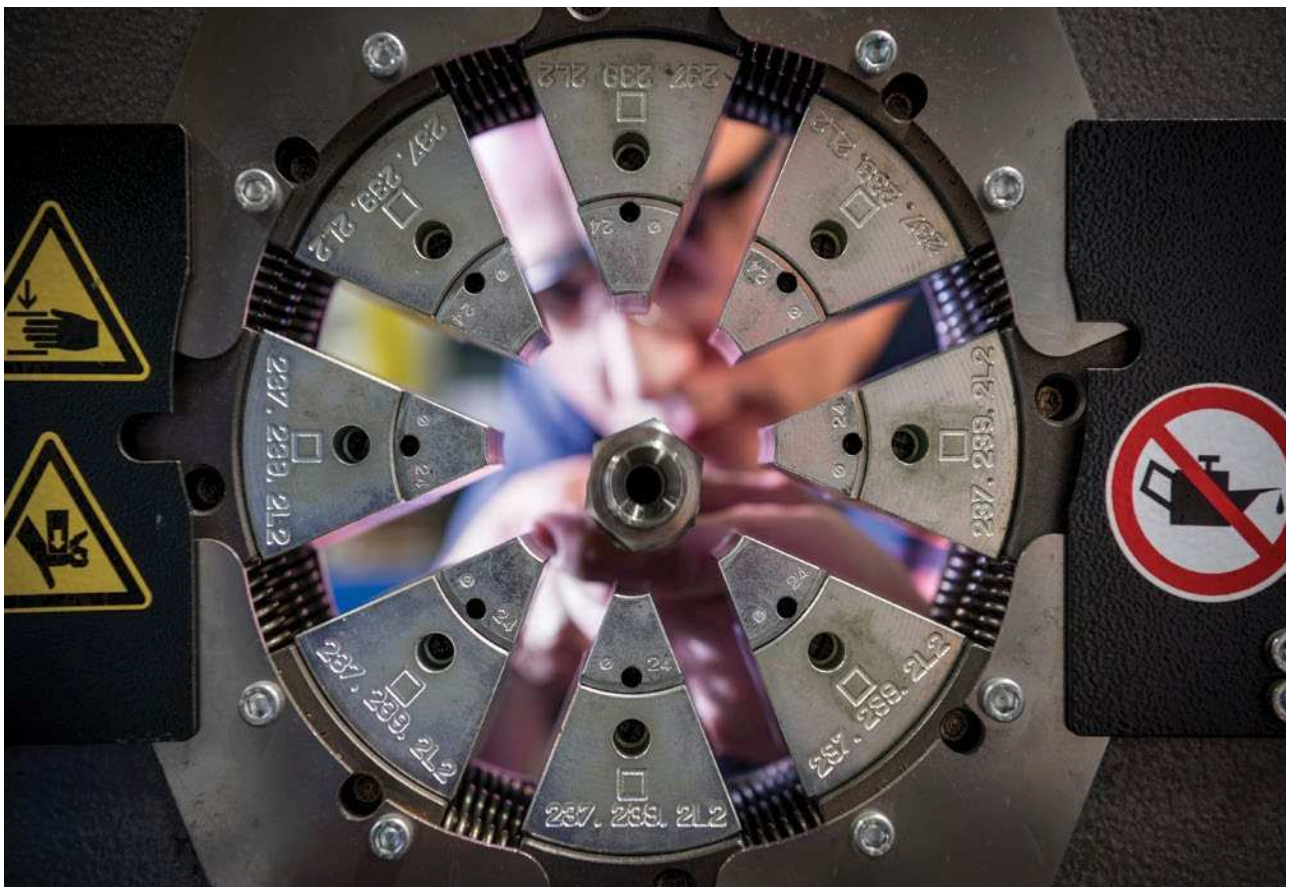
From purchasing to stores and from manufacture to inspection and despatch, team working and co-operation helps us retain the high manufacturing standards required for products used in arduous and long through life working conditions.

An integrated Enterprise Resource Planning (ERP) system allows collaboration between departments to proactively plan/manage operations, make quicker decisions and so prevent delays.

In addition to well established and quality approved sub-contractors, our highly accurate in-house CNC machining of metal parts produces fast and consistent output of finished goods. This enables us to cut waste, respond rapidly to demand and optimise manufacturing throughput.

Skilled staff

Our team of knowledgeable manufacturing operatives play a key part in identifying and implementing continuous improvements which increase the efficiency of the whole manufacturing process. Our flexibly trained workforce has expertise in more than one area of the business and operators can move to where they are most needed. All manufacturing staff receive formalised and continuous training with knowledge transfer from senior to newer employees ensuring that critical experience is passed on to the next generation and we maintain a work force of suitably qualified experienced personnel.



Our engineers are able to conduct varying levels of on-board surveys to establish base line information that can be used to ascertain material state and used as a benchmark for future surveys and re-categorisation. This service-critical data is stored and accessed through our Jetrac® system.

Jetrac® is a web accessible database ensuring an accurate and up-to-date record of all Flexible Hose Assemblies. The prime contractor and/or ships staff are able to access Jetrac® to update the ship's flexible hose register and comment on the material condition of each hose application.

We are able to act as a first tier supplier, sourcing (or taking delivery from other manufacturers) and externally Jetrac® RFID microchip tagging other manufacturers hoses to enable their entry onto the Jetrac® database.

Other benefits of Jetrac® include:

- **Rectification of data inconsistencies that often cause confusion and a delay in the accurate communication of vital hose and/or system data**
- **Significant labour savings during surveying of Jetrac® RFID enabled hoses in comparison to manual procedures**
- **Future hose survey durations are significantly reduced by Jetrac's® streamlined and accountable system**
- **100% accurate asset identification and location**
- **100% reduction in concessions due to a hose expiring before the replacement hose is ordered**
- **Accurate forecasting of hose replacement**
- **Hoses are supplied on a just-in-time basis enabling significantly shorter lead times on Jetrac® RFID enabled hoses**
- **100% reduction in over ordering or in the ordering of unnecessary items.**

Oldham Seals also provide standard recategorisation surveys and bespoke surveys to suit our customer's requirements using traditional methods of reporting.

The benefits of hose management

Having a Hose Integrity Management system in place will benefit hugely from a safety and cost saving aspect. It will allow:

- **Maintaining a register of hoses (Asset Management)**
- **Monitoring the life of each hose**
- **Each hose criticality analysed and risk assessed**
- **Maintain a record of all testing and inspections of each hose**
- **Safety aspect with regards to Personnel, Environment and Production**
- **Early identification of damaged assemblies (reduced equipment downtime)**
- **Recommendations to prevent premature failure ie routing, hose type, additional protection etc.**
- **Accurate annotation of every specification of hose on the ship or submarine**
- **Provides accurate details and dates of all hoses allowing planning ahead for all maintenance and upcoming refit packages**
- **Allows to spot trends ie. regular failures and stock accountability**
- **All hoses are category managed and can be clearly broken down to show accurate numbers**



