



Helping the Marine Industry

Experience

Rotork specialises in producing actuators and related equipment for every part of the ship building industry.

We have over 50 years experience in serving ship builders and operators, and we understand the challenges you face.

Rotork valve actuators are widely recognised as being the most technically advanced, reliable, long life, watertight, and user-friendly actuators in the business. Our operations are backed by huge resources, and our service is exceptional, always meeting our customers' requirements whatever the circumstances.

Marine actuators

Actuators help control the movement of fluids in every part of a ship. They're vital.

We have a full range of actuators, all designed to meet the stringent requirements of the marine industry. They are accurate, robust and efficient, and provide the exacting levels of durability and reliability that you require. They also provide a number of unique cost saving benefits that particularly help marine industry customers. You have precise control, lower costs, lower emissions, and a safe environment.

Support

Rotork actuators are backed by full service support, including retrofit and maintenance. Rotork products and service are available worldwide, wherever your ships are located.

Rotork actuators are installed in every type of ship, both commercial and military, including...

- Cruise liners
- Ferries
- War ships
- Semi-submersible platforms
- VLCC
- Coastal
- LNG Gas Carriers
- LPG Gas Carriers
- Corvettes
- FPSO's
- Power boats
- Sailing yachts
- Derrick and pipe laying vessels
- Trawlers
- Tugs
- Submarines

Rotork work closely with every operation that is involved in the specification, build and operation of ships, including...

- Owners
- Design Architects
- Ship Yards
- Package Suppliers
- Control System Supplier
- Valve Suppliers (Distributors)

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That's why the marine industry worldwide specifies Rotork



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Understanding your challenges

Whether you are managing a marine company, or in charge of an individual ship, you face many challenges.

We understand what they are, and we are here to help you



1 Durability and reliability

We understand that the marine environment is a tough place to be, and all your equipment must, be tough too.

2 Control

We understand that tiny changes have massive results. Flexibility and efficiency are essential. Operating all the different systems in a ship can be a delicate business.

3 Operational costs

We understand that driving down costs is vital, but without compromising safety or emissions. Again efficiency is the key.

4 Safety

We understand that to be safe you must be in control all the time. You must make the environment safe, and protect your crew and passengers.

5 Protecting the environment

We understand that you must keep emissions down to an absolute minimum through the systems you install and the way you control them.

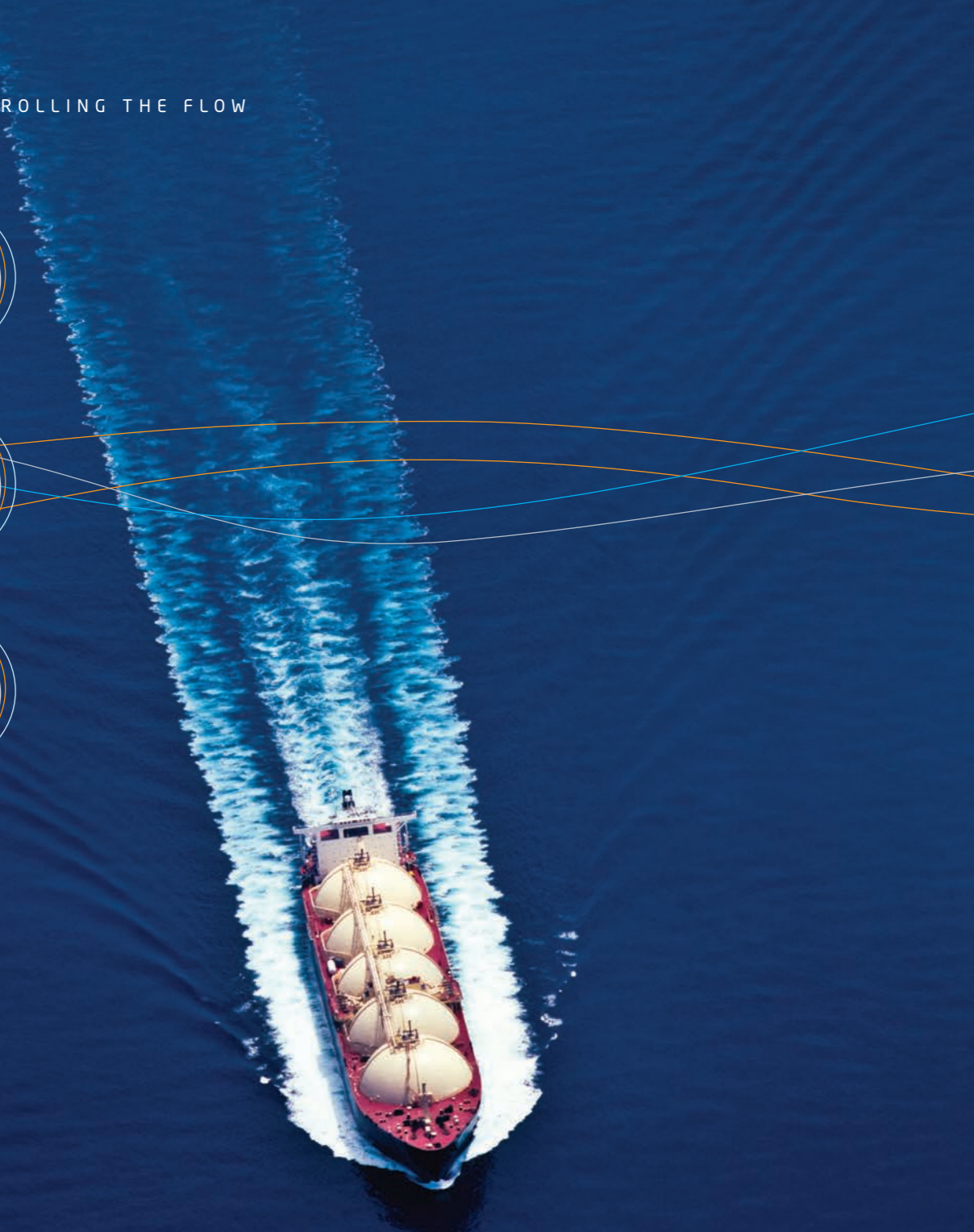
6 Information and management

We understand that you need to know at every moment exactly what is happening with your equipment.

7 Maintenance and support

We understand that your suppliers must keep caring, and your equipment must keep working. Asset management is a vital function.

Let's look at these core needs...



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Helping to meet your challenges

As a specialist in the marine industry, Rotork is dedicated to meeting these 7 core needs with the actuators that we design and manufacture, and the services we provide.

Durability and reliability ¹

- ▶ Our actuators are designed to withstand the harsh environments and operating regimes of the marine industry
- ▶ Designed to survive hostile environments and extreme conditions of temperature, vibration, salt spray and chemical pollution
- ▶ Long operating life, even in the most demanding environments and with minimal or no maintenance
- ▶ IP68 products are environmentally sealed from the factory
- ▶ Products with non-intrusive settings which means the covers do not ever need to be removed, even for commissioning

Providing you with...

Robust, long lasting equipment with minimal maintenance even in extreme environments

Control ²

- ▶ Fast, fine and accurate changes to control your operations, so as to achieve the desired result with minimal wastage

Providing you with...

Efficient operation, fast changes and perfect control

Operational costs ³

- ▶ Our self contained actuators require a low level of maintenance, and are power efficient
- ▶ Integral diagnostics enable planned maintenance and avoid unplanned emergencies
- ▶ Costs reduced through reliable and accurate operation, increasing efficiency and reducing downtime

Providing you with...

Control of costs reduces expenditure on maintenance

Safety ⁴

- ▶ Products that meet and HIPPS ratings
- ▶ Information on status of valves and actuators is available centrally and locally
- ▶ Full data capture of history of valve and actuator, for diagnosis and management
- ▶ Valve torque profiles and events log to help diagnose valve and control problems
- ▶ Valve and actuator data to guide maintenance plans

Providing you with...

Ability to control long and complex operations
Advance warning of problems
Quick reaction to emergency
Regular testing of system integrity
Safe operation of every part of your ship

Protecting the environment ⁵

- ▶ Very fine very fast control of dampers reduces emissions
- ▶ Accurate control of valves to reduce process waste
- ▶ Our actuators provide accurate control for all environmental applications

Providing you with...

Prevention of leakage or spillage
Protection from explosion
Reduced emissions and waste

Information and management ⁶

- ▶ Information on operational characteristics of valves
- ▶ Our actuators interface with any operational control system
- ▶ Accurate data is readily available from our actuators
- ▶ Our easily accessible diagnostics provide full management information
- ▶ Full information on settings, operational accuracy, feedback and history
- ▶ New actuators can easily be incorporated into existing systems
- ▶ Password protection of all information

Providing you with...

Complete information, secure yet easy to access
Knowledge of local and remote areas

Maintenance and support ⁷

- ▶ We can install and commission, and provide complete integration into your systems
- ▶ We can provide a full service during your maintenance, repair and refit operations, including inspection of all actuators, removal, overhaul and replacement
- ▶ We can support all of your legacy actuators
- ▶ We provide tailor-made full asset management programmes, including health checks and preventative maintenance

Providing you with...

Smooth project management
Complete technical support, backed by expert staff
Cost effective and efficient maintenance programmes



Rotork actuators are designed for the marine environment

The marine environment is challenging for all equipment. Rotork actuators have been designed and developed to withstand these conditions, and are manufactured in accordance with the requirements of the Lloyds Register of Shipping.

Corrosion

- ▶ Our actuators can be painted with a marine finish paint, that resists salt water, steam, corrosive chemicals (from leaks) and caustic cleaning fluids

Salt

- ▶ Our products undergo salt spray tests, and have high resistance to corrosion

Water

- ▶ Most of our actuators are completely watertight and can be used on deck
- ▶ Our electric actuators are sealed to IP 68

Fire

- ▶ Intumescent coatings are available, so that actuators can continue to operate during a fire
- ▶ Safety shutdown system in critical areas

Shocks and explosions

- ▶ Many of our actuators are shock tested to naval specifications

Hazardous areas

- ▶ Rotork actuators can be specified as explosion proof
- ▶ This includes operating at a low temperature
- ▶ Electric actuators that conform to ATEX

High and low temperatures

- ▶ Our actuators operate for long periods in very high and very low temperatures

Electromagnetic interference

- ▶ Rotork actuators are designed to protect other equipment from electromagnetic impulses, and are themselves protected from electromagnetic interference that may come from other electrical equipment

The environment inside a ship also presents other unique challenges



Size and weight are always at a premium

- ▶ Some of our marine actuators are designed to be smaller and lighter than usual
- ▶ This reduces the power requirements, and helps to reduce the size of the ship

Confined spaces mean every corner counts

- ▶ Many of our actuators can be mounted in confined spaces, and at any angle

Maintenance is difficult

- ▶ All of our actuators are designed for complete reliability over long periods of time, and with a low maintenance requirement

Power is limited

- ▶ Many of our actuators are designed to have a low power consumption

Information is essential

- ▶ Rotork In-Vision provides full information on valve performance so that preventative maintenance can be planned before problems arise





Choosing the right actuator

In the past, most marine actuators have been hydraulic and pneumatic.

But now there is an increasing number of electric actuators that are better suited in many circumstances.

A recent NATO report has recommended electric actuators for naval applications.

We have actuator solutions for every type of application...

- Electric • Pneumatic
- Hydraulic • Electro-hydraulic

So you can select the most appropriate actuator for every application, and make sure that you have the most cost efficient solution.

We will help you decide



What are the main factors to consider ?

Power supply

The availability of electric, hydraulic or pneumatic power. Many ships now have large electric generators to drive the Propulsion Pods, and so electricity is available to drive other equipment such as actuators.

Limitations on size and weight

Electric actuators do not require ancillary equipment, so their overall footprint is less.

Space

Hydraulic actuators are often smaller, but they are driven by systems that require more space, especially for hydraulic lines, power packs, and oil storage.

Type of valve

The type of valve, whether multi-turn, quarter turn or modulating, and the characteristics of its performance, will help to determine the type of actuator.

Force required to operate valve

Hydraulic and pneumatic actuators can provide a greater force.

Maintenance requirements

The maintenance requirements of complete pneumatic and hydraulic systems need to be considered.

Fail-safe requirement

This normally requires pneumatic, hydraulic, or electro-hydraulic actuators.

In the event of a power failure or an emergency, the fail-safe mode can be open, close, or stay-put.

Battery back-up is available for some actuators, and it can also be supported by the storage of compressed gas for emergency operation of the valve.

Leakage

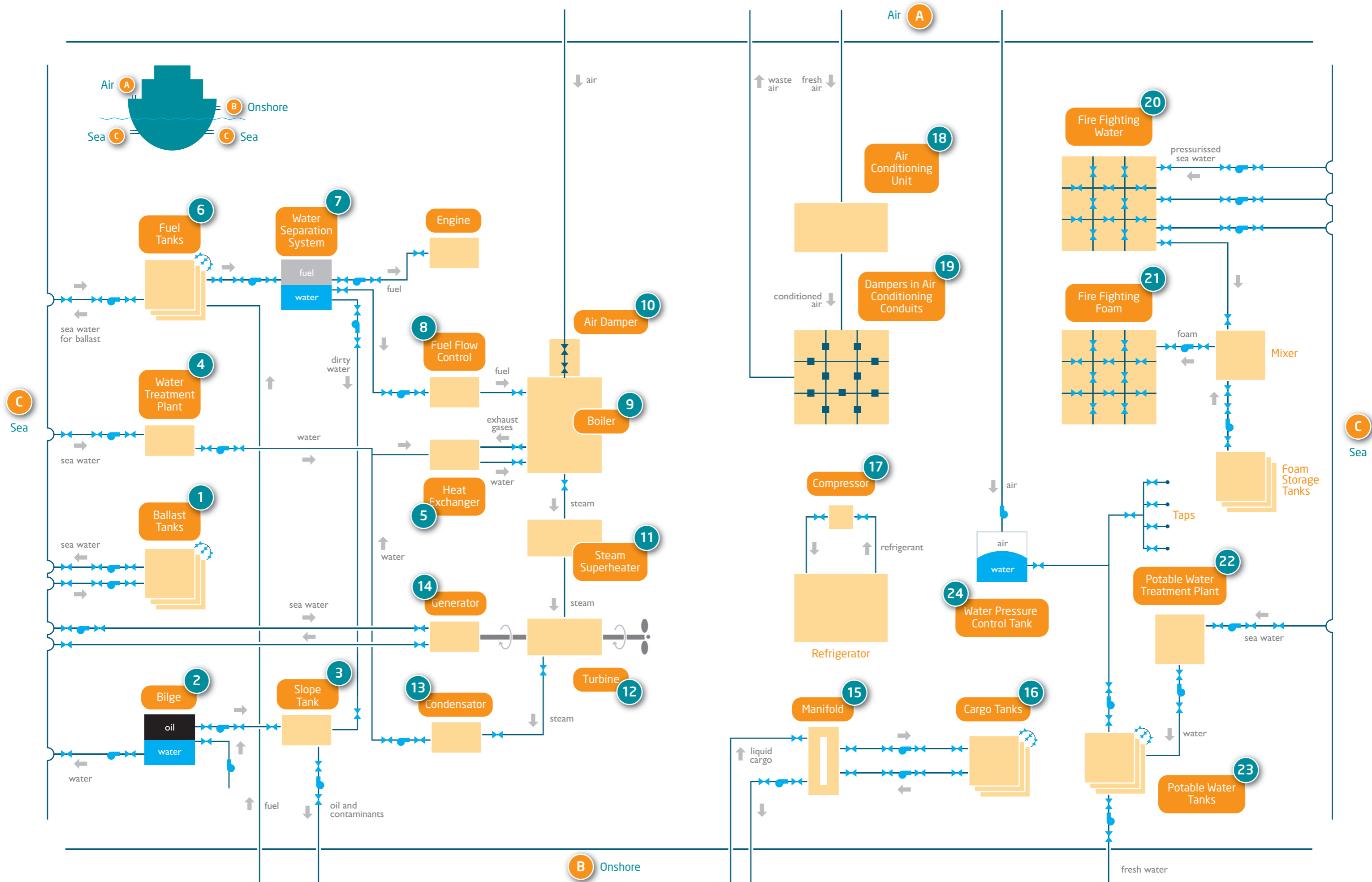
The ongoing supervision of hydraulic and pneumatic actuators, and their power lines, is essential to prevent any possibility of leakage.

Speed of operation

The speed of operation needs to be considered. Pneumatic and hydraulic actuators can normally operate more quickly than electric.

Cost

Overall installations involving pneumatic and hydraulic tend to cost more than electric, because of the cost of the pipework and pumps.





Many areas of a ship are controlled by actuators

Each area has risks and hazards that must be avoided

Ballast and Bilge System

1 Ballast Tanks

To make the ship lower in the water
To balance the ship when unevenly loaded
⚠ Ship instability | Spillage
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators
Manual actuators (operated from deck)

2 Bilge

Collects waste liquids
Separates oil and water
⚠ Pollution
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators
Manual actuators (operated from deck)

3 Slope Tank

Holding tank for oil and other contaminants until pumped to tank on shore
⚠ Pollution
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators
Manual actuators (operated from deck)

Fuel and Propulsion System

4 Water Treatment Plant

Demeralises sea water, by osmotic membranes or distillation
⚠ Calcium build-up
Loss of boiler efficiency
Over heating of boiler
⚙ Pneumatic actuators

5 Heat Exchanger

Uses exhaust gases from the boiler to pre-heat the water
⚠ Inefficiency of boiler
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators

6 Fuel Tanks

Storage of fuel for full ship's range
System designed to prevent surging of fuel from side to side
Hold sea water as ballast
⚠ Explosion/fire | Instability of ship
⚙ Electric | Hydraulic actuators

7 Water Separation System

Separates fuel from water
Sends dirty water to slope tank
Sends fuel to engine and boiler
⚠ Fuel polluted by water
Damage to engine and boiler
⚙ Electric | Hydraulic actuators

8 Fuel Flow Control

Controls flow of fuel to the burners
⚠ Inefficiency | Explosion
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators

9 Boiler

Creates steam to drive the turbine
⚠ Explosion
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators

10 Air Damper

Controls airflow to boiler
⚠ Incorrect air/fuel mix causing emissions and inefficiency
⚙ Electric modulating and pneumatic actuators

11 Steam Superheater

Heats steam to totally remove all droplets of water
⚠ Water droplets can destroy turbine
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators

12 Turbine

Converts steam power to mechanical energy, both for powering generator and for propelling the ship.
⚠ Destruction by water droplets
⚙ Quick acting hydraulic actuator immediately closes if there is a change in the pressure or temperature of the steam

13 Condensator

Condenses saturated steam into water, and returns it to the heat exchanger
⚠ None
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators

14 Generator

Generates power for the ship
Can also drive propulsion pods
Cooled by sea water
⚠ Overheating
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators

Liquid Cargo System

15 Manifold

Routing of different materials into different tanks
⚠ Mixing of different materials
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators

16 Cargo Tanks

Storage of liquid cargo, and keeps different cargoes apart
System designed to prevent surging of cargo from side to side
⚠ Explosion | Spillage
Instability due to surging
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators

Refrigeration System

17 Compressor and Refrigerator

For preserving food products
⚠ Decomposition and loss of cargo
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators

Heat, Ventilation and Air Conditioning (HVAC)

18 Air conditioning unit

Removes or adds humidity to the air
Heats or cools the air
Cleans the air
⚙ No actuators

19 Dampers in Air Conditioning Conduits

Control the flow of air around the ship
Dampers or butterfly valves
⚠ Loss of air flow
⚙ Electric
Hydraulic and Pneumatic actuators

Fire Fighting System

20 Water

Pressurised sea water in every part of the ship at all times
⚠ Failure to respond to drop in pressure
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators

21 Foam

Foam storage tanks and mixer
Mixes foam with pressurised sea water
Takes to every part of the ship
⚠ Drop in pressure
⚙ Electric, electro-hydraulic, hydraulic and pneumatic actuators

Potable Water System

22 Water Treatment Plant

Demeralises sea water, by osmotic membranes or distillation
⚠ Water tasting of salt Calcium build-up in potable water system
⚙ Pneumatic actuators

23 Potable Water Tanks

Storage of potable water
⚠ Pollution of water
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators

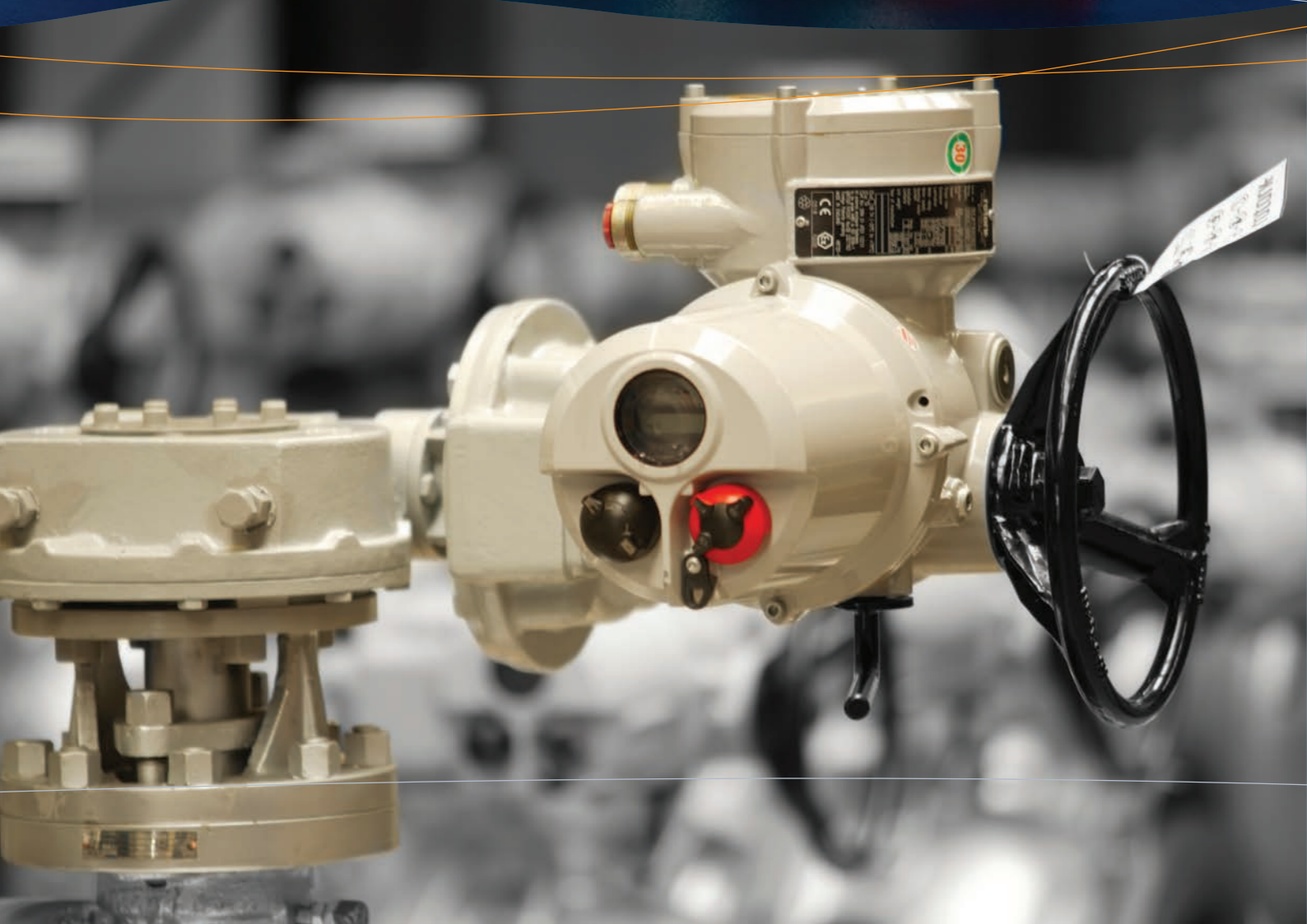
24 Water Pressure Control Tank

Controls pressure of water in the system
⚠ Wrong pressure
⚙ Electric | Electro-hydraulic
Hydraulic and Pneumatic actuators



rotork[®] Products

Here are the main Rotork products that are used in marine applications



IQT

- Intelligent communication options with multilingual display
- Quarter-turn
- Torque range 50 to 2,000 Nm
- Double sealed environmental protection to IP68 (7mtr/72 hrs)
- Non-Intrusive Set-up
- Digital, Analogue or Bus Remote Control
- Diagnostic Software Tools available
- DC, Single or three phase supply
- Self Locking Output
- Failsafe option available
- Lloyds Register Type Approval
- Explosion-proof enclosures

IQ

- Intelligent communication options with multilingual display
- Multi-turn
- Torque range 14 to 3,000 Nm direct drive
- Double sealed environmental protection to IP68 (7mtr/72 hrs)
- Non-Intrusive Set-up
- Digital, Analogue or Bus Remote Control
- Diagnostic Software Tools available
- Isolating / Regulating duty
- Three phase supply
- Optional SIS compatibility
- Lloyds Register Type Approval
- Absolute Encoder Technology
- Detachable Thrust Base
- Bluetooth Enabled Device
- Explosion-proof enclosures

Gears

- Full range of Worm, Spur and Bevel Gearboxes
- Manual or Motorised drive
- Quarter or Multi-turn
- Motorised quarter-turn torque range up to 850,000 Nm
- Motorised multi-turn torque range up to 43,386 Nm
- Manual quarter-turn torque range up to 850,000 Nm
- Manual multi-turn torque range up to 46,100 Nm
- Valve kits and adaption designed to order



IQT-N Marine

- Same performance as IQT range with a reduction in weight and space envelope, and an increased shock resistance
- Meets the requirements of most worldwide surface ship applications
- Double sealed environmental protection to IP68 (7mtr/72 hrs)
- Lightweight and compact design
- Single or three phase supply
- Digital, Analogue or Bus Remote Control
- Full-turn and multipoint option
- Shock tested at 200g according to BS EN 60068-2-27

Q

- Quarter Turn
- Torque range 30 - 406Nm
- Single Phase Supply
- Environmentally sealed to IP68
- Hand wheel as standard
- Simple remote control for basic applications
- Shock tolerant version tested according to military standard MIL-S-901D
- Analogue and digital remote control options

ROM / ROMpak

- Quarter Turn
- Torque range 30 - 650Nm
- Wide range of supply voltages available
- Watertight IP68
- Compact & Lightweight
- ROMpak version includes local controls, local indicators and optional Bus Systems
- Remote Control Capability
- Shock tested at 100g according to BS EN 60068-2-27

CVA

- Quarter-turn CVQ / Linear CVL
- High performance, continuous unrestricted modulation duty - S9
- Quarter-turn CVQ torque range 54 to 271Nm
- Linear CVL thrust range 890 to 6672N
- Watertight IP68 and explosion-proof enclosures
- DC or Single phase supply
- Programmable fail-to-position available
- Non-Intrusive Set-up
- Digital, Analogue or Bus Remote Control
- Diagnostic Software Tools available
- Comparable life to pneumatic operators
- Optional manual override

CMA

- Quarter-turn, Linear and Rotary Actuators
- High performance, continuous unrestricted modulation duty - S9
- Quarter-turn torque range 11 to 339Nm
- Multi-turn torque range 2.26 to 226Nm
- Linear thrust range 117N to 13.34kN
- Watertight IP67 and explosion-proof enclosures
- DC or Single phase supply
- Compact & Lightweight
- Safe and easy setup via an internal electronic 6-segment LCD Display and pushbutton controls
- Electronic thrust/torque limiting
- Two standard configurable relays
- Absolute Encoder Technology
- Manual override

Skilmatic

- Intelligent, self-contained electro-hydraulic actuators
- DC, Single or three phase supply
- Quarter-turn torques 65 - 600,000 Nm
- Linear thrusts 1.7 - 5,500 kN
- Two-position, ESD or modulating operation
- Spring-return or double-acting executions
- Watertight IP68 and explosion-proof enclosures
- Non-Intrusive set up
- LCD Position, Faults and Diagnostics Display
- Digital, Analogue or Bus Remote Control
- Partial stroke test capability
- Certified suitable for use at SIL3



Twin Power Actuator 114 and 214 models

- Multi-turn
- Driven by hydraulic or pneumatic motor
Produces two output torque values – a constant run output with increased start output (up to 50% more) in both directions of rotation.
- Compact size
- Can be operated locally or remotely via pneumatic or solenoid valves
- Manual handwheel
- Three micro-switches to indicate open, close and run conditions
- Added corrosion protection
- Explosion-proof as option

RC200

- Compact Pneumatic Scotch Yoke Actuator
- Double Acting or Spring Return
- Torque up to 4,400 Nm
- High efficiency, low air consumption
- Optional Handwheel M1 override
- Housing in anodised aluminium.
- Optional surface treatment for extra corrosion protection
- Certified suitable for use at SIL3

RH

- Compact Hydraulic Rack and Pinion Actuators
- Double Acting or Spring Return
- Torque to 3,400 Nm
- Electroless nickel-plated cylinders for corrosion resistance
- Certified suitable for use at SIL3

Fire Protection

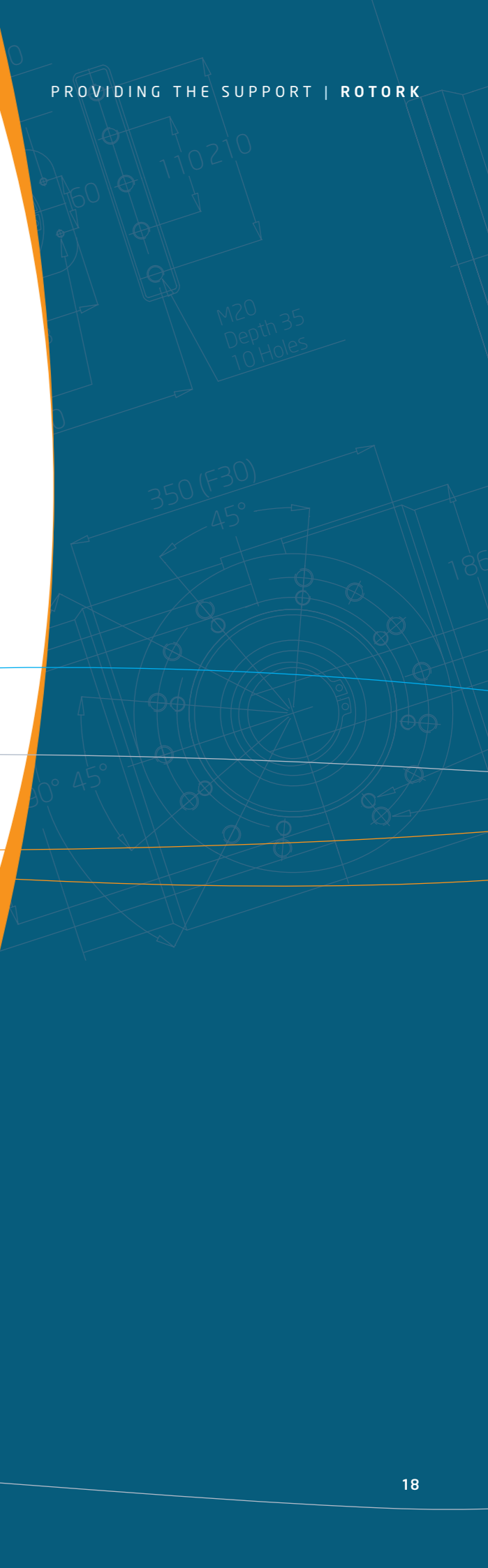
- Insulative Intumescent Coating for selected products
- 30 minutes protection from a fire of 1093°C (2000°F)
- Exceeds ANSI/API 607 and UL1709
- Access to all compartments maintained

Flexible and Semi-Rigid Enclosure Systems

- 30 minutes protection from a fire of 1093°C (2000°F)
- Individually tailored designs for minimum space
- Can be tailored to include gearboxes

Rigid Enclosure Systems

- Temperatures in excess of 1200°C (2192°F)
- Up to 120 min Protection
- Withstand blast overpressure





Networks

Today's ships require up to date communications right down to unit level.

Technical operators need more information faster than ever before.

Maintenance managers want information so that their services can be scheduled economically.

To meet these requirements, every piece of critical equipment can be controlled and monitored by computer.

These computers are assigned to management, operations and maintenance tasks within their own network, exchanging data about the equipment under their control.

The main networks used in marine applications are Pakscan and Profibus



Bus Networks

Pakscan and Profibus networks work well with Rotork actuators. They are easy to set up, easy to operate, and highly efficient.

- The digital communications are more versatile than analogue, and allow for additional functionality in the future
- The twisted pair cable is cheaper than multicore, and is connected simply from device to device, reducing the installation costs
- With Rotork, additional non-networked devices can be hard wired through the actuators enabling the devices to be controlled and monitored
- The IQ setting tool makes it easy to set up the actuator, without needing to remove the access covers
- Additional network enabled devices can easily be added to the system, with minimal wiring
- It is easy to access the data required for maintenance and asset management, using the setting tool, without disrupting host communications
- Rotork provides full control and monitoring of the actuators, and enables remote configuration
- Valuable torque information can be accessed over the network, for use in predictive maintenance of the valve

Rotork are continually monitoring ongoing network developments to give you the maximum benefits.

Pakscan

The Rotork Pakscan system is a world leader in actuation control automation.

Pakscan should always be considered where multiple actuators are involved.

It is ideal for new installations, and when an existing ship is being converted from manual valve operation.

Pakscan was designed exclusively to be an actuator control and monitoring system and is tailored for Rotork products. First launched in 1986, Pakscan has been at the forefront of network technology since its inception, helping to control over 100,000 field units.

Pakscan network systems offer the customer field proven control, reliability and customer support.

The Pakscan system provides the vital link between valve actuator and supervisory control. It is an intelligent, reliable, high integrity, fast and easy to install network between equipment and the control room.

With their high reliability and efficiency, coupled with low maintenance costs, Pakscan networks have proved to be the unrivalled leader in valve actuator communications.

Profibus

Rotork actuators are certified to operate with Profibus, and are ideally suited to the Profibus communication system.

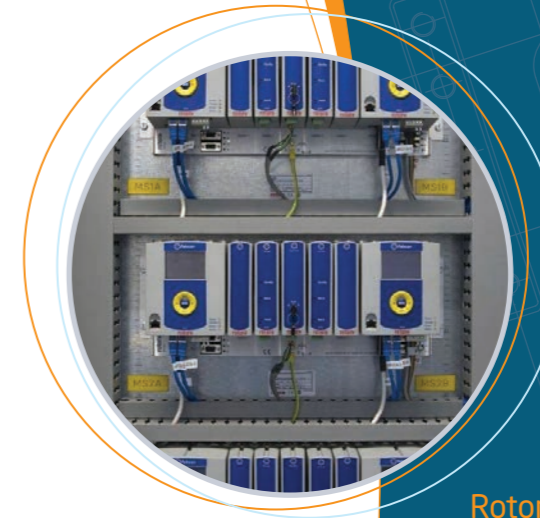
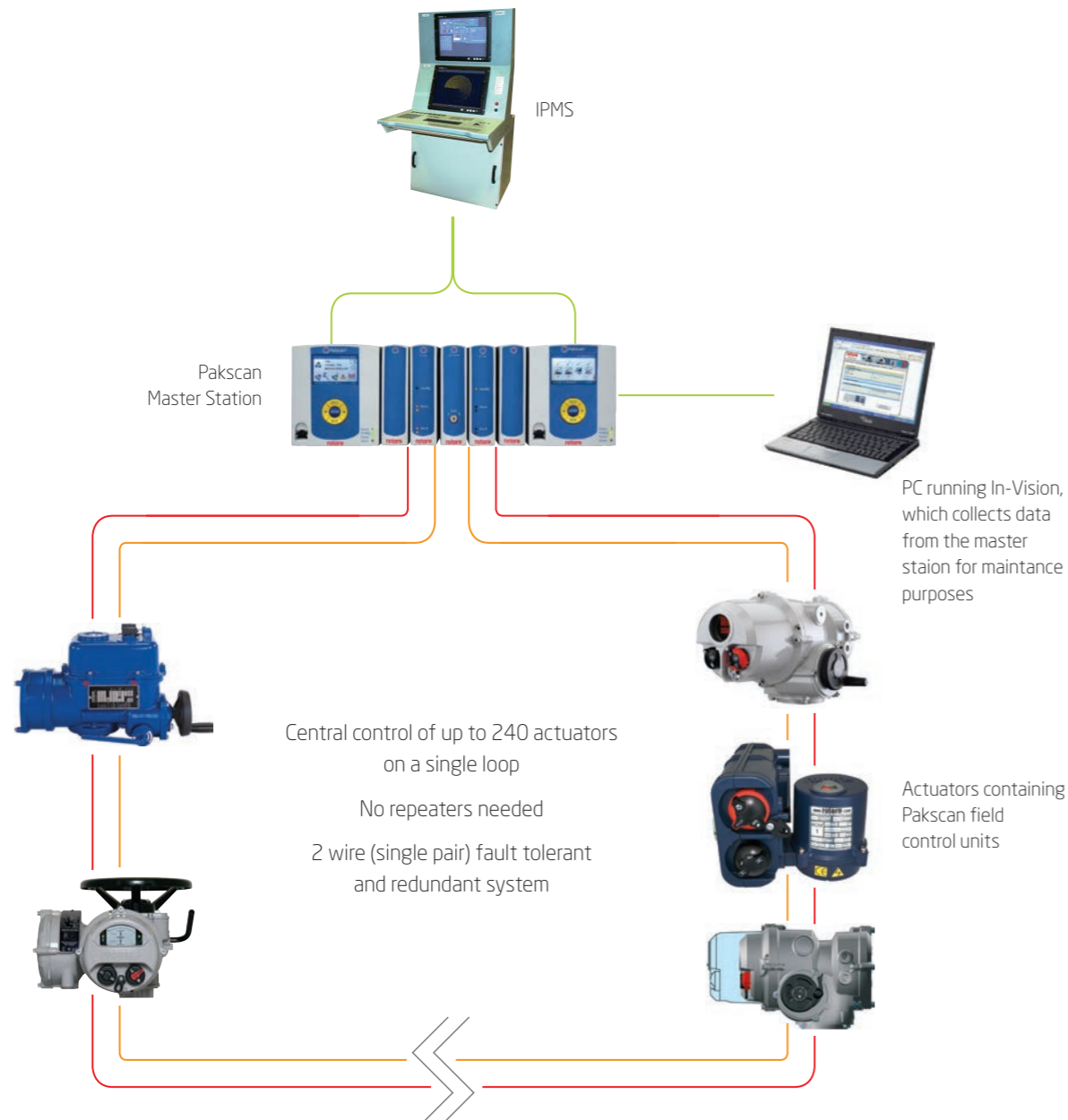
A network using Profibus-DP provides a cost-effective method for connecting multi-vendor devices in any location to a central control system simply and efficiently.

The Profibus-DP network can operate over a range of communication speeds and provides the mechanism for control of the actuator and feedback of data about the valve.

The Rotork Profibus-DP option cards support standard DP-V0 cyclic data exchange and DP-V1 acyclic data exchange used for diagnosis, set-up and historical data.



Simple to design, install and use



Additional features with Rotork Pakscan

- Designed exclusively for actuator control
- Wired and wireless field networks available
- Fault tolerant redundancy as standard
- Wired network uses a low cost twisted pair cable loop
- Provides easy access to asset management data and configuration via the built-in web pages
- The IPMS communicates directly to the master station using Modbus messages
- Master station display shows system status and allows system configuration

Rotork In-Vision

Helping to plan effective maintenance

Rotork's In-Vision is a user friendly PC based control and data acquisition software package that perfectly complements Rotork's Pakscan network control system.

In-Vision is able to monitor the torque required from the actuator to operate a valve. Should the torque increase above a set level, an alarm is raised. The increase in torque may indicate a valve which is wearing out; this alarm can be used as an early warning system for planned maintenance of the valve.

In-Vision brings the computer animation and plant visualisation capabilities right to the fingertips of the ship's technical operators and engineers.

Linking with IPMS

In-Vision connects to the Integrated Platform Management System (IPMS), providing constant input for maintenance planning to the ship's engineers and via a link to Fleet Headquarters, enabling routine and corrective maintenance plans to be prepared.



Customer Service



Working with you

We'll help you at every stage, to fulfil your business and operational needs, and provide you with reliability, efficiency and safety.

We have highly skilled engineers who are fully trained in the latest developments to deliver you the highest possible standards of service.

With over 500 directly employed engineers and over 500 service technicians employed by our agents worldwide, we have the infrastructure required to effectively support all our customers' needs.

All our engineers and technicians hold all the appropriate safety qualifications.

We have workshops worldwide, with trained staff and full test facilities, equipped to overhaul, repair, upgrade, and modify your equipment.

We are opening new workshops near shipyards for servicing actuators and holding spares.

We will always work closely with you to understand your needs exactly and to provide you with the very best solutions.

Total commitment

Our lifetime commitment to our customers includes...

- An unrivalled understanding of actuation technology
- A global network of fully qualified, local service agents
- Lifetime customer care
- Fast effective solutions to the most challenging technical problems
- Long term savings, and reliability you can trust

Dedicated support teams

We have dedicated support teams in every area, working together worldwide to provide you with the highest quality service and support, wherever you are...

- Project management and system design
- Technical support
- Network systems design and support
- Field service
- Spares
- Training

...and the Rotork worldwide network of subsidiaries, Centres of Excellence, distributors and local service agents.

We provide a complete service at every stage

Concept

While you are planning for the future

- Initial planning
- Tailored service agreements

Build

Designing and building your new ship

- Design
- Installation and Commissioning
- Warranty
- Training

Product Support

Ongoing operations

- Technical Support
- Spares

Site Services

Managing your assets for maximum returns

- Preventative Maintenance
- Field Service
- Workshop services
- Retrofit and Site Projects
- Factory Fit

The following pages explain each stage...

rotork

Concept

While you are planning
for the future



Initial planning

Whether you are planning a new build, or changes to an existing ship, we can work closely with you and your partners, to discuss your objectives and your overall plans for the future.

- We can look at your existing equipment, advise you on any requirements, and make recommendations
- We will give you information and advice on specifications, and recommendations of the right actuator for each application
- We can offer a long term supply agreement
- We can offer a comprehensive service agreement
- We can prepare our proposals based on the whole life ownership and operating costs of the equipment

Tailored service agreements

We can review your exact requirements and your plans for the future, and then provide a tailored service agreement with fixed prices for our products and services. We can even hold dedicated stocks of actuators and parts for immediate replacement.



rotork



Build

Designing and building
your new ship



Design

We can provide full design services for your project

- As you develop the design of your overall installation, we will provide the exact specifications for the actuators and for the systems at each location
- We will provide drawings and technical specifications, help with layout plans, and advise on integration with other equipment
- We will integrate with your existing systems and with new build projects
- We will work with your end users, designers, ship builders, manufacturers and distributors

Installation and commissioning

We provide two alternative choices for installation and commissioning, according to your needs...

1 We provide a complete installation and commissioning service by fully qualified engineers, wherever you are in the world

- We will provide installation and commissioning services ourselves, or provide training
- We will integrate with your existing systems
- We will provide all the necessary documentation for every actuator
- We will integrate our actuators into your systems
- We will undertake site acceptance testing, and capture all the performance data
- All the work will be done by our fully qualified network engineers
- All the work is covered by warranty

2 We can provide a complete on-site project management service

Depending on your needs, our project management service can cover all of the installation phases (scoping, design, procurement, manufacturing, installation and commissioning) on the broad scopes of work that typically surround actuation projects.

This can include valve installation, power distribution, control cabling, control cabinet installation, field communications, and structure fabrication.

If you wish, it can also include where appropriate the management of other suppliers, and the coordination and supply of other materials, equipment and facilities.

Warranty

Every Rotork actuator is covered by our standard warranty programme.

All new parts are fully guaranteed for 12 months.

We also provide a 12 month warranty on any actuators overhauled by Rotork. This covers the workmanship, and the parts that we replace.

Tailor-made warranties can be provided as part of a Planned Maintenance contract.

Training

We can train your Operators and Maintenance Staff, and also your Supervisory Management and Engineers

All our courses are tailor made to suit the participants and are backed up with comprehensive literature to take away.

Each course introduces participants to a range of Rotork actuators and their design and application to all types of valve. The courses include design philosophy, strip down and usage, and fault finding and diagnostics. Particular attention is given to installation, commissioning, operation and maintenance.

The courses can be held anywhere in the world, and whatever language your staff speak, so will your Rotork engineer.

We now also offer a series of E-Learning modules on www.rotork.com aimed at anyone who has a requirement to commission and use Rotork actuators and associated equipment in the field.

The modules consist of interactive learning solutions that take around 30 minutes to complete and are equally useful as a refresher course for those who deal with the equipment infrequently.

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Product Support

Ongoing operations



Technical Support

Whatever your enquiry, we can provide you with immediate technical information and advice on all applications for actuators and control systems.

We have full traceability of every Rotork actuator. This means that we know the design, the exact specifications, and the history of every actuator we have ever built.

A team of Sales Support and Applications Engineers are able to offer you both technical and application support for all your products whether they are old or new, and we always aim to provide you with a quick and complete response.

We can advise you on parts, and on any servicing information that you require.

At the same time we will inform you of any relevant product updates that affect your actuators.

Comprehensive technical information is available on www.rotork.com, which contains a detailed library of information on current equipment and services, together with technical specifications on all our products. We are happy to guide you through this library at any time so that you can find the information that you need.

Spares

We stock a full inventory of spare parts, and our worldwide delivery service ensures you receive them quickly and efficiently - wherever you are.

Complete service

We handle all aspects of the supply of spares, including technical support, quotations, order processing and shipping. We are always available to discuss any technical questions.

Comprehensive stock

The majority of standard modules for our current range of products are held in stock to enable us to provide a fast turnaround on orders.

Tailor-made packages

We can offer a tailor made recommended spares package to suit new and existing sites of all sizes and for all applications.

We can advise you on the stock levels that you should hold locally.

We have an extensive database of the actuators supplied over the past 50 years and can offer solutions to any actuators that may require spare parts.

Full information

We have detailed manuals and CD-ROMs, to help you identify the parts you need.



Site Services

Managing your assets for maximum returns



Preventative maintenance

Once everything's up and running, we'll ensure your equipment remains in top condition.

Our customer base is global, and so too is our service and support network from Rotork offices and representative companies worldwide.

1 Health checks

We can undertake a health check, especially of your older equipment in key areas, surveying each actuator and reporting back to you on their condition. Then if you wish, we will repair or upgrade them to the required standard.

Based on the serial numbers, we can also give you a detailed inventory of all your actuators.

This involves a detailed assessment of each actuator and the creation or updating of an asset register.

Against this database we record inspection data and performance data, as well as historic information from our own manufacturing databases (eg build specification and date). Over time this helps to identify the start of any deterioration in any of your equipment.

2 Planned maintenance contracts

We provide customised maintenance contracts to suit individual needs, guaranteeing the efficiency of your equipment at minimum cost, and reducing your cost of ownership.

For most sites our engineers visit on an "as planned" or annual basis to complete the preventative and follow up maintenance. This ensures the maximum operational time for the plant and often the planned work is scheduled to coincide with other maintenance.

The contracts can include...

- Fixed annual cost
- "All risks" actuator cover
- Our engineers working on your ship
- Including planned visits by our engineers, and the cost of materials
- Comprehensive support for all equipment
- Protection against obsolescence through long term spares holding
- Rapid response emergency service

- Corrective actions

- Actuator overhaul on site or in workshop

For larger operations we can provide Rotork engineers to work alongside your own staff on a day to day basis.

All preventative maintenance contracts include tailor-made warranty packages.

3 Routine maintenance and inspection

We provide a full turnaround service, wherever you are in the world, always completing the work on time and to budget.

- We can do a full visual inspection of every actuator, leading to either a health check with replacement of selected parts, or to a full overhaul
- We refit an actuator to the overhauled valve
- We commission locally and in your control room
- We will also do a visual inspection of all the actuators on your ship, and provide a report

Field Service

Rotork provides a worldwide field service response for all types of actuator

Our support can be planned or in response to an emergency situation.

We always aim to be reliable and quick, so that your downtime is minimal.

Our field technicians perform a number of different tasks for customers...

- Installation and commissioning of actuators to ensure they are correctly set up
- Upgrading actuators, such as the installation of additional cards
- The installation and commissioning of network/bus systems
- The inspection and repair of damaged/deteriorating actuators
- The emergency repair of actuators

All our engineers are fully qualified, working from fully equipped service centres. If possible, they will come with the spare parts required.

We provide a 12 month warranty on all the work we carry out.



Workshop services

We offer a certified workshop overhaul capability to bring Rotork products back to full functionality and reliability.

The installed base of Rotork's actuator products around the world stretches back over 50 years. A large portion of these actuators are still in service.

Many Rotork products are operating in very harsh environments, and continue to operate reliably and dependably for many years.

However, depending on the environment and application, some actuators do eventually require refurbishment, which can be done by Rotork trained engineers in our fully certified workshops.

Quick response

Within a week of receiving an actuator for overhaul we will strip it down and send you a report of what work is required to fully refurbish it, together with a quotation.

We then aim to complete the work and send the unit back to you within another week.

Quicker turnarounds can be achieved where required.

However, occasionally complete refurbishment can take up to 4 weeks due to the need for special coatings to be renewed or special original parts obtained.

Complete service

The work will normally include...

- Completely stripping, cleaning and inspecting
- Replacing oil seals, O-rings, bearings, exterior bolts, and oil
- Completely functionally bench testing
- Re-certification through a production test rig so that a full one year warranty can be given

New Rotork standard paint will normally be applied or a specialist coating as required. For Rotork units that are powder painted, any blemishes in the original coating will be repaired to extend their protection.

With explosion proof actuators we pay special attention to the flame paths to ensure the continued integrity of the equipment, and compliance with its original certification

Retrofit and Site Projects

We can design, install and commission retrofit solutions for any application – from single valve installations to fully comprehensive turnkey contracts.

Retrofit

Retrofitting actuators to valves in the line is a safe and cost effective solution that minimises disruption.

Whether you are replacing obsolete actuators, changing power source or motorising manual valves we are able to offer tailor-made solutions designed to comply with your exact requirements.

Working from basic valve data we are able to offer a full sizing service that matches actuator models to the valves' requirements. We carry out full and detailed site surveys, collecting all the dimensions needed to design the mechanical components that will mount the new actuator to the existing valve.

Where space or access is an issue, safe remote-drive solutions can be engineered using extended spindles, pedestals and drive adaptors.

Ease of installation and maximum reliability of the whole installation are guaranteed, with all work covered by a full Rotork warranty.

Our design service is backed by a factory-trained installation team who are able to mechanically install, cable and commission the actuators, including working in confined spaces, and they can also assist with the integration into your ship control system.

Our retrofit service covers Rotork's complete range of actuators. We can also replace the actuators of any other brand and provide easy integration without the need to change your control system.

Site Projects

Rotork, and its subsidiaries, carry out significant extended scope actuation projects throughout the world every year.

This is a growing requirement from our customers who are often looking for a "one stop shop" to automate part or all of their processes.

Our capabilities cover all of the installation phases (scoping, design, procurement, manufacturing, installation and commissioning) on the broad scopes of work that typically surround actuation projects.



Factory Fit

We help local valve distributors provide actuated valve solutions to their customers. We also manage the supply of large quantities of automated valves on major projects for contractors and end-users.

Our Factory Fit service undertakes the assembly of valves and actuators. Their careful assembly is critical to ensure that an automated valve performs correctly and reliably.

This service is often provided by a valve manufacturer, but there is a growing need for actuators to be installed on valves after they have left the valve manufacturer's factory.

We can automate all valve types regardless of the available power supply.

This service is provided at our network of service centres around the world.

We normally undertake the following steps...

- We select the correct actuator type and size based on the basic valve data and the plant operational criteria
- The team at our local service centre designs the components needed to modify the valve so that the actuator can be mounted
- We produce drawings showing the complete valve and actuator assembly to enable our customer to verify the correct orientation and ensure that there is sufficient space available for installation
- We manufacture the adaption kit
- We install it onto the valve, and perform a full range of functional tests on the finished assembly
- Once the automated valves have been installed on site our field service technicians are available to assist with the final commissioning

Our actuators, adaption kits and installation service are all backed by the worldwide Rotork warranty.



Complete team



A complete team

We work closely with end users, designers, ship builders, equipment manufacturers and distributors

We always like to have good relationships with all of our partners and customers.

As an independent organisation, Rotork is able to work effectively with all related manufacturers.

We believe we understand the way they work and the pressures they face, and we try to help them honour their customer commitments.

We know that our partners and customers enjoy working with us too, and they often commend us on our service quality and product reliability. They also appreciate that our technological lead allows us to offer them the versatility they need for every application.

Our global, commercial and technical support services ensure that our partners and customers are totally supported.

We always try to make our partners' and customers' lives easier - for example with our fast quotation service, our back-up warranties and our international documentation.

And we have invested in manufacturing facilities around the world, so as to ensure that we can always produce our actuator and control systems within your project timescales.

Keeping ahead

We continue to lead the way in every aspect of our business...

Developing our products

We continually monitor market trends and listen to our marine customers' needs, so as to improve the quality, value and performance of our products for the marine industry.

Committed to quality

We are dedicated to providing world class quality in our products and services, and we are independently assessed and approved to ISO9001:2000 standard.

Certified for Health and Safety

The health and safety of our staff, and of those with whom we work, is of the utmost importance.

The design of our working practices and the training of our staff are all planned to achieve a safe working environment.

We are assessed and certified for health and safety by the nationally recognised authorities, both in our factories and on your ships.

Protecting the environment

We are committed to protect the environment in every way we can, and to help our customers to achieve their own environmental objectives.

- At least 80% of the materials used to manufacture our current actuators are recyclable
- We give instructions on recycling, and mark components accordingly
- We design energy efficiency into our products
- We can give you guidance on environmentally friendly disposal
- We have independent certification to ISO14001
- We monitor our carbon footprint very closely and reduce it wherever we can
- We publish a full annual environmental report
- We are listed on the FTSE 4 Good index and we are a signatory to the Global Compact



About Rotork

Providing actuators and site service around the world



As the world's largest independent valve actuator manufacturer, we specialise in actuation and nothing else, because it's all we do. We can focus fully on delivering the totally reliable products and services that our diverse customers and worldwide markets demand of us.

At **Rotork** we firmly believe our reputation is based on reliability, backed by a proven and successful track record over more than 50 years.

As an **independent company**, we are able to work freely with every valve, damper and fan manufacturer without any constraints.

As a major manufacturer, we operate in **every sector** – **petro-chemical, water, sewage, power** and **marine**. We're involved in all the key areas of the actuator field – **electrical, hydraulic** and **pneumatic** – as well as manual and automated gearboxes, mounting kits, control systems and other related services.

We don't mass produce actuators to meet potential market needs; rather, we manufacture them to satisfy our customers' individual specifications and requirements. As a result, our range includes products that are simple and functional through to those with the latest sophisticated technology. Large or small, every actuator is designed to the very highest standards of reliability.

Whatever you need, you have all the expertise available from one source

www.rotork.com



- Controls
 - Electric Actuators | Control Systems
- Fluid Systems
 - Fluid Power Actuators | Control Systems
- Gears
 - Gearboxes | Gear Operators
- Instruments
 - Precision pneumatic control devices
- Site Services
 - Projects | Services | Retrofit

Latest product information and a full listing of our worldwide sales and service network is available on our website

www.rotork.com

UK

Rotork Controls Limited
tel: +44 (0) 1225 733200
fax: +44 (0) 1225 333467
email: mail@rotork.co.uk

USA

Rotork Controls Inc
tel: +1 585 247 2304
fax: +1 585 247 2308
email: info@rotork.com

YOUR LOCAL ROTORK AGENT

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HELPING THE

Marine

INDUSTRY



REDEFINING FLOW CONTROL

