

Goltens China

Shanghai . Guangzhou . Dalian . Zhoushan



Goltens China - Servicing Marine, Offshore, Oil & Gas
and Industrial Customers

www.goltens.com





Dalian
Zhoushan
Shanghai
Guangzhou

Goltens is a service organization that enables ship owners and power plant operators all over the world to minimize asset downtime.

For over 75 years Goltens has been the alternative when the original equipment manufacturer is unable to meet the budget or the time frame available. Responding to customer needs year after year, we have added service locations and developed a range of services with a quality that is recognized as second to none.

Goltens China is headquartered in Shanghai, with set up in Guangzhou, Dalian and Zhoushan.

Established in 2000 in Shanghai, with a 2500m² workshop, Goltens China is becoming a leading provider of specialized services to the Marine, Offshore, Oil & Gas, Industrial sectors.

As an engine specialist we service and repair a wide range of engines and related equipment. Through on site machining we eliminate downtime associated with the disassembly, transportation and reinstallation of machinery.

To meet new environmental regulations we help plan and install green technology solutions that prolong the life-time of valuable assets.

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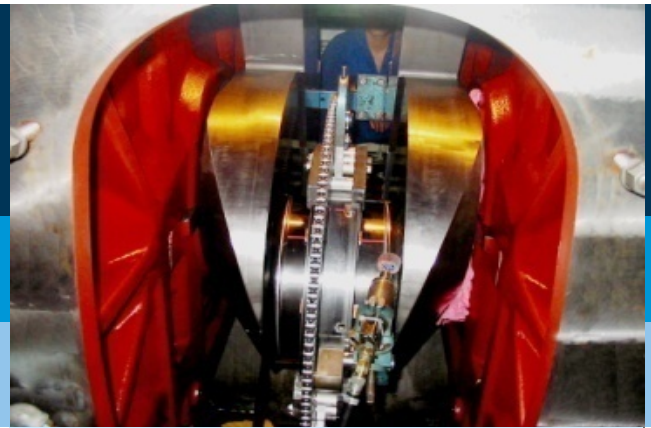
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Crankshaft / Journal Grinding



Goltens has long been the leader in in-situ crankshaft and journal grinding and machining. As the first company in the world to complete in-situ crankshaft grinding in the early 1950s, Goltens' patents on its in-situ crankshaft grinding tooling revolutionized the industry with massive reductions in down time for owners coping with crankshaft failures and damaged journals.

Through constant and focused R&D and field trial, Goltens has developed the most cutting-edge in-situ crankshaft machining tooling in the industry. On larger diesel engines and damaged journals, this allows our highly skilled technicians to perform large scale jobs in a fraction of the time of traditional grinding, oftentimes with a single cut fillet to fillet with the highest tolerances. We apply our technology to challenges in the marine, industrial, stationary power and offshore sectors.

We repair damaged journals on any and all manner of rotating equipment including compressors, turbines and other shafts.

Our Crankshaft and Journal Machining Specialization Includes

- Machining and grinding of crankpin journals up to 1080 mm dia
- Grinding of main journals up to 1080 mm dia
- Machining and grinding of crankpin fillets
- Grinding of main journal fillets
- Machining and grinding of tail shafts/shafting up to 1080 mm dia
- Machining and grinding of damaged Journals for Steam and Hydro Turbines
- Straightening of bent crankshafts
- Machining or grinding of crankshaft thrust collars
- Machining of coupling bolt holes (instead of reaming)
- Honing and/or blue fitting of crankpin journals



Crankshaft / Journal Annealing



Crankshaft casualties often result in extremely high hardness levels in the crankpin, and that hardness has to be removed or the shaft will have to be condemned and replaced. Goltens has now successfully salvaged hundreds of crankshafts in over 50 countries across industries with its class approved and well proven in-place annealing process.

Historically the only option was to try and machine below the hardness, which very often resulted in a condemned shaft if the hardness extended below the rated diameter. Even if the machining was successful, a large amount of material generally needed to be removed from the shaft, limiting expected lifespan.

With in-situ annealing, the amount of material machined off the crankshaft is generally much less substantial, leaving significantly more material on the journal, which extends the life expectancy of the shaft. Goltens' process for annealing crankshafts and other shafting can be done successfully In-Situ (with the crankshaft in-place) as well as in our workshops around the world. A deep understanding of the metallurgy, expansion characteristics and safety precautions has been developed and refined over the years into a safe, repeatable, highly controlled process.



Goltens' Crankshaft Annealing Advantages

- Germanischer Lloyd Class approved annealing process
- Comprehensive capability to handle all aspects of hardness treatment inclusive of engine preparation, Inspection, pre-machining, hardness removal and finish machining as well as engine reassembly
- A large, global team of highly skilled In-Situ technicians to ensure a rapid, expert response anytime and anywhere
- Deep experience successfully annealing crankshafts across a broad array of makes and models of engines and rotating machinery
- Globally deployed and available portable annealing equipment for In-Situ application

Partial List of Crankshafts successfully annealed:

- | | | |
|--------------------|---------------------|-------------------|
| - BERGEN BRM | - MAN B&W 8L32/40 | - STORK |
| - DEUTZ 12M640 | - MAN B&W 9L 40/54 | WERKSPoor 280/8 |
| - GMT 420.12 | - MAN B&W 9L28/32 | - STORK |
| - MAK 453 | - MAN B&W 9L40/54 | WERKSPoor 6TM |
| - MAK 551 | - MAN B&W V9V 40/54 | 410 |
| - MAK 6M453 | - MAN B&W 16U28LH- | - STORK |
| - MAK 6M552C | 4 | WERKSPoor |
| - MAK 8M19 | - MIRRLEES 16KV | 8TM620 |
| - MAK 8M32 | MAJOR MK II | - SULZER |
| - MAN B&W | - MIRRLEES K8 | 12ZV40/48 |
| 10V52/55A | MAJOR | - SULZER |
| - MAN B&W 12V52/55 | - MITSUBISHI MHI | 16ZAV40S |
| - MAN B&W | 16KU | - SULZER AL 25/30 |
| 14V40/45A | - NIIGATA 16V32 CLX | - SULZER ZA40 |
| - MAN B&W 16V40/54 | - NIIGATA 32CX | - WARTSILA |
| - MAN B&W 23/30 | - PIELSTICK 12VPC2 | 18V46B |
| - MAN B&W 28/33 | - PIELSTICK 14VPC4 | - WARTSILA 4R32 |
| - MAN B&W 28LH | - PIELSTICK PC2 | - WARTSILA 9R32 |
| - MAN B&W 40/54A | - ROLLS ROYCE B- | - WARTSILA 6R32 |
| - MAN B&W 7L40/45 | TYPE GAS | |
| - MAN B&W 8L23/30 | - SKL VDS 26/20 | |



Laser Alignment



Goltens' In-Situ technicians have broad expertise as it relates to the use of state-of-the-art laser alignment and laser scanning tools.

Goltens utilizes these tools and techniques on a daily basis in conjunction with the performance of its other In-Situ machining and retrofit design services and it is this repeated high tolerance usage that makes our technicians some of the best in the world.

Goltens also offers these services on a standalone basis to support a wide variety of troubleshooting and alignment issues encountered by customers who are diagnosing cause of failure, installing new equipment or reinstalling repaired equipment or simply suspect their equipment is out of alignment.

Goltens' Laser Alignment Advantages

- Specialized laser alignment and scanning equipment deployed at our stations around the world
- A global team of specialists who are expert in the use of the equipment to ensure a rapid response anytime and anywhere

Laser Alignment Applications

- Shaft alignment
- Line bore measurements/center of circle
- Alignment of rotating machinery
- Alignment of stern tube bearings
- Sheave/pulley alignment
- Straightness
- Flatness
- Plumb line

Laser Scanning Applications

- 3D scanning of engine rooms for retrofit applications
- Hull surveys/scans
- 3D Dimensional checks (using laser tracker)
- Thermal growth evaluation



IN-PLACE MACHINING

Line Boring



Goltens undertakes both simple and complex boring jobs utilizing off the shelf and heavily customized, purpose built boring tools.



Our In-Situ Line Boring Specialization Includes

- Line boring main bearing or camshaft pockets standard and oversize
- Single pocket line boring standard and oversize
- Centerline shift in horizontal and vertical direction
- Large and small scale tapered boring
- Machining of thrust faces
- Re-bushing of main bearing and camshaft pockets
- Machining of engine lower liner landing surfaces for resleeving
- Boring of stern tubes, large diameter and tapered bores
- High tolerance in line boring of any cylindrical components or rotating machinery



IN-PLACE MACHINING

On-Site Services



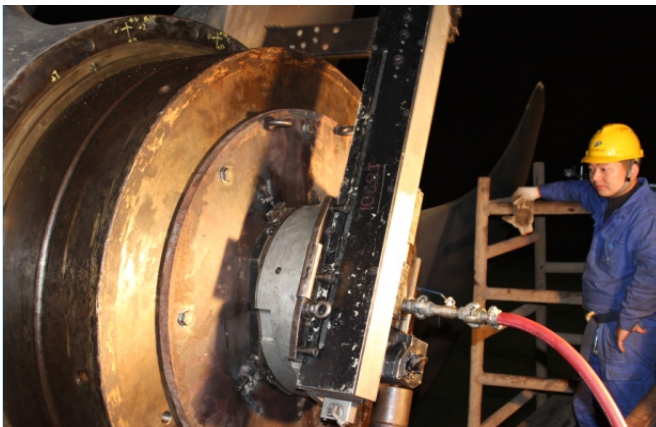
Goltens' culture as a precision tool maker and its constant investment in capital machinery and personnel related to In Situ machining has made its stations around the globe capable of handling almost any specialized machining job.

If we don't have the proper tool for your special, one of a kind requirement, chances are we can build it.

Our experience covers a full spectrum of marine/ shipyard, Offshore, Oil & Gas, Stationary Power and general industrial applications worldwide.

Services commonly provided by Goltens' teams include:

- Small and large-scale flange facing up to 6 meter diameter
- Surface/XYZ milling
- Reaming
- Sheared / Broken Stud removal
- Metal stitching of cast components (i.e. Engine block repairs after con rod failure, crack in cooling space and casings etc.)



ENGINE SERVICES

Engine Services



Engine maintenance and repairs is the main service of Goltens China. Routine maintenance, trouble shooting and repairs of engines is our specialty.

Supported by our specialists and departments for crankshaft grinding, laser alignment, line boring, fuel equipment, rebabbiting, precision machining and spare parts supply, it makes Goltens China a one-stop engine service centre.



Advantage:

- Expertise in repair, reconditioning and replacement of damaged or worn out parts
- Library of drawings and manuals for a large range of engines
- Constant up-date through continuous liaison with manufacturers
- Skilled personnel-engineers and mechanics with shipyard and sea going experience; technicians trained at the manufacturers' factories for quick trouble shooting and problem solving



ENGINE SERVICES

Fuel Equipment Hydraulic System



Fuel Equipment

With rising bunker prices and enforced air pollution acts, the demand for well maintained fuel injection equipment is ever increasing.

Goltens Shanghai capabilities within injection equipment requiring the finest tolerances has been documented through several generation.

Goltens China

- Fully equipped workshop with special equipment for diagnosis, repair and testing
- Trained specialists and technicians
- Original drawings on file
- Spare parts in stock



Hydraulic System

The use of hydraulics as a power medium is widespread throughout many different industries. Hydraulic dep. cover all aspects of repair, reconditioning, services and maintenance of marine, oil & gas and industrial installations.

Goltens Offers Trouble shooting & Repairs of all kinds of:

- Electro Hydraulic Cranes
- Towing Winches
- Mooring Winches
- Anchor Windlass
- Thruster (Electric & Diesel Driven)
- Tank Control System
- Cargo Grabs
- Steering Gears



HPS Pumps FIVA Valves



Hydraulic power supply (HPS) pumps and Fuel Injection Valve Actuation (FIVA) valves are the key components of ME engine.

To follow maker's recommended maintenance schedule carrying out overhaul is the necessity in order to keep engine running without failure.

HPS pump overhaul - Benefit:

- Pump testing under design pressure and flow rate simultaneously
- Acquire pump's internal leaking rate by simulating actual running condition
- Graphic display to monitor the testing condition at real time
- Testing report



The FIVA/ELFI overhauling job include:

- Disassemble FIVA/ELFI at workshop
- Clean and inspect valve housing and main spool
- Valve housing is refurbished and main spool is replaced if necessary
- Replaced the repair kit by original parts of FIVA/ELFI
- Function test on professional bench after assembled
- Calibrated feedback sensor

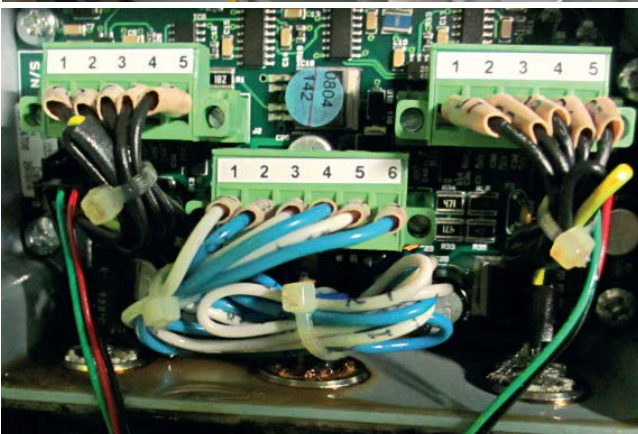


ENGINE SERVICES

Alpha Lubricator Services

Lack of maintenance may result in low or missing accumulator pressure, worn solenoid valves as well as defective non-return valves, which all may cause wrong lubrication. This can be avoided by the recommended overhaul and maintenance

Goltens China have years of experience, we can provide on site maintenance and supply service kits .



Based on our service experience and our guideline for overhaul intervals, the following parts must be replaced every 5 years or 32,000 R/H to ensure optimal and trouble free operation:

Lubricator:

- Accumulators
- Solenoid valves
- Non-return valves
- Feedback sensors
- Sealing and O-rings

Pump Station:

- Filter inserts
- Coupling spiders

ALCU:

- Angle encoder/index transmitter
- MCU/BCU



Service and maintenance kit

Governor Turbocharger



Governors

Goltens have fully equipped workshops capable of the following on most types of governors:

- Testing, repair & overhaul
- Full reconditioning

Parts that generally needs attention:

- Governors from main engines/ Auxiliary engines
- Governors for Cargo Turbines
- Governors for Auxiliary Turbines



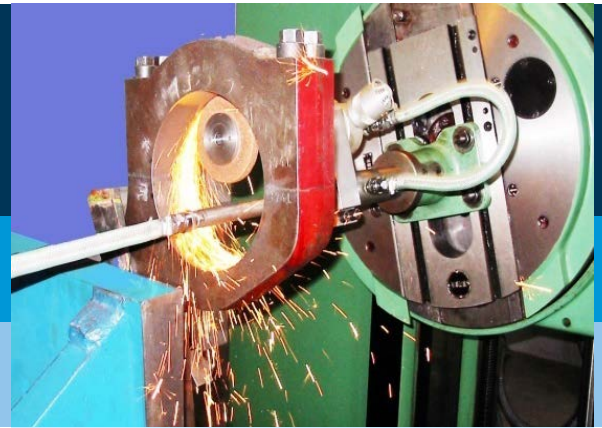
Turbochargers

The standard overhaul of a turbocharger consist of opening up, cleaning the rotor, ash blasting, repair and balancing.

We overhaul all types of turbochargers and supply top quality high performance spare parts. Our service include complete turbocharger overhaul in our workshop and afloat including rotor balancing in-situ.



Reconditioning & Machining



A Goltens Machine shop always contains Horizontal and Vertical Boring machine, Lathes, Milling and Shaping machines, Radial boring machines, Grinding machines plus machines for reconditioning of engine parts.

Typical Goltens' Reconditioning works:

- Cylinder liners
- Piston crowns/skirts
- Piston Rods/Connecting Rods
- Cylinder heads/covers
- Exhaust valve spindles, seats and cages
- Turbocharger repairs and balancing
- Fuel Injectors, nozzles, valves and pumps
- Heat exchangers
- Cargo & service pumps



Rebabbiting



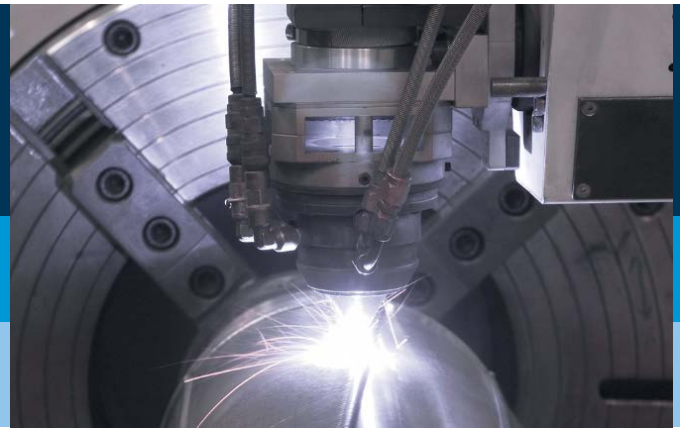
Goltens Bearing Reconditioning Advantages :

- Specially designed tools and machinery for rebabbiting
- Customized procedures and specially trained technicians to complete the job
- The ability to undertake bearings from 50mm to over 1000mm diameter.
- Precision machining of bearings to suit dimension drawings
- Library that includes specifications / drawings for most engines
- Ample White Metal Stock in inventory
- Competent nondestructive Testing technicians to undertake bond testing.

Types of Bearings Reconditioned:

- Crankshaft Bearings
- Crosshead Bearings
- Intermediate Bearings
- Turbine Bearings
- Pump Bearings
- Main Gear Bearings
- Thrust Pads for Main Shafts, Turbines, Crankshafts
- Stern Tube Bearings

Laser Cladding



Laser Cladding Technology is a process that repairs surfaces on parts by first machining down the worn surface and building it back up by depositing cladding material in thin layers to restore the worn surface.

By applying a protective layer of powder consumable, it is possible to prolong the operating life of new parts and to refurbish worn. Thus, there is a huge potential for cost savings and minimizing downtimes.

Laser Cladding Advantage:

- Environmentally Friendly Process
- Minimal Distortion
- Strong Metallurgical Bonding
- Erosion & Corrosion Resistant
- Control Thickness Easily
- Shorter Delivery Time

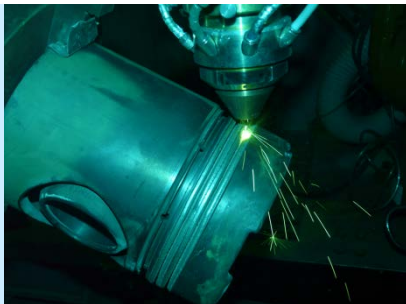
Applications:

Critical shafts and engine parts - Welding with minimal distortions allows the processing of critical parts such as propeller shafts, crankshafts, pump shafts, camshafts, piston rods, crosshead pins, etc.

Turbo machinery - In-situ laser cladding allows fast and cost-efficient repair of low pressure blades of steam turbines. Small turbo rotors can be repaired without distortion.

Other parts - Repairs can be made on cast iron parts, such as expensive cylinder cover castings, and pump impellers at minimum cost and post machining.

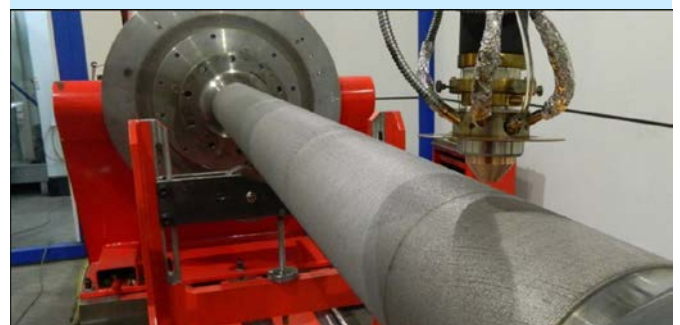
Product:
Piston
Dimension:
ø 258
Coating Type :
Cobalt based
Coating Area :
Three Piston
Ring Groove



Product:
Cross head
Dimension:
ø 390



Product :
Turbocharger Rotor
Coating Type :
Fe-based
Coating Area :
External Circular Surface



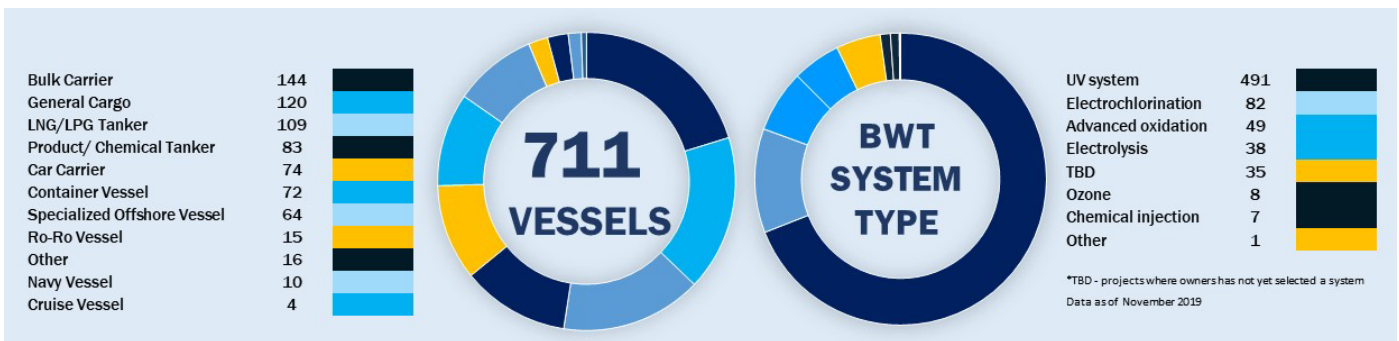
Product: Piston Rod
Dimension: ø150x5200mm
Coating Type: Cobalt based
Coating Area: 0.8mm

Ballast Water Treatment Retrofits

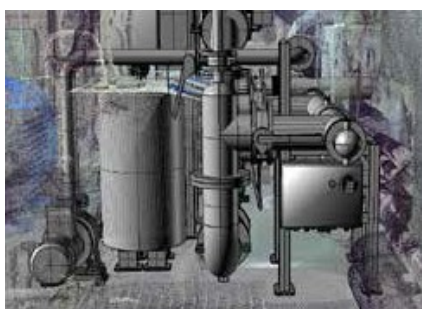
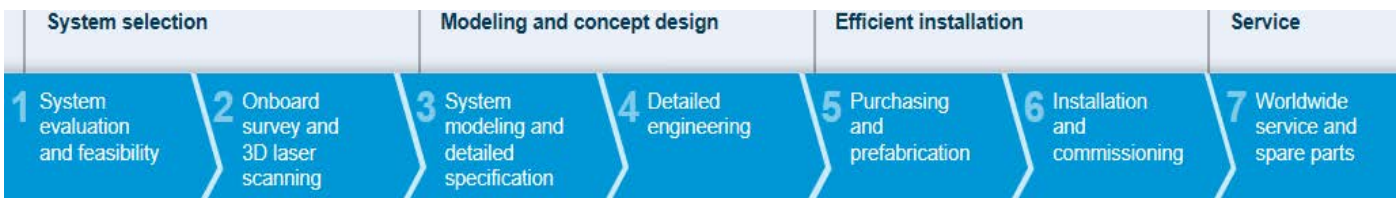


Goltens Green Technologies' retrofit expertise is unmatched in the market. The company has undertaken well over 700 projects using systems from numerous manufacturers, including Optimarin, Bio-UV, Sunrui, Headway, Severn Trent DeNora, Alfa Laval, Auramarine, Hyde Marine, Wärtsilä, JFE, Miura, Pansia, Techcross, NK, Ecochor, Teamtec and others.

As a leading independent global provider of ship repair services, Goltens has constantly been presented with new challenges by ship owners who have one main objective – how to keep their vessels in operation. Goltens Green Technologies is a highly skilled and experienced global force with resources in every region in which Goltens operates around the world.



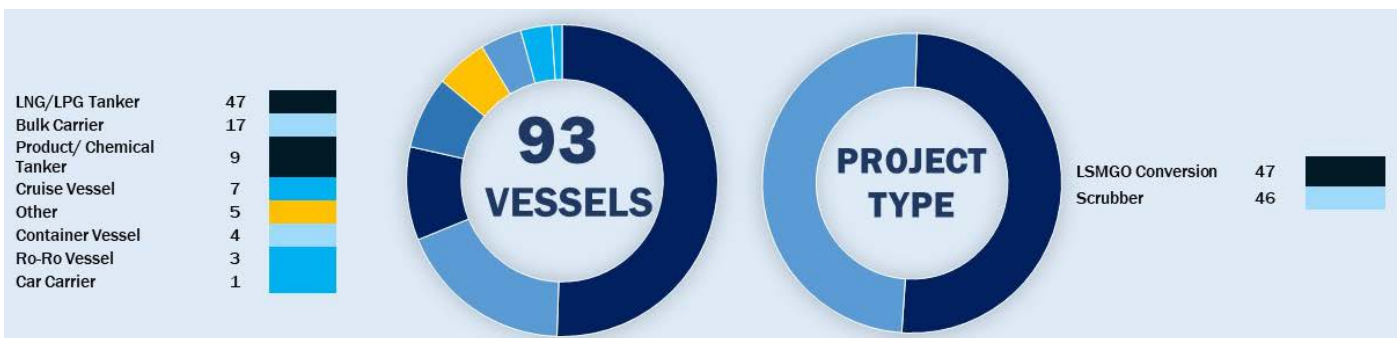
Our Process & Approach: Decision support for smarter implementation



Scrubber Retrofits



The Sulphur emission control legislation is in effect and will be phased in to tighten standards globally by 2020. Various compliance options are available to shipowners to address these regulations, and Goltens Green Technologies has taken over 90 projects for Exhaust Gas Scrubber Retrofits.



Exhaust Gas Scrubber

Goltens has the ability to undertake retrofit of Scrubber installations with the purpose of removing sulphur emissions while maintaining the ability to run on low-cost heavy fuel.



LSGO Modification

Goltens has the ability to undertake retrofit of installed diesel generators to run on dual fuel, closely cooperating with market leading manufactures.

These retrofits involve the installation of complex piping and control system, plus the scanning and design process to increases accuracy and speed up the installation.

SPARE PARTS

Spare Parts



We specifically offer :

- ✓ 2 stroke / 4stroke OEM Manufactured Spare Parts
- ✓ 2nd-hand Spare parts
- ✓ Goltens Manufactured Fuel Injection Equipment



Range of Supply:

- **2 Stroke Diesel Engine spares for :**
Sulzer/ Wartsila, Man B&W, Mitsubishi UEC
- **4 Stroke Diesel Engine spares for :**
ZJCMXD, ZJCME, Anqing Daihatsu, Zichai Yanmar, Chongqing Cummins, Shanxi Diesel (SXD), Yanmar, Daihatsu, Bergen, STX, Ssangyong
- **Turbochargers spares for :**
MAN NR, TCR, VTR, IHI RH, TPS , MET
- **Hatch cover spares for :**
MACGREGOR, TTS, NAKATA MAC, SMS, IMABARI, etc
- **Winch/ Windlass spares for :**
IHI, KAWASAKI, etc
- **Governors spares for :**
WOODWARD, ZEXEL
- **ME Remote control system spares for :**
MAN B&W, NABACO
- **Purifiers for :**
Alfa laval, Mitsubishi
- **GOLTENS G-pump:**
G1400, G2800
- **OEM Manufactured Bearings:**
Standard/ Oversize/ Undersize

Co-operation Service With:



- Japan Engine Corporation
- HHI-EMD Engine & Machinery
- YANMAR Authorized Service Station
- STX engine
- CSSC Marine power engine spare and service
- Anqing CSSC Diesel Engine spares and service
- DOOSAN
- GE Engine



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