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02

Diesel Engines

24 hours a day, 7 days a week, backed by our worldwide network of service facilities and on-call emergency repair team, **Goltens has been helping thousands of vessels to reduce off-hire and spare part consumption and more accurately, predict operating cost over the past decades.**

Our team of specially trained technicians and engineers are capable of performing routine maintenance, troubleshooting and repair on all major makes of main and auxiliary diesel engines.

Goltens offers:

- Expertise in repair, reconditioning and replacement of damaged/ worn out parts.
- Skilled personnel – engineers and mechanics with shipyard and seagoing experience; technicians trained at the manufacturer factories for quick troubleshooting and problem solving.
- Readily available spare parts.





Engine Trial in Power Plant

Diesel Doctor Working
Onboard Vessel

Engine Diagnostics – “Diesel Doctor”

Goltens has a team of specially trained Service Engineers to carry out engine performance analysis and troubleshooting with the assistance of portable “Diesel Doctor”. We can provide Vibration and Noise Analysis, Engine Inspection Programs, troubleshooting and repair preparations to reduce maintenance and operation costs while increasing machinery performance, efficiency and reliability for customers involved in the Oil and Gas, Shipping and Marine, Manufacturing Industries, etc.

03

Reconditioning 04



Nimonic Valve Spindle Reconditioning

In an ever more competitive world, reconditioning is the best alternative to replacement with new parts. Goltens has well-equipped facilities with class approved procedure for parts and components to be reconditioned to original maker's specifications.

Typical Components for Reconditioning:

- Cylinder Covers / Heads
- Piston Crowns / Skirts
- Exhaust Valve Spindles & Seats (Stainless Steel or Nimonic)
- Exhaust Valve Cages / Housings
- Piston Rods / Connecting Rods
- Pump Housings



Reconditioned Piston Skirts



Reconditioned Cylinder Covers



Grinding of Piston Ring Grooves



Reconditioned Exhaust Valve Housings & Cages



05

Precision Machining

Fully-equipped with computerised machines and automatic equipment, Goltens is well positioned to meet the high demands of today's Marine Shipping Environment. Our continued investment in equipment and people makes us the "repair partner of choice" for many local and international customers.

Goltens workshop capacities include:

- Large high technology CNC Plano Milling Machine with maximum cutting length x width of 6000mm x 4000mm which can undertake machining jobs for work pieces of up to 10 tons.
- Full range of CNC, NC and machines for all boring, grinding, milling and machining requirement.
- Full range of PTA, SAW, MIG, TIG welding equipment, welding positioners and associated manipulators.
- State-of-the-art Chrome Plating plant.
- Stress relieving furnace.
- In-house grit blasting facility ensures no time lost before inspection can commence.



Rebabbitting 06

Since Goltens designed the hydraulic centrifugal rebabbitting machine 30 years ago, **we have rebabbitted over 100,000 bearings**, making us the Industry's foremost expert.

Typical Parts for Rebabbitting:

- Crankpin and Main Bearings
- Crosshead Bearings
- Intermediate Bearings
- Turbine Bearings
- Alternator Pedestal Bearings
- Pump Bearings
- Main Gear Bearings
- Thrust Pads and Thrust Collars
- Stern Tube Bearings

Goltens offers:

- Specially designed tools and machines to suit different sizes and weights requirement of different types of bearings.
- Well-proven rebabbitting procedures widely recognised and accepted by all classification surveys.
- Experienced and well trained technicians.
- Round-the-clock workshop operations to meet vessel's urgent needs.



Ultrasonic Bonding Test of Remetalled Crankpin Bearing



Centrifugal Remetalling of Stern Tube Bearing



Machining of Stern Tube Bearing

07 Fuel Equipment

Goltens has over the years, built up a worldwide reputation for excellence in Fuel Equipment Reconditioning. Our capabilities within injection equipment require the finest tolerances has been documented through several decades.

Goltens has a fully-equipped workshop with special equipment for diagnosis, reconditioning and testing.

Typical Components for Reconditioning:

- Fuel Injectors (Including latest Slide Valve type)
- Plunger and Barrels
- Fuel Nozzles
- Needle and Guides
- Fuel Valves
- Fuel Pumps
- HP Fuel Piping



Sulzer Pump Block Overhaul



Nozzle Lapping



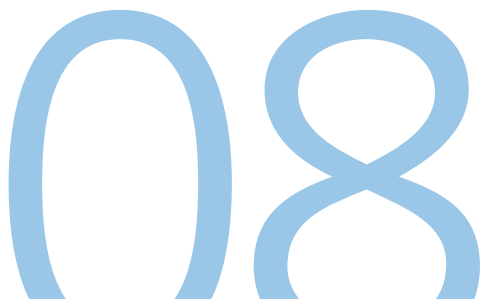
Engine Manufacturer Authorised Fuel Equipment Testing Machine



Contact Face Grinding



Reconditioning of Fuel Slide Valve



Crankshaft Grinding



Boroscope of Oil Passage

Having reconditioned over 25,000 crankshafts since the start up in 1940, Goltens has both the experience and expertise to handle any kind of grinding problem.

Goltens offers:

- Specially designed tools for grinding of bearing surfaces without dismantling the shaft.
- Bench grinding in dedicated workshop.
- Trained engineers and mechanics who are skilled in the art of in-situ grinding and bench grinding.
- Readily available tools for almost any engine make and type.



Grinding of Crankshaft in Workshop



Multi Point Machining of Crankpin

09

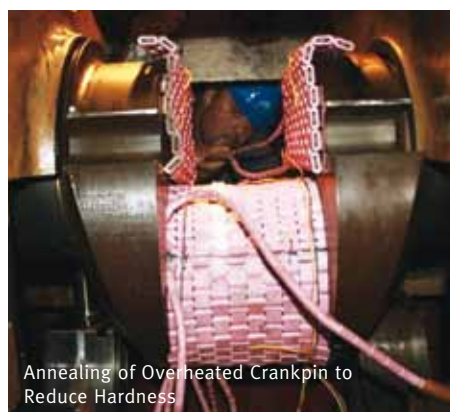
In-situ Crankshaft Machining

In the field of crankshaft machining, Goltens has long been the acknowledged leader. Goltens' first tool for in-situ machining was patented as far back as 1957. Since then, we have machined more than 50,000 crankpins and main journals in-situ.

We have also developed tools to machine thrust pad of crankshafts, heat treat of crankshafts and other tools customised as solutions to individual ship owners' challenges.



Grinding of B&W Engine Thrust Face



Annealing of Overheated Crankpin to Reduce Hardness

In-situ Machining 10

With in-situ machining, Goltens can offer a quicker, more economical alternative to dismantling damaged components, transporting to workshop, repairing and re-transporting for assembly and re-alignment. We can mobilise a wide range of machines and equipment to your site, ensuring that your machinery is operational as soon as possible.

Goltens offers:

- Portable Machines for resurfacing.
- Lightweight machines for vertical/horizontal position machining for separators.
- Portable machines to suit overhead/under surface machining for thrusters seating.
- Portable flat face milling machines (generator foundation in power station).
- Portable key-way machine (turbine shaft in power station).



Milling of Vertical Flange Surface



Milling of Thruster Seating

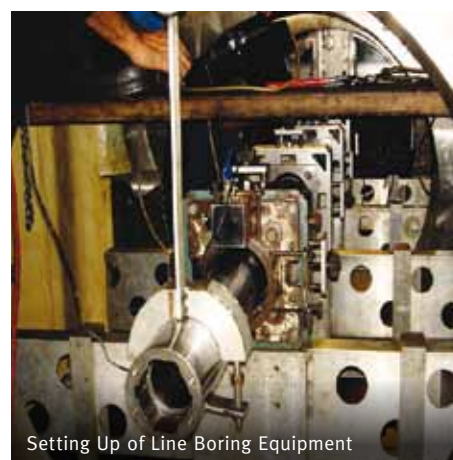
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Machining of Liner Bore



Line Boring and Flange Facing



Setting Up of Line Boring Equipment

Line Boring

Line boring in-situ or in workshop is a speciality of Goltens. With the use of skilled personnel, special designed tools and laser guided equipment, **Goltens executes work of exact precision.**



Line Boring of Main Bearing Pockets for 4-stroke Engine

Laser Alignment

Goltens uses special laser equipment for re-alignment of machinery and checking of machinery after re-alignment.



Laser Alignment Check of Main Bearing Pockets



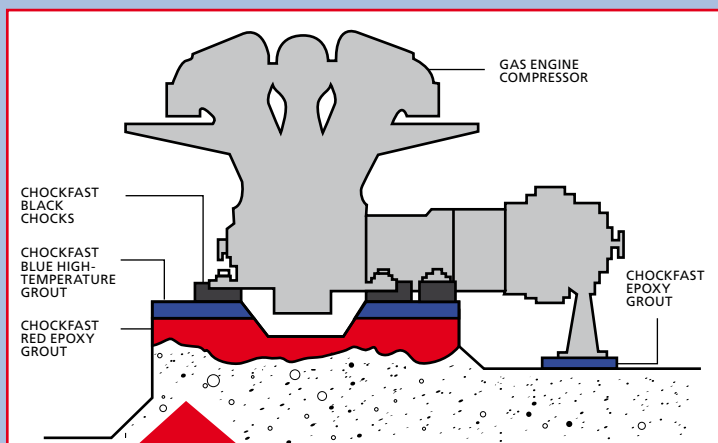
Laser Alignment Check of Propulsion Shaft Line



Alignment of Stern Tube

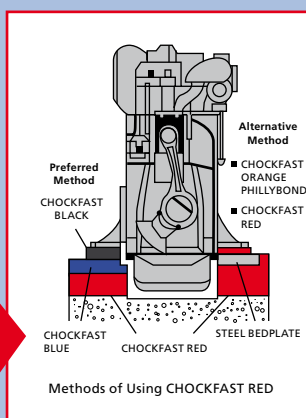


Flatness Check of Thruster Pedestal



The Chockfast System Assures Precise and Permanent Alignment of Gas-Engine Compressors

...and Diesel Engines



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Chocking & Grouting

ITW Polymer Technologies

Marine and Offshore Sectors

Alignment and chocking are critical operations in new buildings and repairs. Being the authorised distributor for **ITW Polymer Technologies**, Goltens can provide a unique knowledge, which offers a quick, dependable and accurate system for alignment and chocking, and supply various types of epoxy grouting solutions to suit the needs of Marine, Offshore as well as Industrial installation.

Advantages of Chockfast Chocks are:

- Minimise heat build-up on foundations.
- Assure precise and unsurpassed contact with bedplates.
- Provide a high coefficient of friction to help maintain engine alignment and reduce possible bearing or crankshaft damage.
- Resist abrasion, impact, cavitation, corrosion, erosion and chemical attack.

Industrial Sectors

The Chockfast System for permanent alignment of gas engine compressors and diesel engines consist of pourable Chockfast epoxy resin chocks, **Chockfast Blue** high temperature grout, and **Chockfast Red** foundation-capping and strengthening compound.



Chockfasting of Engine



Chockfast Warehouse

Deck Machineries & Hydraulic Services

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Load Testing of Crane

Goltens offers a full range of professional inspection, maintenance and repair services to meet marine and offshore hydraulic services requirement:

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



Overhauling of Crane Boom in Workshop



Replacement of Windlass at Anchorage



Overhaul of Cable Lifter

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Metal Stitching

Metal stitching is a well-known method for repairs of all kinds of casted material. Goltens professionally trained teams are specialised in carrying out metal stitching both in-situ and in our workshop.

Parts that generally need stitching are:

- Engine blocks and bedplates
- Pump casings
- Turbine casings
- Gear and gear casing



Crack Repair on Piston Skirt



Troubleshooting of Control Panel

Automation & Electrical

The manoeuvring, control, alarm and safety systems are major contributors to many of the severe damages we entertain regularly. **Our concept, hence, is to overhaul the manoeuvring and safety systems as an integral part of a total overhaul to avoid interface problems.** It is well-known that no system is stronger than its weakest link.

Priority Systems:

- Engine remote control
- Bridge control
- Alarm and monitoring systems
- Safety systems
- Rudder and propeller controls
- Cargo control systems
- Lift controls
- Fire alarm systems
- Switchboards
- Voltage regulators
- Starter panels
- Distribution network
- Electric Motors
- Generators/Alternators

Goltens offers:

- Troubleshooting
- Repairs
- Fine tuning of exiting
- Installations
- Calibration of sensors