



MARINE AND OFFSHORE



MECHANICAL SERVICES
HYDRAULIC SERVICES
DIESEL ENGINES AND TURBOCHARGERS
SHAFT LINE AND PROPULSION SYSTEMS
LASER AND OPTICAL ALIGNMENT
IN-SITU MACHINING
METALOCK® COLD STITCHING
WELDING AND PLATEWORK
BOILER SERVICES
ANCILLARY EQUIPMENT FOR FPSOs AND TANKERS
ELECTRICAL SERVICES
CRANES AND DECK MACHINERY
REFRIGERATION
MARINE ELEVATORS

LIFEBOATS, DAVITS, RESCUE BOATS,
LAUNCHING DEVICES
LOAD TESTING
FIRE FIGHTING EQUIPMENT
ELECTRONICS
NAVIGATION AND STEERING
GMDSS (GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM)
VDR (VOYAGE DATA RECORDER)
CALIBRATION
AUTOMATION
LOGISTICS SERVICES
NETWORK
AUTHORIZED SERVICE REPRESENTATIONS



 **METALOCK**
BRASIL

ABOUT US

Metalock stands for a highly successful repair technology to cracked or broken cast iron or steel components. This cold process originated in the oil fields of Texas in the 1930's; developed to eliminate the dangers of open flame welding in inflammable conditions.

The process has many advantages, such as the absence of heat, meaning the elimination of distortion, reduction in post repair machining and maintenance of pressure tightness.

Metalock International Association was created in 1953. The members funded associated companies throughout the world with most, not all, using the Metalock name. Today these and further independent companies are members of the Metalock International Association.

Metalock activities in Brazil started in São Paulo, in June of 1957, originally under the name Unilock. The basic activity was performing repairs to cold cast iron components, mainly for industrial and marine equipment, such as diesel engines, compressors, pumps and presses. At that time, most industrial machinery was made in cast iron and the repair market expanded because there was a shortage of spare parts, as a consequence of World War II. Steel subsequently partially substituted cast iron in machinery and Metalock Brasil diversified its activities. There was considerable demand for marine equipment repairs in Brazil and in January of 1961, the company took over Oficina Duncan, a marine engineering service company in Santos, adding marine engineering services to its activities.

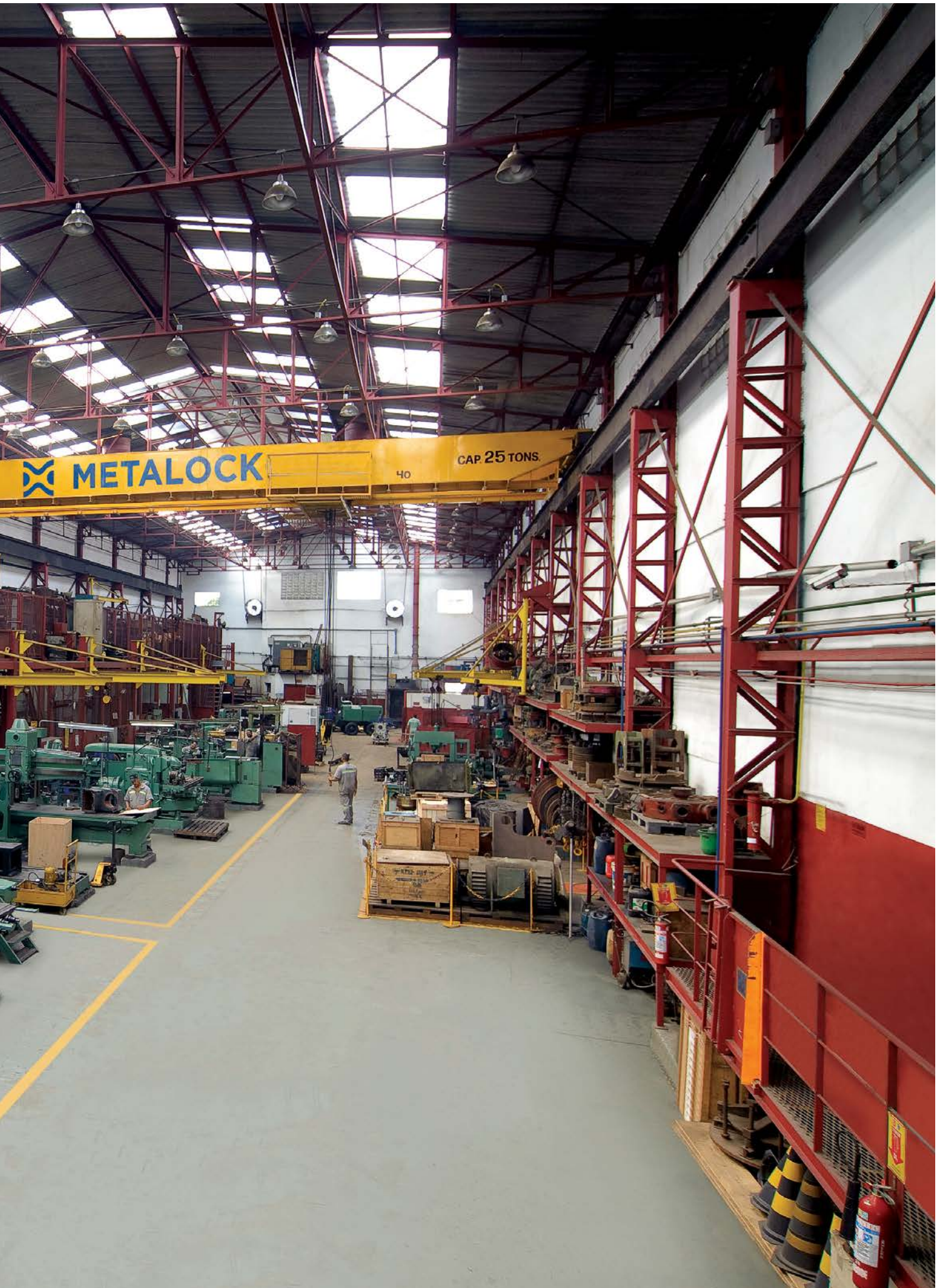
Metalock Brasil expanded its engineering services in the industrial, marine and offshore markets in Brazil considerably, building itself a reputation for reliable services conducted in-house – cold stitching (Metalock®), mechanical, machining, in-situ machining, welding, plate work, boiler work, electrical, electronics, pneumatics, hydraulics, propulsion, refrigeration, electroplating and safety inspections.

Metalock Brasil is authorized service representative for more than 60 manufacturers of marine equipment and its technicians regularly attend training courses at these manufacturers abroad, keeping abreast of global technological developments and methods. In addition it has close working arrangements with other marine equipment manufacturers. Its repair teams are accustomed to working abroad, on board vessels during voyages and are readily deployed to anywhere in the world.

Metalock Brasil has workshops in Santos, São Paulo and Rio de Janeiro. It attends at all major ports in Brazil and South America, often using a qualified network of subcontractors, under its supervision, enabling it to offer local service, thus minimizing travel time and costs. It also provides riding squads for all voyage repairs, along the Brazilian coast as well as abroad. Through MIA, ISES and fellow representatives of manufacturers, it offers a global service network.

Metalock Brasil is ISO 9001:2015 certified by DNV-GL.

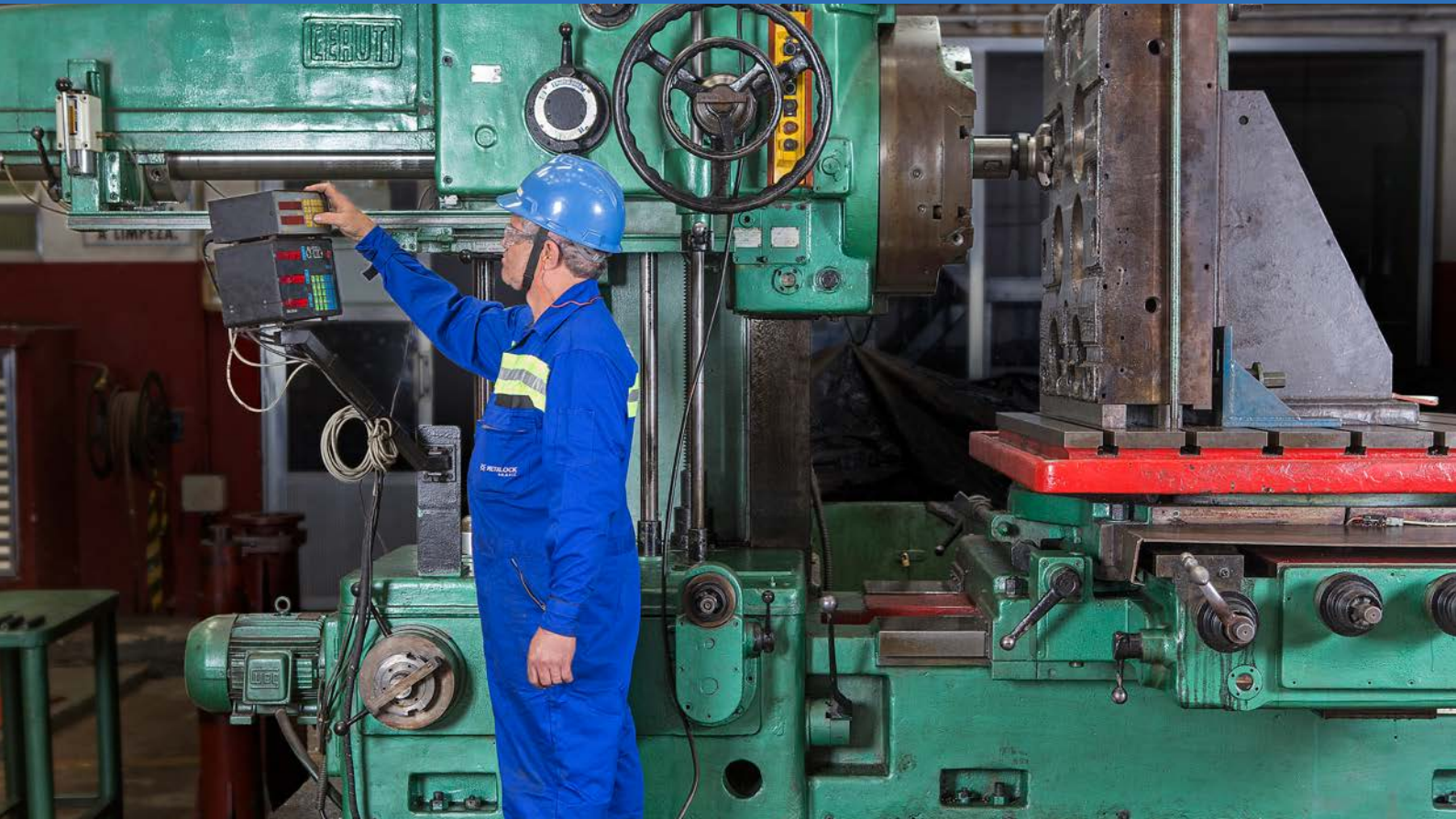






SERVICES

WORKSHOP



Mechanical

Repair and overhaul of:

- Pumps (centrifugal, reciprocating, gear)
- Air Compressors
- Heat Exchangers
- Valve Chests
- Deck Machinery (windlasses, anchor winches)
- Reduction Gearboxes

Authorized Service Representatives for:

- Hyundai Cargo Pumps
- IHI
- Kawasaki Precision Machinery
- Mirae Industries
- Reintjes
- Shinko
- Teikoku

Hydraulics

- Steering Gear
- Hydraulic Power Packs Refurbishment
- Hydraulic Power Units and Controls
- Hydraulic Cylinder Repairs

**Factory trained service engineers
and technicians**

DIESEL ENGINES AND TURBOCHARGERS



- Overhaul Main Engines (2 stroke and 4 stroke)
- Overhaul Auxiliary Engines
- Overhaul of Turbochargers
- Balancing Turbocharger rotors with Schenk balancing machine HBU 20/40
- Re-blading of MET turbos
- Reconditioning of components:
 - Cylinder Heads
 - Cylinder Liners
 - Piston Crowns
 - Piston Skirts
 - Exhaust Valve Spindles, Seats & Cages
 - Exhaust Valve Stems
 - Crosshead Pins
 - Connecting Rods
 - Fuel Injection Equipment (Valves, Nozzles, Bodies, Fuel Pumps)
- Fuel Pump Timing
- Repair and Renewal of High Pressure Fuel Pipes
- Removal of broken Studs
- Remetal (Babbitt) Bearings
- Crankshaft rectifying, *in situ* and ashore
- Chocking Engine Bases (Epocast resin & Vibracon elements)
- Governors – Overhaul (Woodward, Zexel, Yanmar, Regulateurs Europa)



Authorized Service Representatives for:

- Hyundai Global Service - Engine and Machinery (HIMSEN, MAN B&W, WINGD)
- J-ENG (Japan Engine Corporation) - UE Engines
- Mitsubishi – MET Turbochargers
- Steyr Motors
- Yanmar – Large Marine Engines

Trained service engineers and technicians for:

- MAN B&W
- WinGD Ex Sulzer/Wärtisila
- MaK

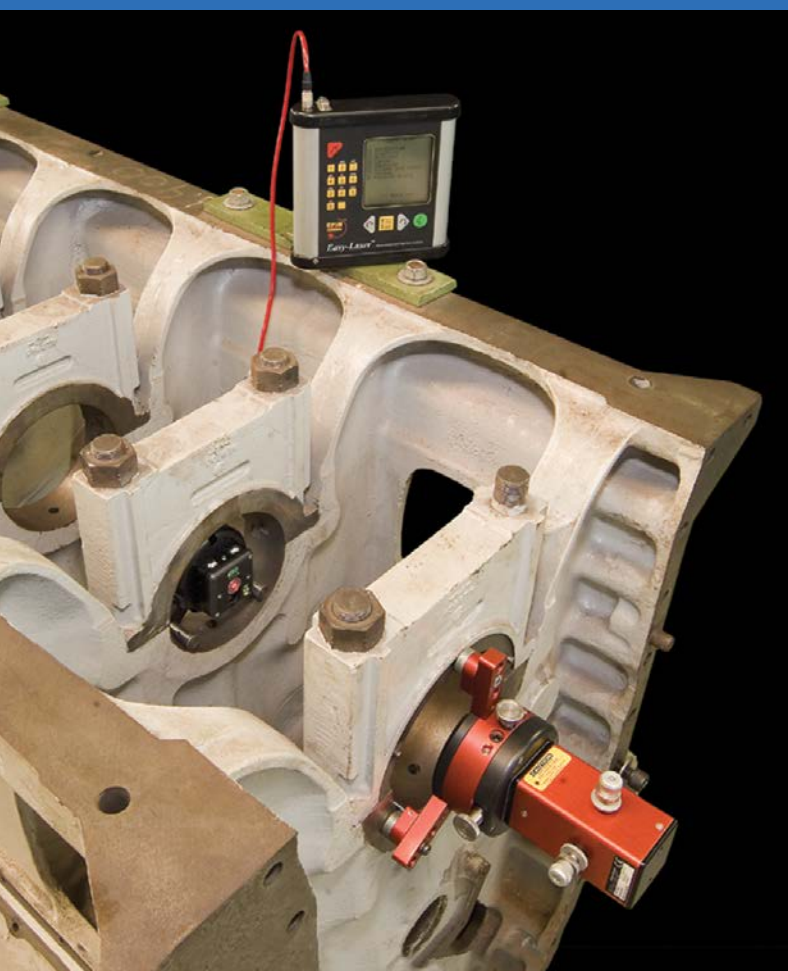


- Bonding of Propeller Shaft Simplex® Seals and Vulcanizing of Pneumostop Thruster Seals
- Rebabbitt Stern Tube Bushes
- Propeller Repairs
- Controllable Pitch Propellers

Authorized service representatives for:

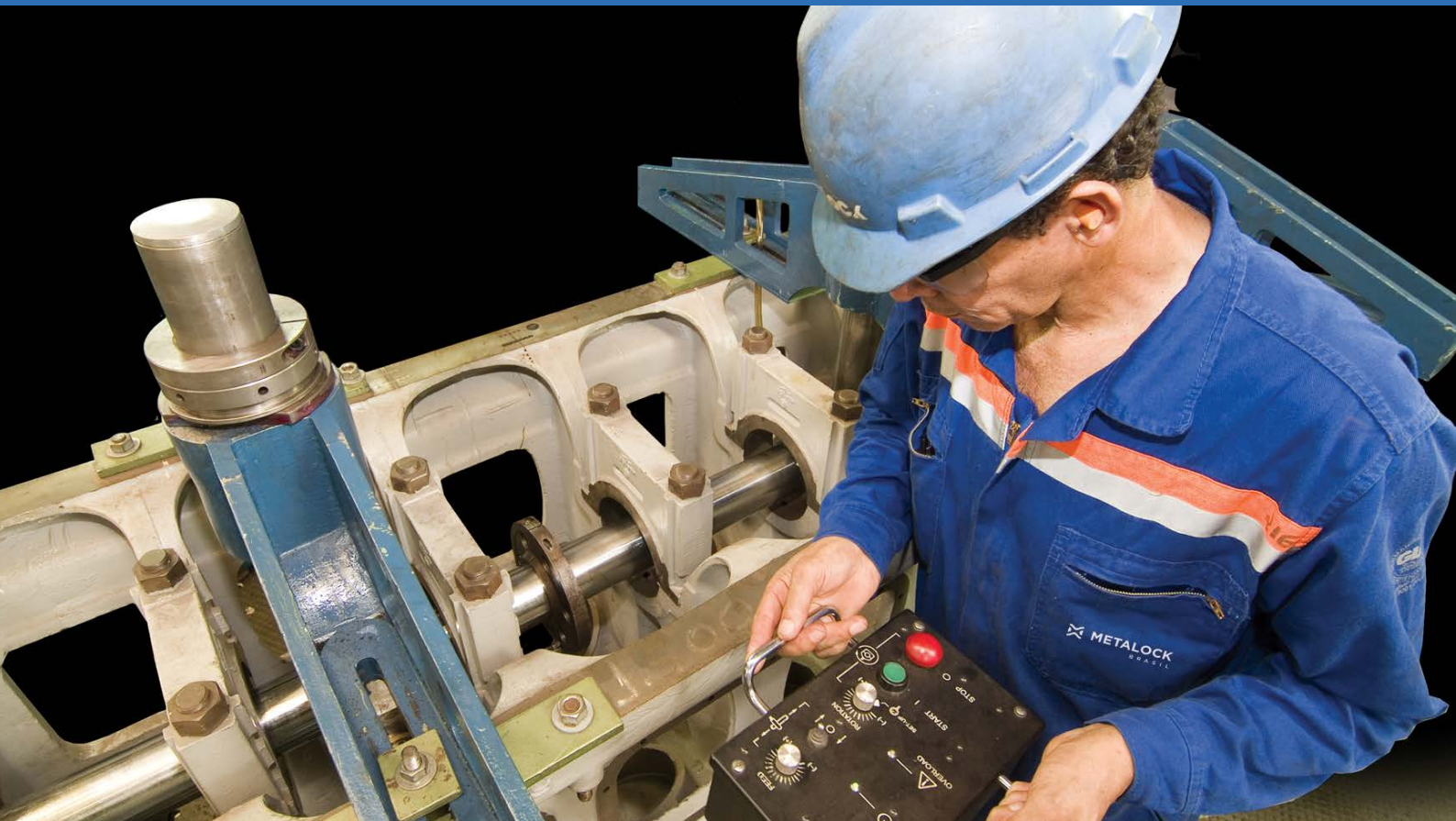
- SKF Marine (SIMPLEX Seals)
- Hyundai Global Service
- Kawasaki Heavy Industries

LASER AND OPTICAL ALIGNMENT



- Engine Blocks
- Propulsion Shaft Line and Stern Tube
- Engine/Alternator Assemblies
- Electric Motor/Pump Assemblies
- Crane Pedestal

IN-SITU MACHINING

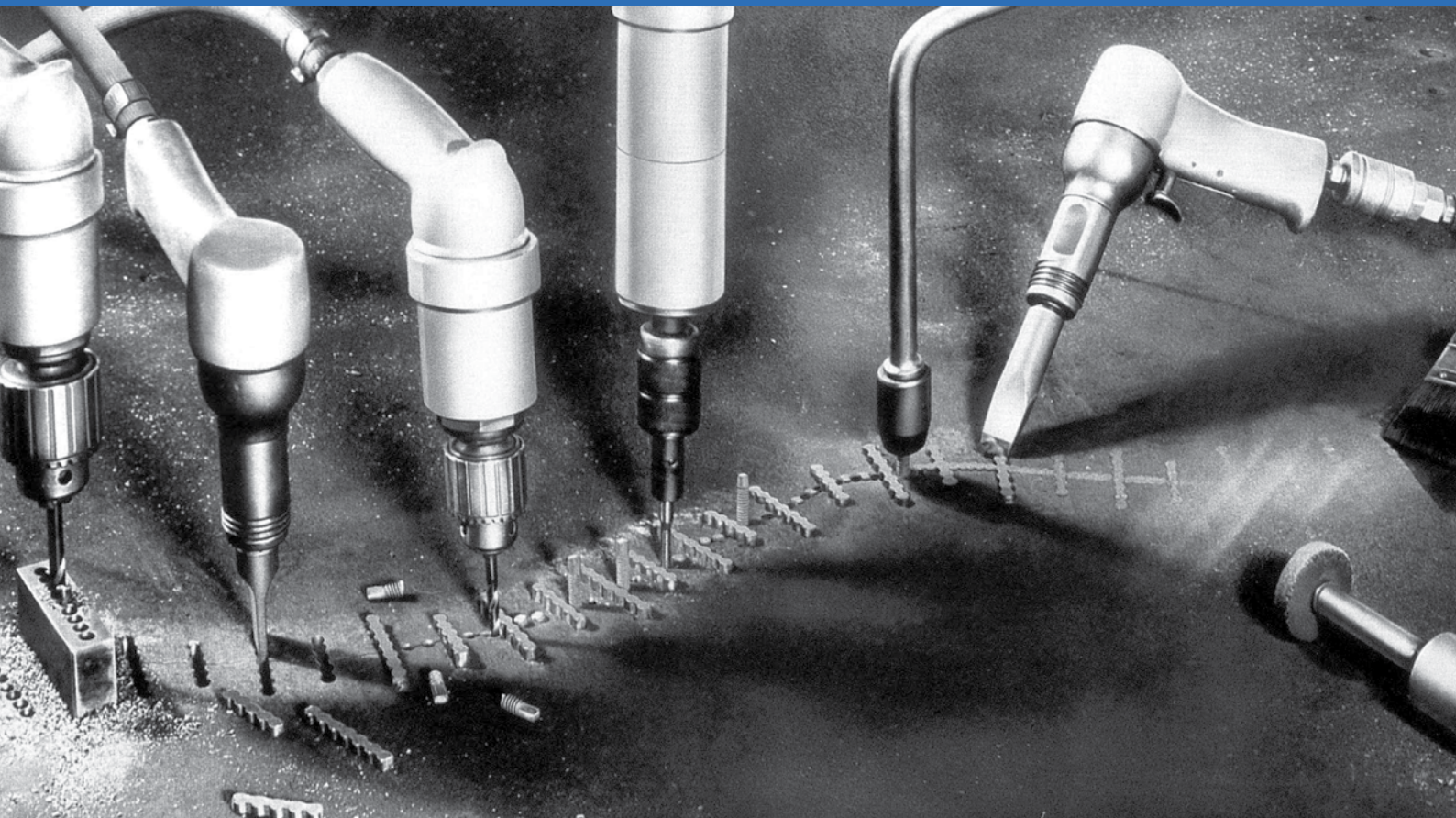


- Line Boring of engine blocks up to 12 m
- Rectification of crankshafts (crankpins, main journals and radii)
- Cylinder cover/liner/block landings (including bushing)
- Machining of shaft ends
- Boring of housings
- Boring of holes

Equipment:

- Crankshaft rectification equipment up to \varnothing 1000 mm
- Portable line boring equipment up to 12 m
- Flange Facers from 25 up to 3200 mm
- Chamfering machines
- Liner landing skimming machines
- Drill machines with magnetic bases
- Slides up to 5500 mm
- Boring bars
- Liner honing machine up to \varnothing 980 mm





Repairs to casting constructions:

- Compressor and pump casings
- Motor frames
- Engine blocks
- Gearboxes

Advantages:

- Repairs cracks to cast iron, steel, aluminium and other alloys
- Maintains alignment, surfaces, and dissipates stresses
- Absorbs compression forces
- The vast majority of repairs can be done in-situ, minimizing the need for disassembly and reducing downtime
- A fraction of the cost of replacement





- Structural and Shell Plating
- Tanks (including Stainless Steel)
- Pipework
- High pressure piping
- Gangways
- Deck
- Crane sections
- Hatch Covers

Welding Processes:
SMAW / FCAW / MIG / TIG

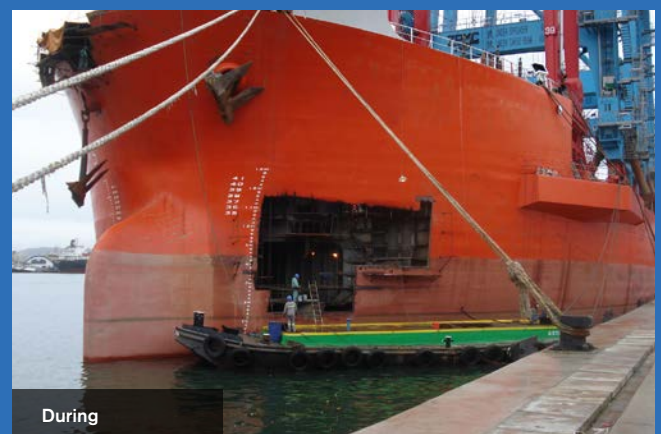
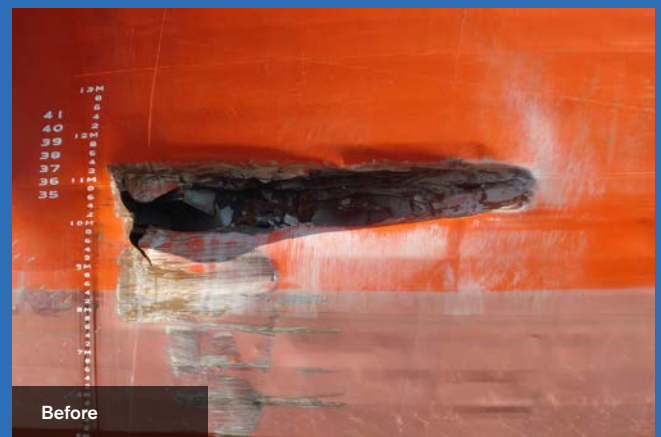
Elaboration of Welding Procedure Specification (WPS) and Welding Procedure Qualification Record (WPQR) specific to each project

Approved Welding Procedure

- Manual Arc Welding of Higher-Strength Hull Structures Steel Grade E36 - DNV GL

Welders certified by class

- Lloyds Register to ASME IX 4G & 6G
- DNV GL ASME IX





- Steam and Oil Fired Boilers
- IGG – Inert Gas Generator
- Incinerator

Boiler Inspections

(Water/steam side – Oil fired side – Exhaust gas side – Combustion gas side, furnace and chambers)

Repairs to:

- Plating, shells, pipes and stays
- Supports and securing arrangements
- Heaters and economizers
- Circulation pumps
- Valves and cocks
- Safety Valves – strip / overhaul / lap faces / adjust / set pressure / popping test
- Re-tubing
- Welding cracked tubes and tube plates
- In-situ machining of tube plates
- Combustion chamber – structural and TIG welding
- Refractory repairs and renewal
- Burners – troubleshooting, repair and installation
- Automation and Control



Technicians certified to Brazilian Standard NR13

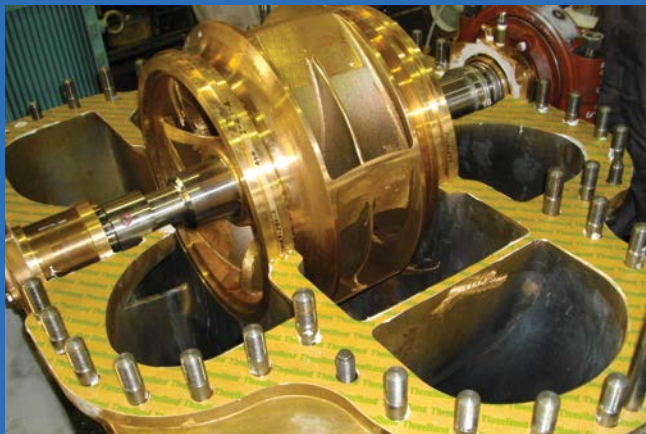
Authorized Service Representatives for:

- Kangrim
- Sunflame
- Volcano

ANCILLARY EQUIPMENT FOR FPSOs AND TANKERS



- Installation, commissioning and maintenance of Sea Water Lift Pumps (authorized by DMW)
- Overhaul, repair and testing of Pressure Safety Valves (authorized by Fukui Seisakusho)
Testing capability up to 300 bar
- Overhaul of Cargo Oil Pumps and Cargo Oil Pump Turbines (authorized by Shinko)





Rewinding and overhaul of:

- Low voltage AC & DC rotating machinery - motors and alternators
- During the rewinding of the customer's alternator Metalock Brasil can arrange generator rental
- Transformers

Repairs to:

- Circuit breakers
- Switchboards

Further services:

- Predictive, preventive and corrective maintenance to electrical machinery
- Health care of electrical machinery
- Thermographic survey LV & HV
- Balancing of electric motors and alternator rotors
- Secondary injection testing for protection relays
- Repair, maintenance and commissioning to frequency inverters and soft-starters
- Electrical installations
- Electrical engineering services
- Field maintenance



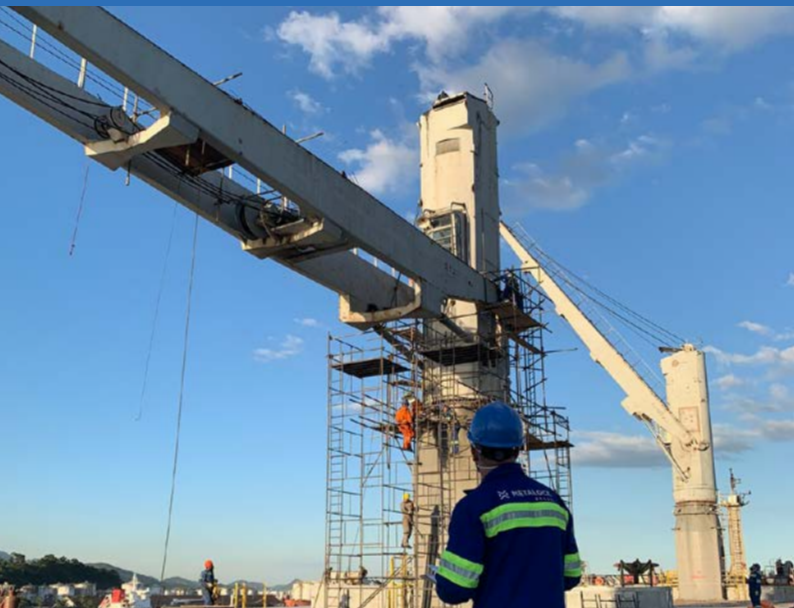
Authorized Service Representatives for:

- Emod Motoren GmbH
- Hyundai Global Service (Electro Electric Systems)
- JRCS
- KTE
- Marelli Motori
- Shanghai NSE Co., Ltd.
- Taiyo Electric Co
- WEG



Certified by DNV-GL for repairs to Explosion Proof Motors under IEC 60079-19 for protections: d, e, n and t

CRANES AND DECK MACHINERY



- Jibs
- Gearboxes
- Renewal of Brake Bands
- Spreaders
- Windlasses
- Anchor Winches
- Load Testing

Authorized service representatives for:

- Davit International GmbH
- JMU (ex IHI)
- Oriental Precision (OPCO)

REFRIGERATION



- Domestic Reefer systems
- Stores
- Air Conditioning systems
- Provision Reefer systems
- Compressor Overhauls

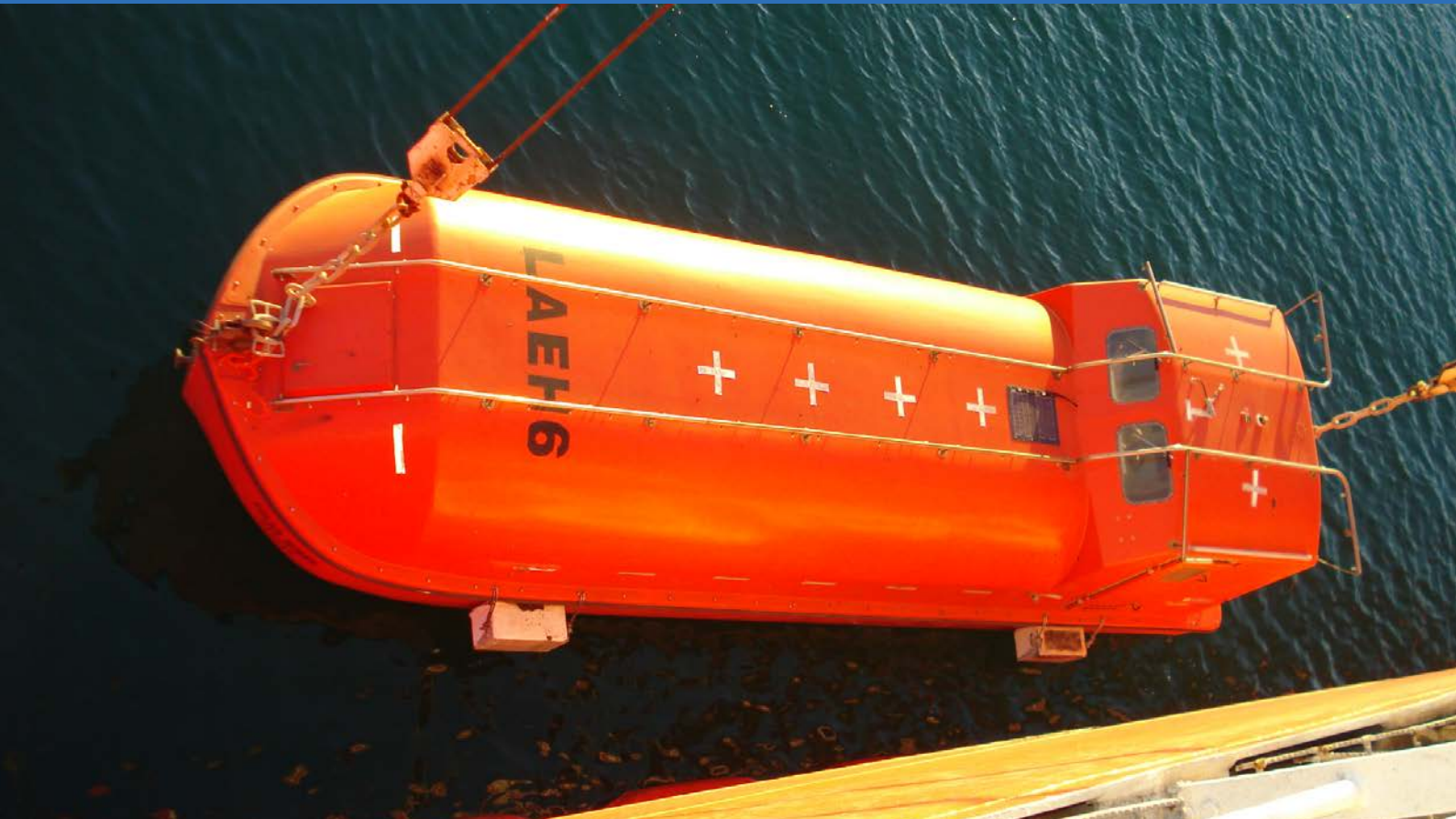
MARINE ELEVATORS



- Annual and 5-yearly Survey and Certification
- Repairs and Maintenance
- Preventive Maintenance
- Modernizations and Retrofits
- Spare Parts

Authorized Service Representatives for:

- Hyundai Elevator



- Inspection, Services and Maintenance
- GRP (Glass Reinforced Plastic) Repairs
- Structural Repairs
 - Engine and propulsion systems maintenance, repairs and commissioning
 - Inspection of accommodation ladders and gangways
 - Replacement of lifeboat release and retrieval systems

In compliance with IMO SOLAS MSC Res. 402(96), 404(96) and MSC Circ, 1331 and MC Circ 1392

Classification Societies:

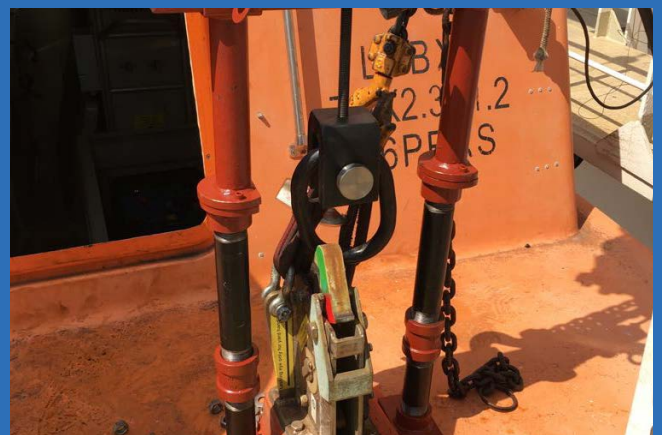
- ABS
- BV
- DNV GL
- LR
- NK
- RINA



LOAD TESTING



- Lifeboats
- Davits
- Accommodation Ladders
- Gangways
- Cargo Gears
- Cranes
- Load testing up to 300 mT (using water bags, load cells and flow meters)
- On-load hook tester up to 10 Tons





Fire Fighting & Life Saving Appliances

- Breathing Air Apparatus
- Escape Set
- Medical Oxygen Resuscitator
- Fire Extinguishers
- Fire Hose & Hydrants
- Immersion Suit
- Lifejackets
- Anti-Exposure Suit

Fixed Systems

- CO2 High Pressure
- Dry Powder System
- Foam System
- Galley System
- LAFF System
- Deep Fat Galley System
- BA Compressor
- Medical Oxygen System
- Chem/Inert Gas System (Novec, FM200, Inergen)

In compliance with MSC
Circ's 1318, 1432, A.951

DNV-GL Certified



ELECTRONICS



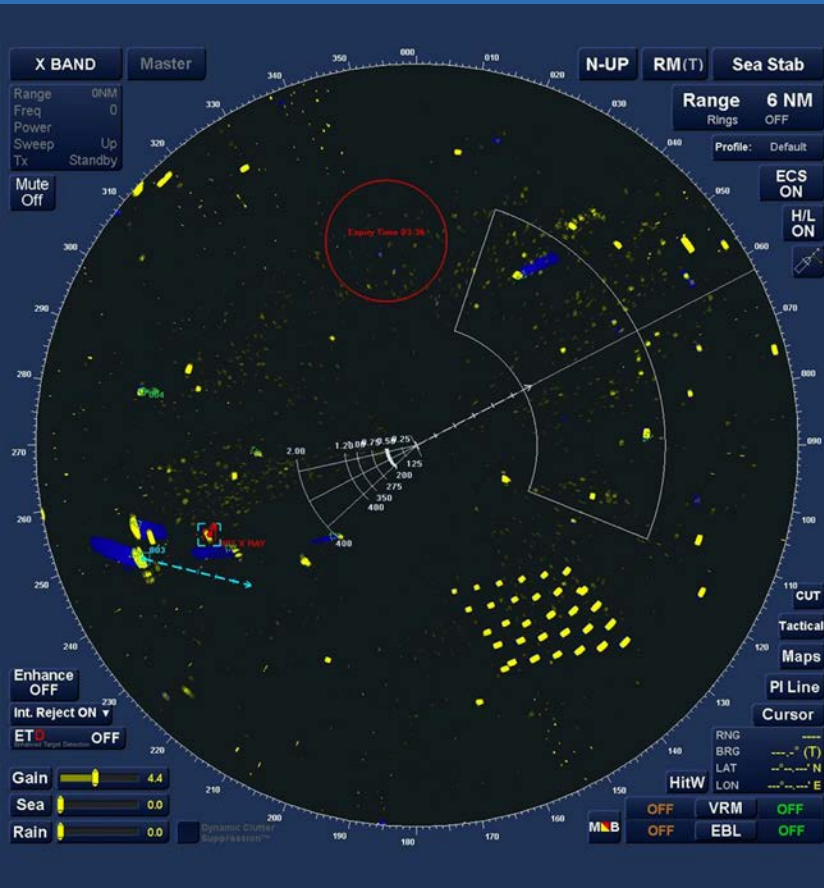
Activities and Services

- Corrective, Predictive and Preventive Maintenance
- Installation Survey
- Initial Survey
- Periodical Survey
- Renewal Survey
- Retrofitting
- Newbuilding Installation
- Commissioning
- Design and Integration

Accreditations

- ABS
- BV
- DNV-GL
- Lloyds Register
- Class NK
- RINA





- AIS (Automatic Identification System)
- IBS (Integrated Bridge Systems)
- Radar
- Conning
- ARPA (Automatic Radar Plotting Aid)
- ECDIS (Electronic Chart Display and Information System)
- Gyrocompass
- Magnetic Compass
- Auto-Pilot
- Speed Log
- Echo Sounders
- GNSS (Global Navigation Satellite System)
- BNWAS (Bridge Navigation Watch Alarm System)

GMDSS (GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM)



Bridge equipment:

- MF/HF
- VHF
- Inmarsat - C
- SSAS (Ship Security Alert System)
- EPIRB (Emergency Position Indicator Radio Beacon)
- SART (Search And Rescue Transponder)
- AIS (Automatic Identification System)
- LRIT (Long Range Identification & Tracking)
- VSAT (Very Small Aperture Terminal)
- TV-at-sea
- Internet-at-sea

Shore-based equipment:

- GMDSS (Global Maritime Distress and Safety System) Stations
- AIS (Automatic Identification System)

Activities:

- Safety Radio Survey (GMDSS and MODU)
- Mandatory Annual Testing of AIS, EPIRB, LRIT, SART, AIS-SART and SSAS

VDR (VOYAGE DATA RECORDER)



- VDR (Voyage Data Recorder)
- S-VDR (Simplified Voyage Data Recorder)
- APT (Annual Performance Test) for VDR and SVDR
- Installation
- Integration
- Retrofitting and upgrading
- Commissioning

Manufacturers Represented:

AMI
Headway
Highlander
JRC
Kelvin Hughes
MacGregor (Interschalt)
Netwave
Rutter
Samsung
Transas
Wärtsilä SAM Electronics

CALIBRATION



Instruments:

- UTI (Ullage Temperature Interface)
- Pressure
- Environment (Multigas Detector, Explosimeter, Oxygen Detector)
- Temperature
- Electrical
- Dimensional

Authorized Service Representatives for:

- Riken Keiki



- MSB (Main Switch Board)
- ICMS (Integrated Control and Monitoring System)
- MEAS (Main Engine Automation System)
- PMS (Power Management System)
- UMS (Unattended Machinery Space)
- AMS (Alarm Monitoring System)
- AVR (Automation Voltage Regulator)
- PLC (Programmable Local Controller)
- Oil Mist Detector
- Fire Control System
- Propulsion Control System
- Control Panels
- Inverter Systems
- Oil / Water Separation

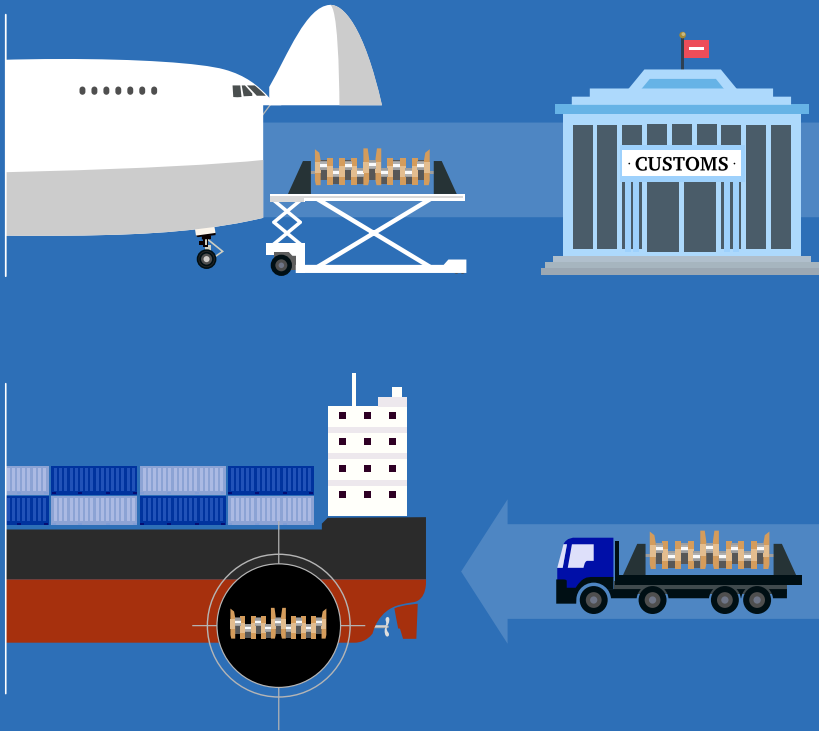
Electric and Hydraulic Automation

- Crane System
- Power Pack
- Mooring & Anchor Winch
- Steering Gear
- Cargo Control System
- Ramp Control System
- Hatch Cover and Folding Control System
- Watertightness Integrity Surveys - Accredited

BWMS (Ballast Water Management Systems)

- Engine Space Scanning and Project
- Integration
- Installation
- Commissioning

LOGISTICS SERVICES



SHIPS SPARES IN TRANSIT

- CUSTOMS CLEARANCE
- DELIVERY TO VESSEL
- COLLECTION FROM VESSEL AND DELIVERY ABROAD

AIR AND SEA FREIGHT

NETWORK



● SANTOS · RIO DE JANEIRO · SÃO PAULO

● REPRESENTATIVES

ELECTRO-MECHANICAL

- ALCONZA
- DANFOSS SONDEX
- DMW CORPORATION
- EMOD MOTOREN
- EVOQUA
- EPOCAST ITW ENGINEERED POLYMERS
- FUKUI SEISAKUSHO
- HYUNDAI GLOBAL SERVICE
HIMSEN · MAN B&W · WINGD
- IKNOW ex TSUJI MARINE SERVICES
- J-ENG UE ENGINE
- KANGRIM
- KAWASAKI HEAVY INDUSTRIES
- KAWASAKI PRECISION MACHINERY
- MARELLI MOTORI
- MET TURBO MITSUBISHI
- MIRAE INDUSTRIES
- NAKAKITA SEISAKUSHO
- REINTJES
- SAMAYU MITSUBISHI MARINE MACHINERY
AND MACHINERY
- SHANGHAI NSE
- SHINKO
- SKF MARINE SIMPLEX · TURBULO
- SPS TECHNOLOGY
- STEYR MOTORS
- TAIKO KIKAI
- TAIYO ELECTRIC
- TEIKOKU
- WEG
- YANMAR - LARGE MARINE ENGINE

ELECTRONICS

- ALPHATRON MARINE
- AMI
- BEMAC UZUSHIO ELECTRIC
- DECKMA VIA SKF MARINE
- GRAVINER
- HEADWAY
- HENSOLDT KELVIN HUGHES
- HIGHLANDER
- ICS ELECTRONICS
- JOTRON
- JRC
- JRCS
- KANGRIM
- KTE
- MACGREGOR GERMANY INTERSCHALT
- NABTESCO
- NAKAKITA SEISAKUSHO
- NK CO. LTD.
- OROLIA
KANNAD MARINE · McMURDO · NETWAVE · RUTTER
- RIKEN KEIKI VIA NAKAYAMA
- SAAB TRANSPONDERTECH
- SAIERNICO ELECTRIC
- SAL NAVIGATION CONSILIUM GROUP
- S&SYS SAMSUNG HEAVY INDUSTRIES
POWER & CONTROL SYSTEMS DIVISION
- SUNFLAME
- TAIYO ELECTRIC
- VOLCANO
- WÄRTSILÄ SAM ELECTRONICS
- YOKOGAWA

LIFE SAVING APPLIANCES

- D-I DAVIT INT. - HISCHE
- FASSMER-MARLAND
- FASSMER SERVICE
- GLOBAL DAVIT
- HATECKE
- HOEI SENPAKU
- HYUNDAI LIFEBOATS & BADA
- IKNOW ex TSUJI MARINE SERVICES
- IMC - JMU ex IHI MARINE
- JIANGSU JIAOYAN MARINE
JIANGYIN XINJIANG F.R.P
- MANSEI INC.
INCLUDING MIURA MACHINE VIDER
- NISHI-F
- THE SAFETY
- ORIENTAL PRECISION
- QINGDAO BEIHAI
- SEKIGAHARA SEISAKUSHO
- SHIGI
- STEYR MOTORS
- SURVIVAL SYSTEMS INTERNATIONAL



www.metalock.com.br

WORKSHOPS **24/7**

Santos

Rua Visconde do Rio Branco, 20/26
11013-030 · Santos
SP · Brasil
Tel.: +55 (13) 3226-4686
santos@metalock.com.br

Rio de Janeiro

Rua da Gamboa, 281
20220-324 · Rio de Janeiro
RJ · Brasil
Tel.: +55 (21) 2516-5561
rio@metalock.com.br

São Paulo

Avenida Bom Jardim, 330
03035-000 · São Paulo
SP · Brasil
Tel.: +55 (11) 2292-5422
sao.paulo@metalock.com.br

AGENTS

Greece & Cyprus F-WayServ

Contact: George Karavariotis
Tel.: +30 210 894 7664
Cel.: +30 697 301 6585
info@fwayserv.com

Norway Storm & Bull Shipping AS

Contact: Sigurd A. Wold
Tel.: +47 52 70 12 55
haugesund@storm-bull.no

UK ISES Ltd.

Contact: Pepe Bris
Tel.: +34 627 919 9990
secretariat@isesassociation.com

India Suprimar Maritime Services

Contact: Probal Mitter
Tel.: +91 22 3192 2106
Cel.: +91 98217 35745
suprimar@suprimar.net

Turkey Atlantis Marine Service Ltd.

Contact: Caner Ararat
Tel.: +90 216 290 12 06
caner@atlantismarine.com.tr

USA Vogler Marine Agencies

Contact: Don Vogler
Tel.: +1 908 581 0900
shiprepair@vogler.net