



Shanghai

Singapore



BOEAMAN

HYDRAULIC SOLUTION

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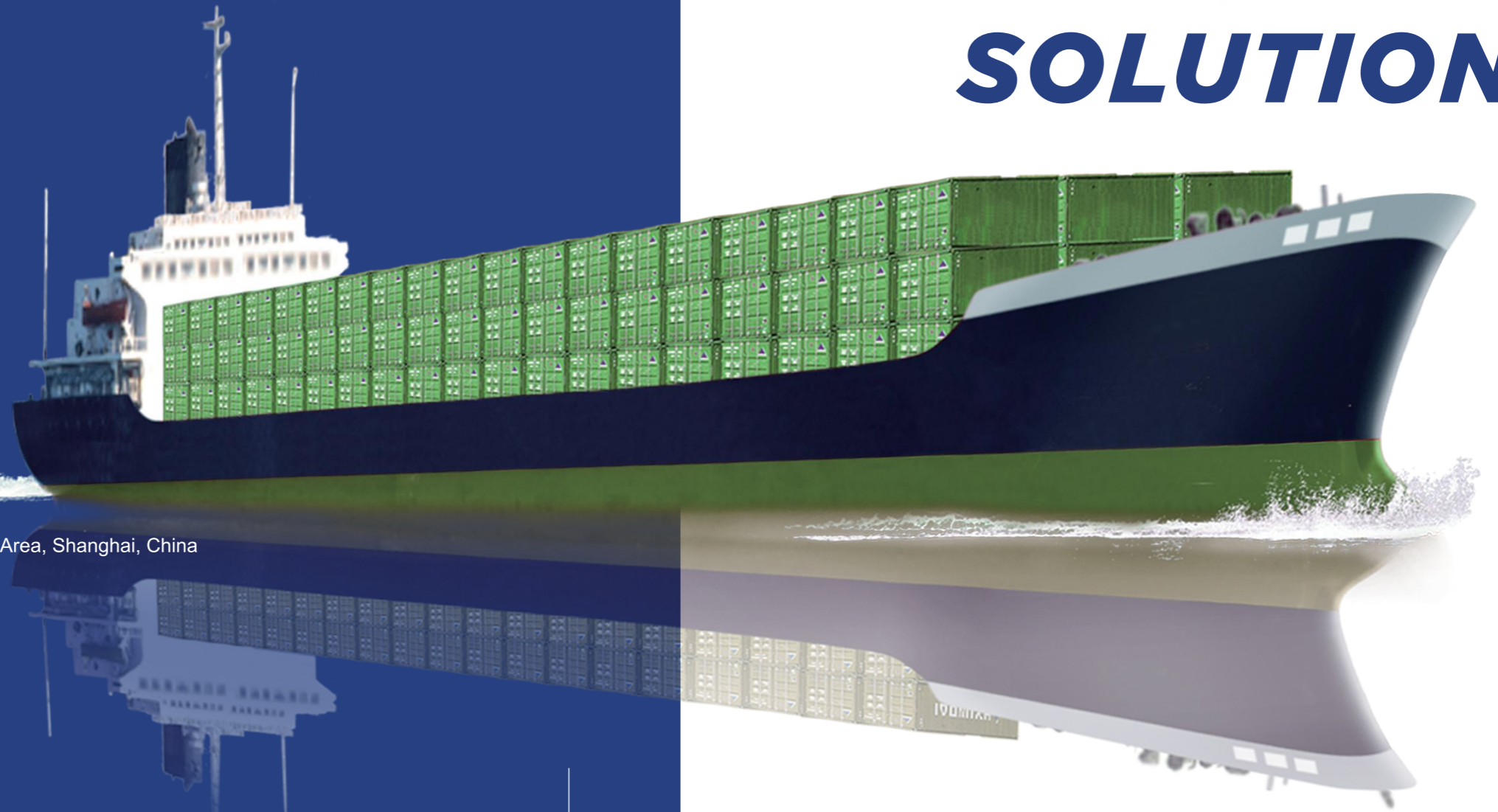
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Boeaman Technology Service Co., Ltd.

ABOUT US .



BOEAMAN

2015 ^{Year}
Established: August 16, 2015



20000000 ^{Yuan}
Capital: 20 million Yuan



BOEAMAN

Boeaman Technology Service Co., Ltd.

Boeaman Technology Service Co., registered in China and Singapore, provided professional technical service in marine industry, specializing in electronically controlled engines hydraulic pumps and FIVA/ELFI repair, maintenance and overhaul and relative maintenance.

Corporate Philosophy

To Provide Our Principals With Most Quality Services In All Respect Of Their Needs And Satisfaction.

Our Promises

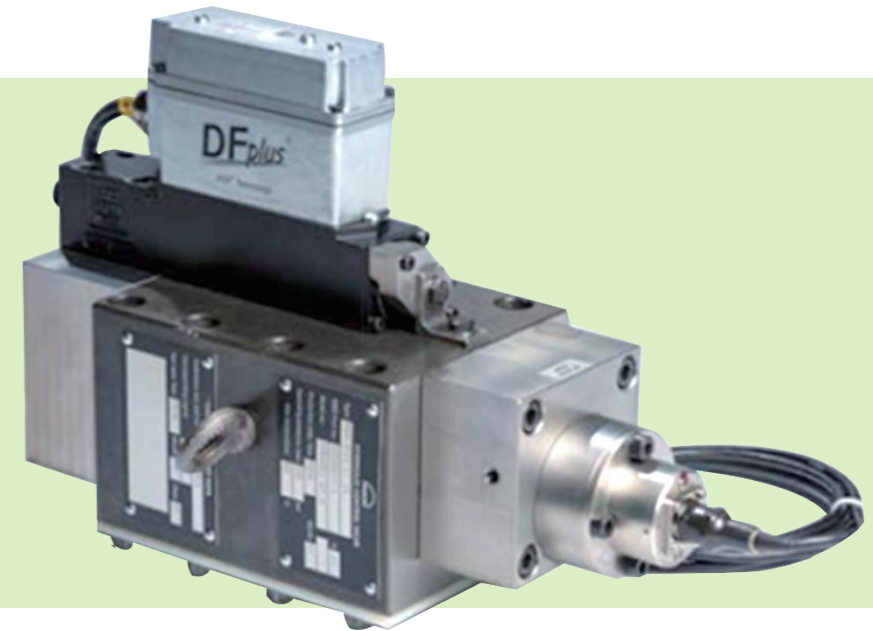
Close communications with our valuable customers worldwide.
Continue to expand our business to meet our customer's requirement.
Reinforce our sense of ethics and highly transparent business activities.
Value the environment and promote harmony with local communities.



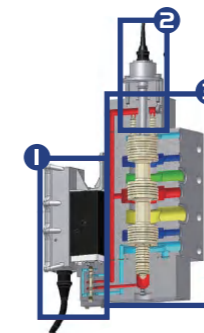
FIVA OVERHAUL AND TEST



FIVA OVERHAUL PROGRAM



- Pilot valve calibration.
- Capable to test all kind of FIVAs.
- Calibrate inductive sensor and safety check.



Maintenance Plan for FIVA valves			
		5 years	10 years
1	Pilot valve	Inspection & Calibration	Exchange
2	Stroke sensor	Inspection & Calibration	Exchange
3	Main valve	Overhaul	Overhaul

Detail data of calibration and function testing					
Cylinder No			Type	FIVA II-60	
Serial No	056840-08-7		Parts No	5032039-5	
New Pilot Valve	Yes		New inductive sensor	Yes	
Oil temperature	Reference value	42 °C±1 °C	Oil pressure	Reference value	250±1bar
	Measured value	42 °C		Measured value	250 bar
Flow rate	Reference value	30±0.2L/min	Zero adjustment	Reference value	12.20±0.01mA
	Measured value	30.00 L/min		Measured value	12.20 mA
The amount of internal leakage of original pilot valve.			3.9 L/min		
The amount of internal leakage of whole valve set with original pilot valve.			0.8 L/min		
The amount of internal leakage of whole valve set with new pilot valve.			3.7 L/min		
Output signal from inductive sensor in both extreme positions			4.71 mA / 19.10 mA		
Output signal of default position (on loss of pilot valve command signal)			19.21 mA		
Output signal stamped on the name plate (original)			11.42 mA		
Output signal from new inductive sensor when calibration rod is mounted			11.46 mA		
Result:	Overhaul, Maintenance, and Calibration. Working fine with new pilot valve and sensor. Function Testing is acceptable.				

FIVA
Overhaul Workshop in
Shanghai and Singapore



Work Scope

- Exchange Program
- Pit Stop
- On board Overhaul

- Trouble Shooting
- Routing Maintenance

- Cleaning and inspection of the valve housing and main spool.
- Replacement of control valve and repair kit by original parts for FIVA
- Replacement and calibration of the feed back sensor
- Function test
- Report

PILOT TEST



FIVA pilot valve dismantle and inspect

MBD FIVA with Moog pilot valve

Nabtesco pilot valve test

Parker pilot valve test

FIVA TEST



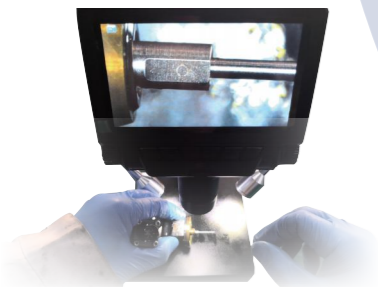
FIVA dismantle and inspect

MBD FIVA with Parker pilot valve



Rexroth pilot valve test

Nabtesco FIVA test



Rexroth pilot valve inspection

After overhaul completed apply anti-rust paint

Rexroth FIVA

HPS PUMP TEST BENCH



HPS PUMP OVERHAUL PROGRAM

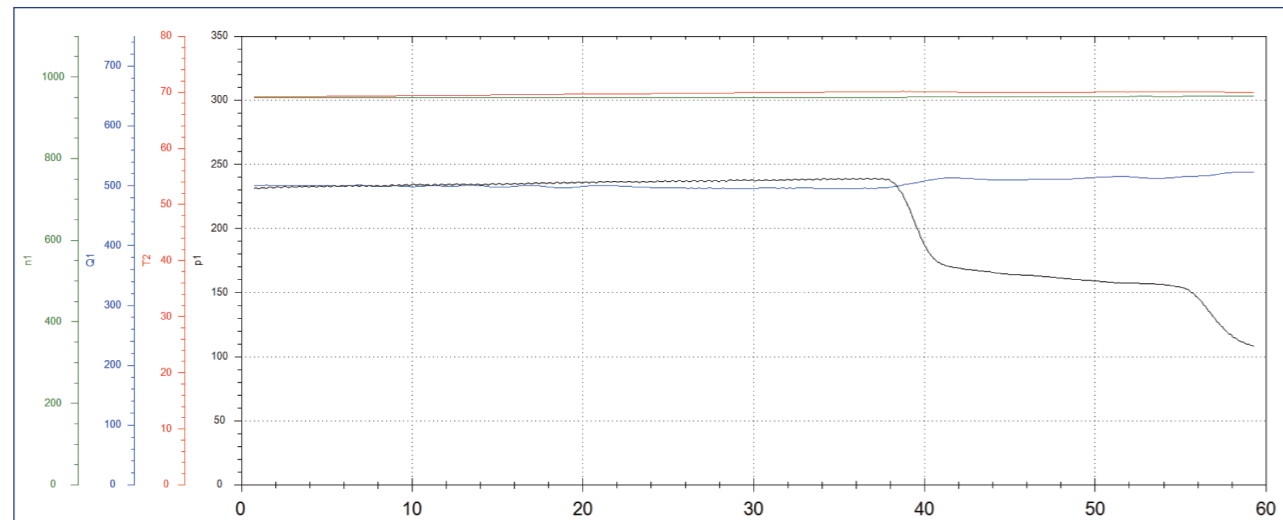


- Simulate engine running condition via control proportional valve during pump testing.
- Carry out pump testing up to 750L/min capacity.
- Calibrate inductive sensor and safety check.
- Graphic display.
- Workable for Dynex, Bosch/Rexroth and Parker pump.

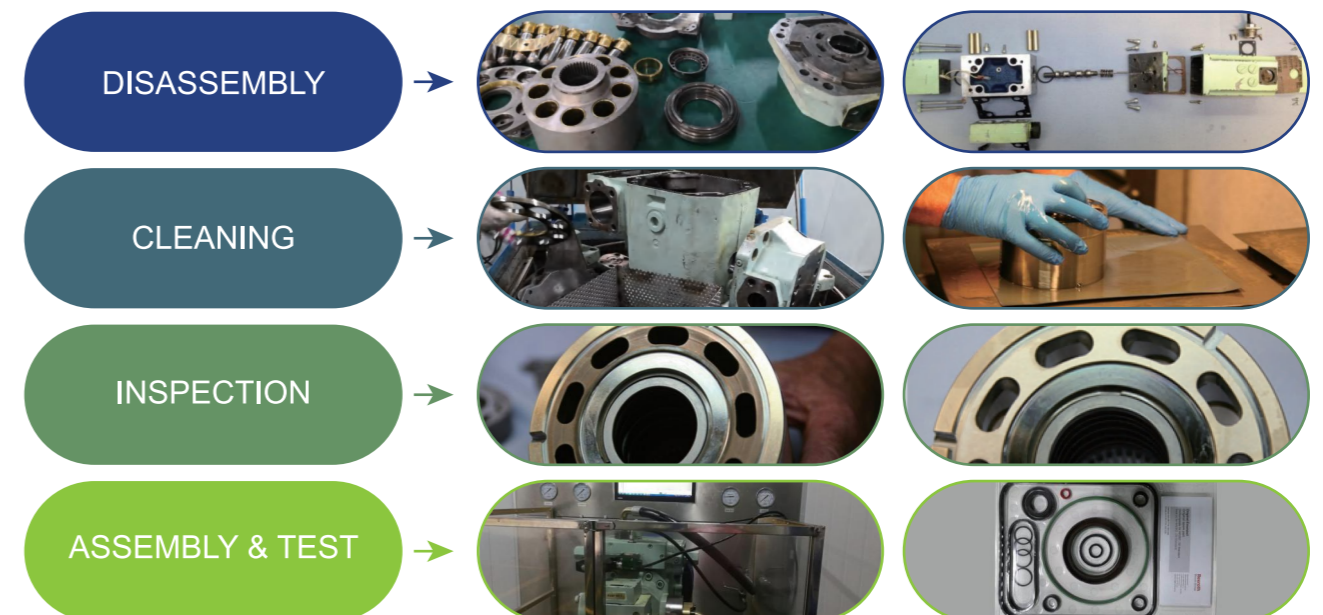
Pump
Disassembly
Cleaning
Replacement of gaskets and O-rings
Reassembly
Test and report

Prop. Valve
Disassembly
Cleaning
Replacement of O-rings
Reassembly
Test

Reporting
Overhaul documented including testing report



Result:	Overhaul and calibrate HPS Pump is in working condition, function testing is acceptable
Recommend:	keeping of hydraulic oil quality and monitoring of engine oil filters, internal leakage is above acceptable limit. Recommended to replace cylinder and piston at the next dry docking.
Remarks:	HS4 upgrade kit supplied by MITSUI



REXROTH HPS

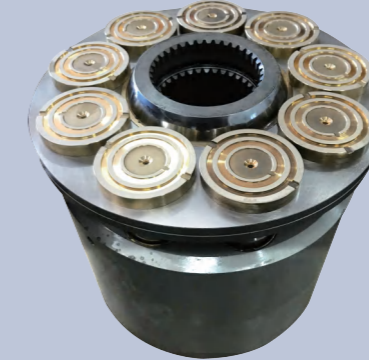
pump overhaul and test



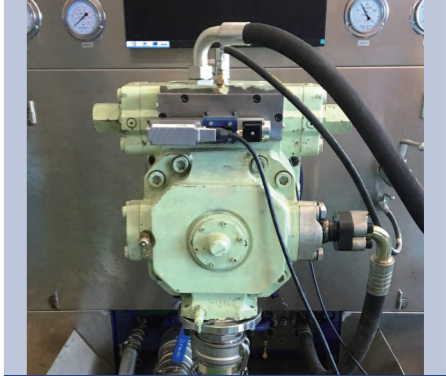
Service report



HPS piston polish and inspect



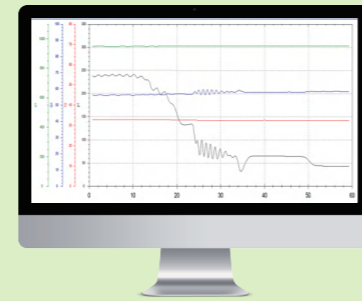
Piston and cylinder assembly



A4VS0750 HS4E Rexroth HPS pump test

PARKER HPS

pump overhaul and test



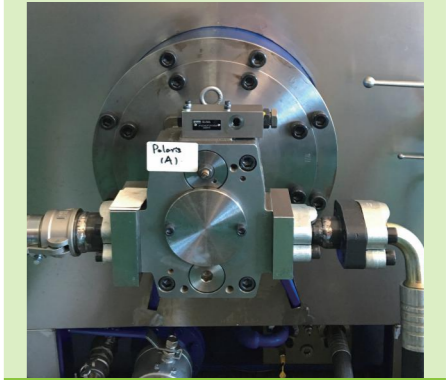
Service report



Piston dismantle and inspect



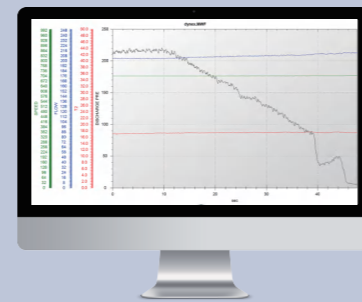
PV063 parker HPS pump dismantle



PV063 Parker HPS pump test

DYNEX SERVO

pump overhaul and test



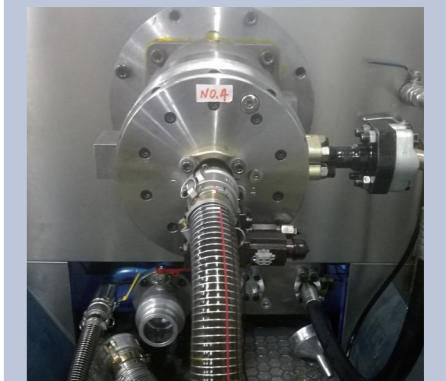
Service report



Assemble piston

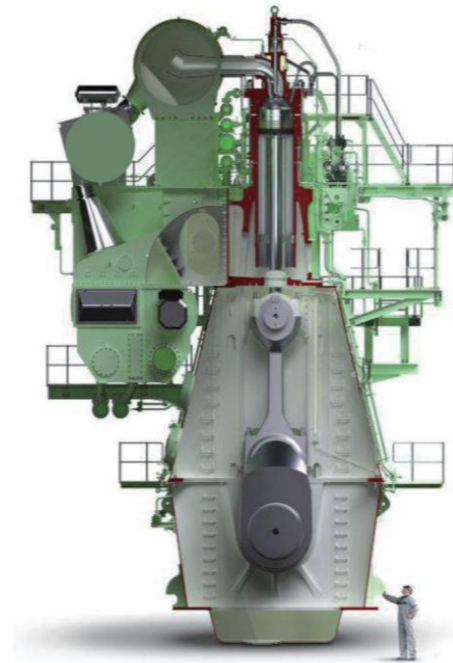


Reassemble HPS pump



Dynex servo pump test

ELECTRONICALLY CONTROLLED ENGINE OVERHAUL PROGRAM



2 ME ENGINE ELECTRICAL AND HYDRAULIC SYSTEM

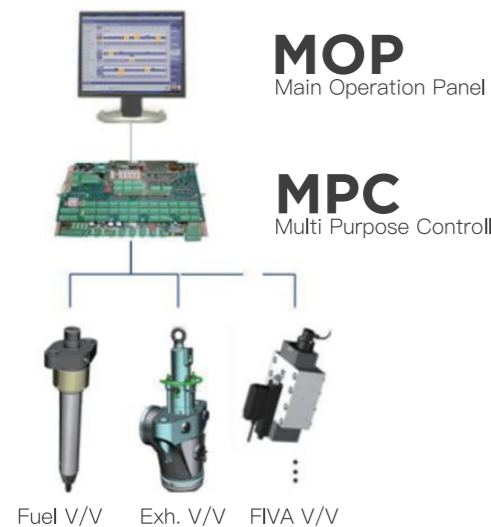
HCU

Hydraulic Cylinder Unit

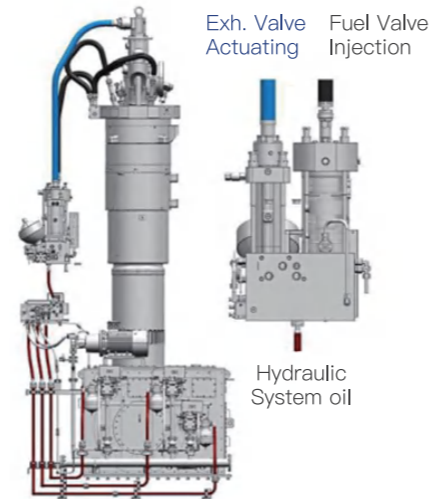


- Deliver the hydraulic oil to each cylinders as to actuate the fuel and Exh. valve
- Consists of
 - Fuel oil booster unit
 - Exh. valve actuator
 - FIVA valve and etc...

1 ME ENGINE KEY COMPONENTS



Electronic Control



Hydraulic system

HPS

Hydraulic Power Supply



- Supply the necessary high-pressure hydraulic oil through driven pumps
- Consists of
 - Elec. start-up & driven pumps
 - Safety accumulator block
 - High pressure pipe and etc...

MPC

Multi Purpose Controller



- Precised timing control for fuel valve injection, exhaust valve opening and etc.
- MPC function
 - EICU(Engine Interface Control Unit)
 - ECU(Engine Control Unit)
 - CCU(Cylinder Control Unit) and etc...

WORKING DAY

1 days 2 days 3 days 4 days 5 days 6 days 7 days 8 days 9 days

5 days
Overhaul & Inspection(HCU&HPS)

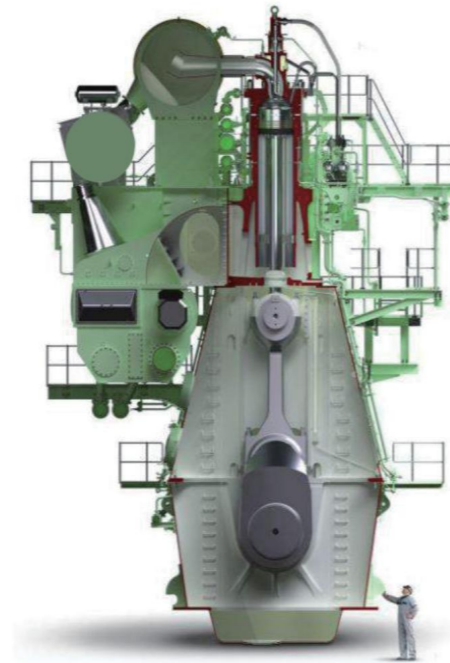
3 days
Electric component

2 days
Maintenance & Inspection

2 days
calibration & Test

1 days
Confirm Trial

ELECTRONICALLY CONTROL ENIGNE OVERHAUL PROGRAM



1 HCU (HYDRAULIC CONTROL UNIT)

- Overhaul for FIVA valve units & lubricating system.
- Overhaul of exhaust actuators & fuel booster units.
- Replacement repair kit for accumulators & re-fill of Nitrogen.



Fuel booster
32,000 R/H



Exh.valve actuator
32,000 R/H



Accumulator
32,000 R/H



FIVA valve
32,000 R/H



Cylinder lubricator
32,000 R/H



Distributor block
32,000 R/H

2 HPS (HYDRAULIC POWER SUPPLY)

- Inspection auto filter for hydraulic system.
- Inspection of injection nozzle for chain case & gear case.
- Re-adjust of safety valve setting pressure and operate function.
- Pressure build up time test of hydraulic system.
- Check for leakage of all hydraulic line & units.
- Replacement of hydraulic hoses & proportional valve for driven pumps
- Replacement repair kit for accumulators & re-fill of Nitrogen.



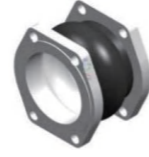
Accumulator block
32,000 R/H



Hydraulic hose
32,000 R/H



Accumulator
32,000 R/H



Compensator
32,000 R/H

3 FUNCTION TEST

- Inspection for junction box connection & all cabling.
- Check for insulation of ECS system & power source.
- Supplement peeling off cables (harden) with shrinkable cable.
- Function test of HCU, HPS & tacho system.
- Inspection for interlock switches & transmitters.
- Binding check for all cables.

4 MECHANICAL/PNEUMATIC SYSTEM

- Inspection of gear tooth condition and re-tightening work of chain
- Overhaul of main starting valve.
- Replacement repair kit for pneumatic valves.
- Replacement repair kit for accumulators & re-fill of Nitrogen.



Pneumatic system
32,000 R/H



Chain re-tighten
4,000 R/H



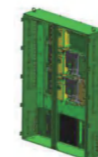
Chain tightener
4,000 R/H



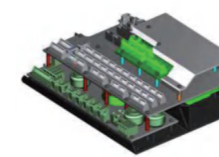
Guide bar
4,000 R/H

5 ELECTRONIC COMPONENT

- ECS parameter for each value and performance curve.
- Telegraph re-calibration on E.C.R & L.O.P
- Check of alarm history in event log on M.O.P
- P.M.I & Cocos EDS system check
- Check of ethernet system for monitoring system



Electric control panel
32,000 R/H



MPC
32,000 R/H



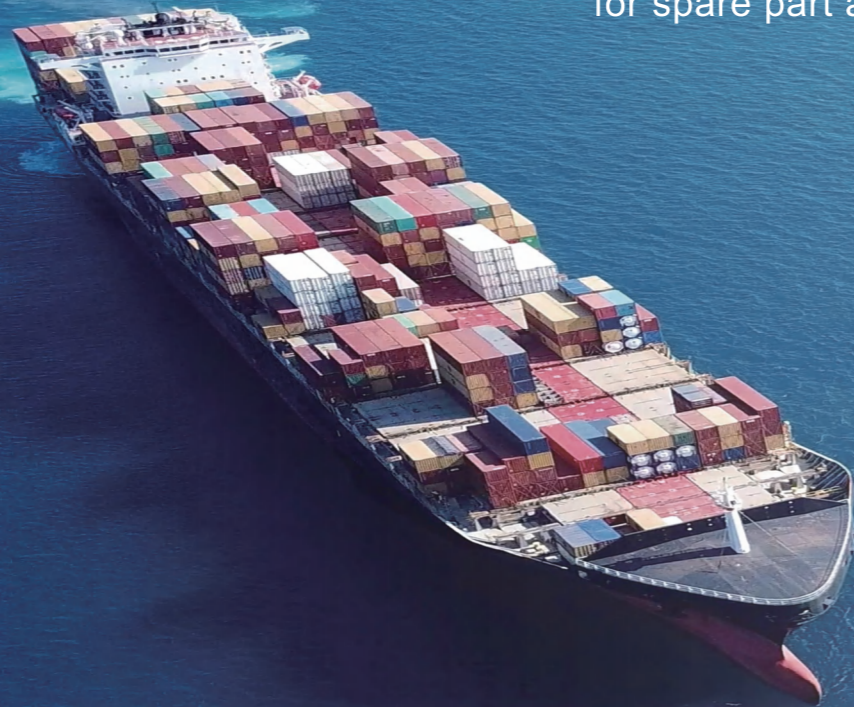
Level switch
32,000 R/H



ETC.,
32,000 R/H

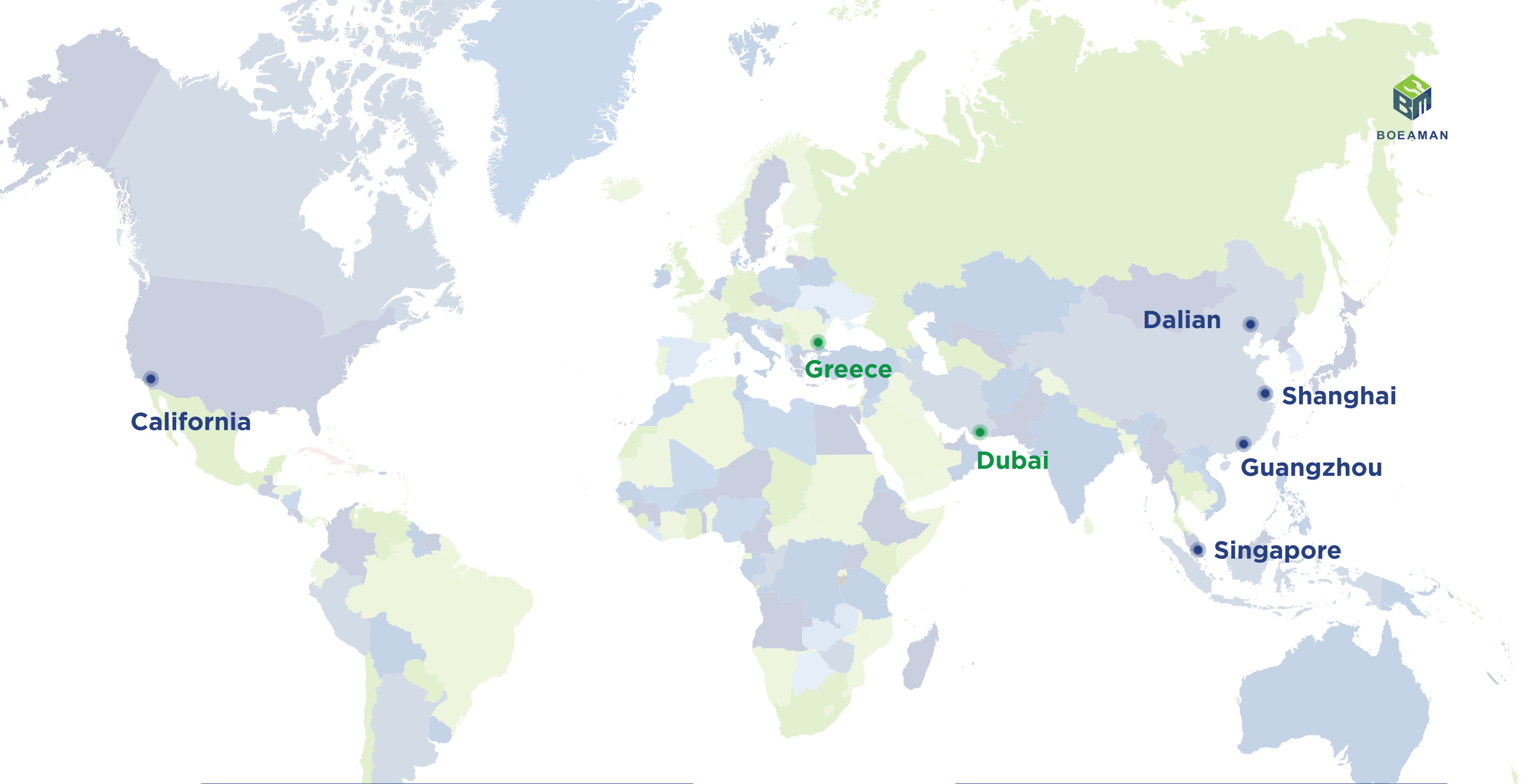
COOPERATIVE PARTNERS

for spare part and service



We commit to providing original or OEM spare part and fast shipping to our customers. We have various kinds of spare parts in stock:

- ME engine components
- Repair Kits for Alpha lub, fuel booster & exhaust actuator
- Repair kit for Rexroth pneumatic valve
- HPS pump and upgrade kits
- Various sealing rings
- FIVA and Proportional valve (MBD, Nabtesco, Rexroth)
- Tacho encoder



BOEAMAN SERVICE NETWORK
provide 24-hour service to support customer



Boeaman Technical Services provides warranty for its product, and it's secured by global service network.

6 months warranty for technical service
6 months warranty for spare par