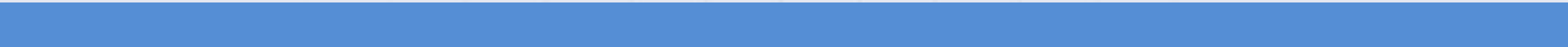





ISO9001 : 2008

# K&S International

Repair Team Profile





# Contents Lay out

01. Office & Warehouse

02. Organization

03. Repair Team Introduction

04. Repair Contents

05. Work Flow

06. Performance Record

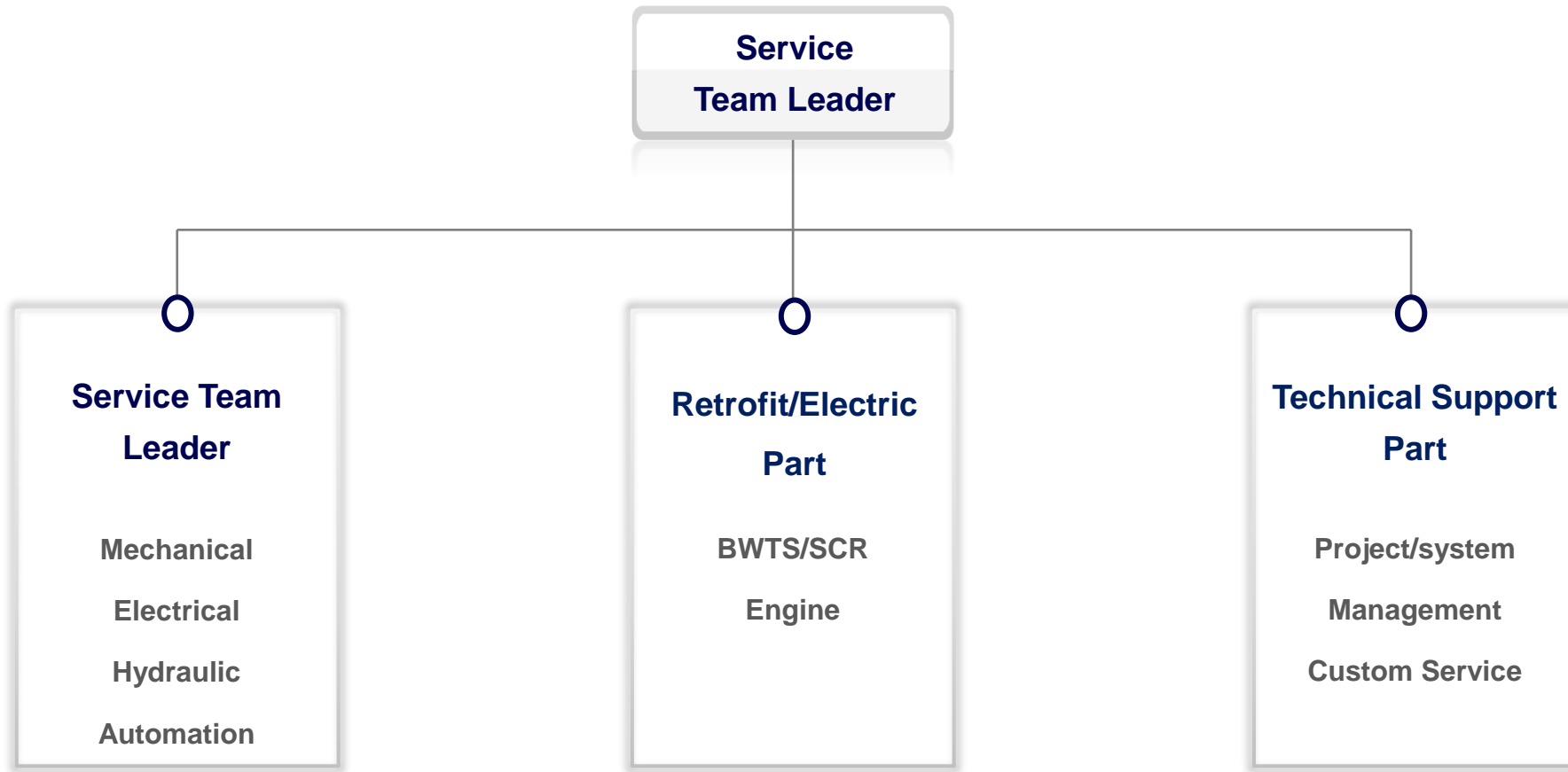
07. Major Client

# 01 Office & Warehouse



**Busan, Korea**

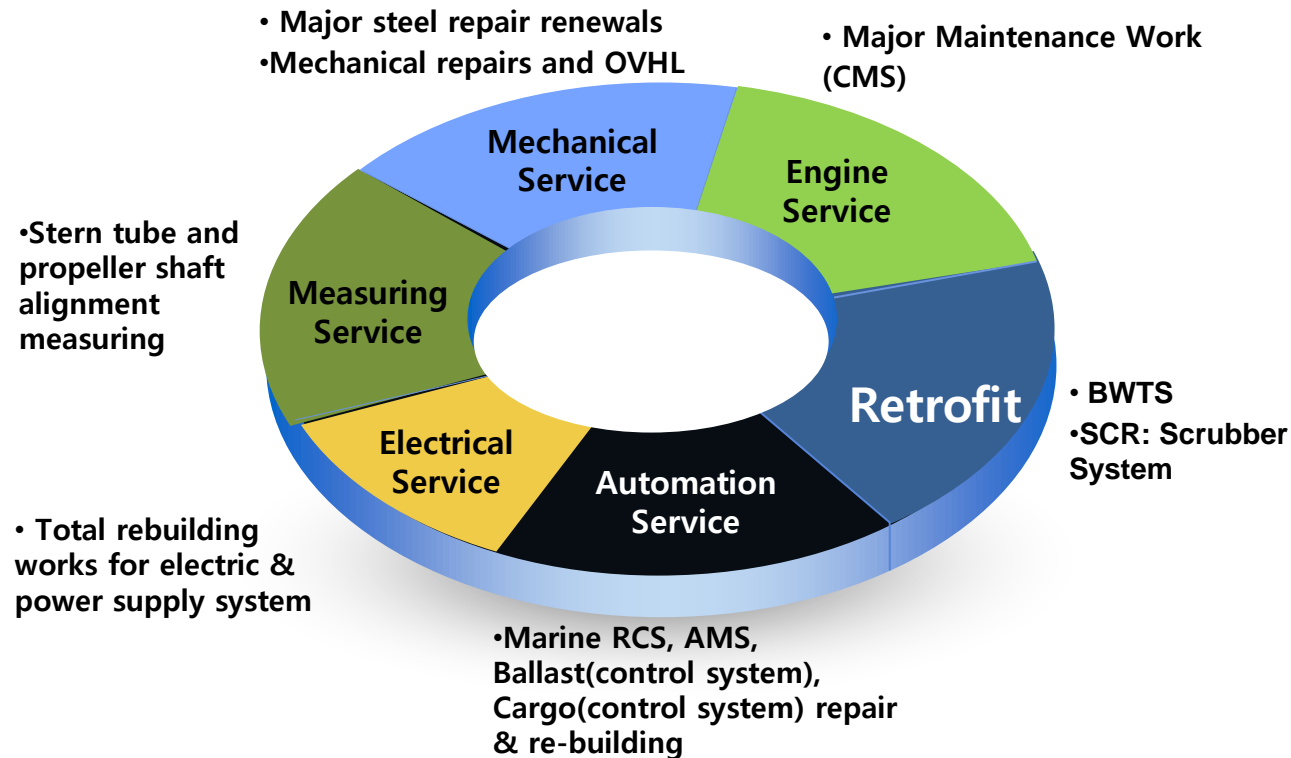
## 02 Organization



## 03 Repair Team introduction

<b>Team</b>	<b>K&amp;S International</b>		
<b>Address</b>	Gamjeon-dong, Sasang-gu, Busan, Korea	Factory	1,320m2 (To be extended)
<b>Service Team Leader</b>	HANJIN SHIPPING Chief Engineer HANJIN SHIPPING Repair Team Leader * K&S International Repair Service TEAM		
<b>Retrofit Part</b>	SEYANG SHIPPING supervisor Wärtsilä Repair Team * K&S International Repair Service TEAM		
<b>Technical Support Part</b>	MAN Diesel & Turbo Korea Superintendent Engineer DSME(Daewoo Shipbuilding & Marine Engineering) Comm' Manager * K&S International Repair Service TEAM		

## 04 Repair Contents



## K&S International Repair Total Solution + Spare Parts

Provide Mechanical and electrical service including installations retrofitting and commissioning with highly experienced engineers.

## 04 Repair Contents

### Mechanical Service

- Major steel repair renewals
- Mechanical repairs and Engine room, deck, cargo hold and tank pipe works
- Cargo gear repairs, testing
- Pipe insulations and claddings for LPG carriers
- Hydraulic cylinder, power Pack repair, inspection(Hatch Cover, winch/windlass)

### Engine Service

- Engine regular overhaul maintenance
- Commissioning (New, repair)
- Major maintenance work (CMS)
- Governor overhaul calibration, engine block machining service.
- Assessment of extent and nature damage.
- Main engine components reconditioning

### Measuring Service

- Main bearing saddle measurement service
- Stern tube and propeller shaft alignment measuring
- Engine bed plate height measuring
- Bearing jack up test

## 04 Repair Contents

### Electrical Service

- Total rebuilding works for electric & power supply system
- High voltage power analyzing service
- Control console and local control panel repair & rebuilding
- Alternator and transformer repair & re-winding
- Power supply system MSBD repair and modification.

### Automation Service

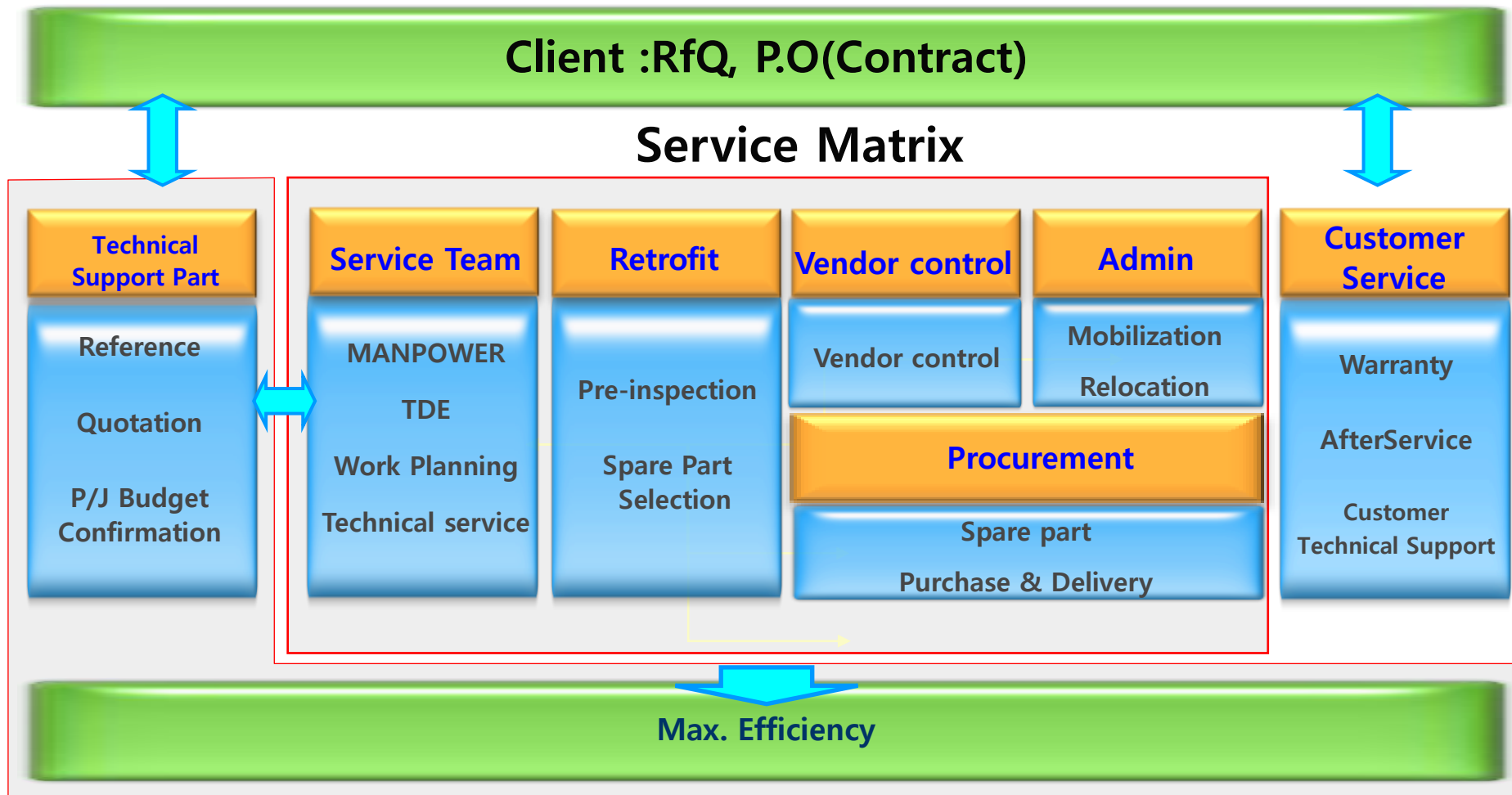
- Total rebuilding works for automation system
- Control console and local control system repair & rebuilding
- Automation system consulting and upgrade.
- Marine RCS, AMS, Ballast(control system), Cargo(control system) repair & re-building
- Pneumatic control system repair, overhaul and modification
- Pressure, temperature, level gauge system calibration.

### Retrofit

- BWTS (Ballast Water Treatment System)
- SCR (Selective Catalytic Reduction)
- Scrubber System-Installation & Repair

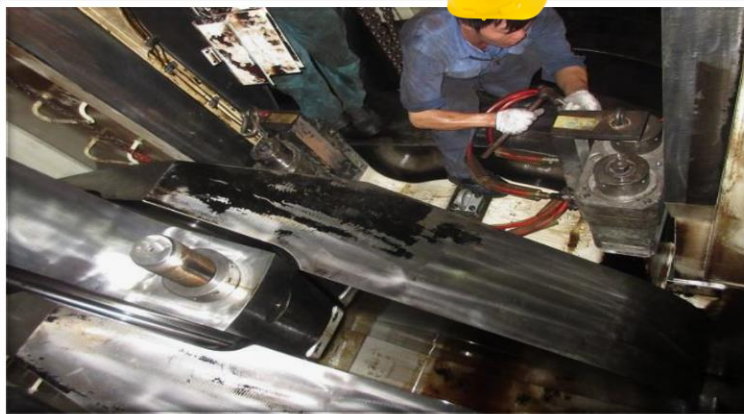


# 05 Work Flow



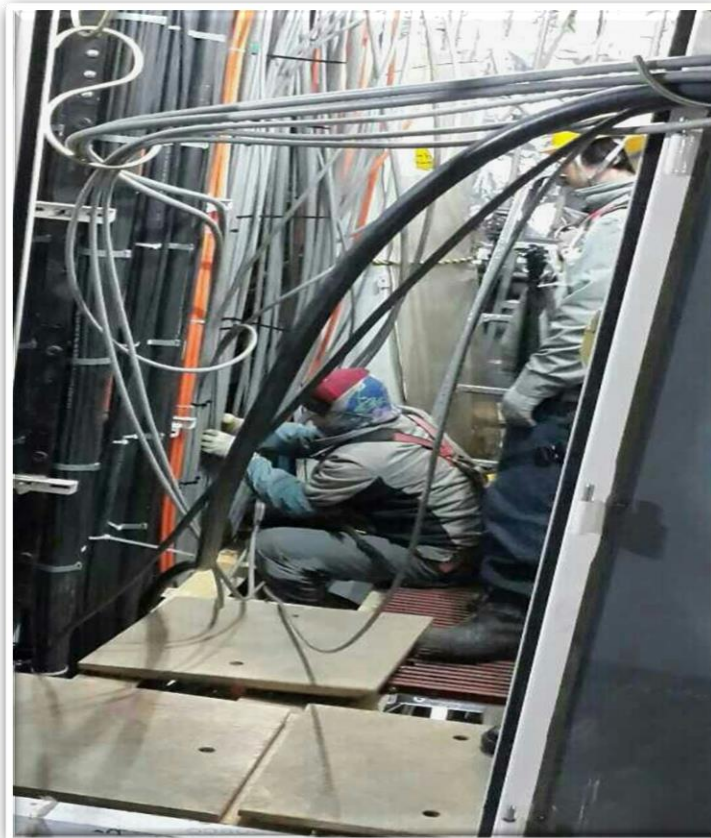
## 06 Performance Record

- K&S International has professional ship repair team that is covering various range of services, taking quick action and giving best solution to the owner under different condition & limited time.



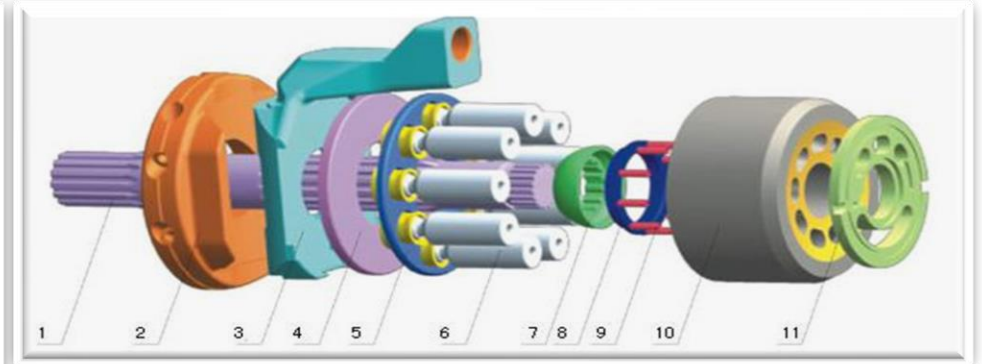
## 06 Performance Record

- K&S International has professional ship repair team that is covering various range of services, taking quick action and giving best solution to the owner under different condition & limited time.




## 06 Performance Record

- K&S International has professional ship repair team that is covering various range of services, taking quick action and giving best solution to the owner under different condition & limited time.



# 06 Performance Record

## DETAILED REPORT



Title: Sr. Superintendent Doc ID: DBAA108647

Reported by: JuWon Park Revision: -

Order no: 10897414 Status: Draft

Draft by: - Pages: 2 (1/8)

**Installation name:** MV BRUSSELS BRIDGE

**Customer contact:** Hiroko Kono

**Vessel phone / email:** brusseelsbridge@corign.co.jp

**Location (of job):** ZELSCO, Zhoushan, China

**Order by:** Hiroko Kono

**Internal order by:** JiHyun Park

**Work performed by:** JuWon Park

**Attention:**

**Copy to:**

**Installation Number:** 10004390

**Shipped / Hull no:** H91 / H2130

**Maker or Licensee:** HYU

**LR no:** 9643310

**Date ordered:** 13.08.2015

**Date started:** 17.08.2015

**Date finished:** 20.08.2015

**Reporting date:** 24.08.2015

**Approved by:** Hailung Song

Reason for service:							
Item	Work description / Work number			Engine concerned (Engine Numbers)			
1	Main bearing, crosshead bearing inspection			AA4247			
2							
3							

Engine Number	Engine Type	Rotation direction	Use	Engine Speed	kW	Running hours	@ Date
DB 24390	BRT-FLEX 82C	RCW	ME	95	33720	25387	17th 08.2015

### Operating Media

Fuel oil		Lubrication oil supplier		Cooling water treatment	
Density 15°C	1100.000 kg/l	Brand	Shell Meline S30	Blend	1 1.5 %
Viscosity 50°C	475.0 cSt	TBN (new oil)	6.9 (MSKOHlg)	PH / dH	
Sulphur	2.8 %	Sample	7.0	Brand	LIGUIDEWT
LCV	40.01 kg/kg	Syst. Vol. m <sup>3</sup>	40		
CCA	898	Cylinder oil (ZS)			
Temp Engine inlet	141 °C	Brand	Shell Alexia 54		
		Consumption	1.311 g/kWh		

### Engine Control (ZS)

Remote control system:	Nabtesco M800-H	Monitoring system:	JRC-5
Safety system:	Nabtesco M800-H	Governor / Actuator:	Nabtesco / Heinzmann
Engine interface:	DENIS-9520	Oil Mist Detector:	Dahabuo MD-SX Controller


### Installation data Propulsion

Control:	Gearbox:	Servo:	Servo oil:
Type:	Speed:	Servo:	Servo oil:
E-Motor:	Speed:	kW:	Run Hours:

### Information of serviced equipment:

Name / Type:	BRT-FLEX 82C
Maker:	HYU
Description:	ME
Serial Number:	300214068

MAN Diesel & Turbo  
MAN PrimeServ Busan



## Intermediate Report

Name of Vessel:	Hansa Magdeburg	IMO No.:	9256377
Name of Yard:	Wenchong shipbuilding	Hull No.:	293
Engine Type:	7560MC-C	Sea Trial:	1 <sup>st</sup> April, 2012
Visit by:	Chilkyu Kwon	Engine No.:	D1161A
Engine Builder:	Hudong Heavy Machinery	Run. hours:	- Hrs
Order No.:	S2091-SR0002S	Service Center:	PrimeServ Busan
Place:	Kwangyang, Korea		
Period:	10 <sup>th</sup> Nov., 2012 ~		
Owner:	Leonhardt & Blumberg		
Requested by:	Mr. Hartmut Priebe		
Reason:	Replacement of no.5 crankpin bearing		
Keywords:	Crankpin bearing		

### Work done

2012.11.10-11

As requested, our service team attended above mentioned vessel at Kwangyang, Korea. The reason of attendance was to replace damaged no.5 crankpin bearing.

The damage of no.5 crankpin bearing which might be caused by water in lub.oil system had been reported by ship's crew

During dismantling the crank pin bearing, it was found that the lower bearing and upper bearing shells were stuck on no.5 crank pin. The heavy damage on no.5 crank pin was found. The roughness and hardness were not measured. The connecting rod had heat damage and seized.

Damage on crosshead bearing and connecting rod bearing were found

The lub.oil system was checked and metal particles which comes from white metal was found in lub. oil.

Due to heavy damage of crank pin, the new bearing shells are not able to be assembled.

Followings were recommended


Heavy damaged crankpin, cross head pin should be ground or machined.

Heat damaged connecting rod should be replaced with new/ reconditioned one

Lub. oil should be replaced with new one due to dirty by metal particles. The flushing should be carried out if necessary.

MAN Diesel & Turbo Korea Ltd.  
1906-1, SongJeong-Dong, GangSeo-Gu, Busan, Korea 610-819  
Tel. +82 (0)51 536 9644 • Fax: +82 (0)51 972 4004 • [service@mandieselturbo.com](mailto:service@mandieselturbo.com)

## TECHNICAL REPORT



Discipline or report series <sup>RR</sup>	Document number <sup>RR</sup>	Report number <sup>RR</sup>	Issue <sup>RR</sup>
EAT Materials- Failure Investigation	DNS205728	DNS205728	2

**Title<sup>RR</sup>**  
Investigation into the functional failure of a propulsion propeller pitch-control actuator of MV Hebrides, operated by Caledonian MacBrayne. Pitch control was delivered as part of the propulsion system by RR Marine.

Author <sup>RR</sup>	Telephone:	Date <sup>RR</sup>
		30/03/2017

### Summary<sup>RR</sup>

The MV Hebrides ferry operated by Caledonian MacBrayne ran aground in Lochmaddy Marina in North Uist Dep 25, 2016 at 1105 a.m. LT while approaching the berth. It was reported that the grounding was caused by a technical failure of the port pitch control system. The pitch is set by a stepper motor which depends on a grub-screw for transfer of torque between the motor and the actuator via a three part coupling. The preliminary investigation carried out by the Marine Accident Investigation Board (MAIB) determined that the failure of the pitch control was caused by the grub-screw unscrewing from its intended position. In addition to the three parts of the coupling, the grub-screw and the motor shaft, the investigation also examined a new coupling sourced through the normal supply chain. The investigation came to the following conclusions:

- Both the event coupling and the new coupling deviated slightly from dimensional requirements with respect to outer diameter, length, body length (event only), position of grub-screw hole and grub-screw hole large diameter. None of these deviations were considered to be of significance for the development of the event
- The coupling that came loose had a concentricity of 0.016mm to 0.023mm between outer and inner diameter. The new coupling had concentricity of 0.002 to 0.009
- The event grub-screw, the new grub-screw and the motor shaft were dimensionally correct.
- Neither the event grub-screw nor the new grub-screw had any practical rundown torque.
- Both grub-screws were found to have hardened tips, ~100HV and 40HV harder than the mating shaft flat for the event and new grub-screw, respectively.
- The motor shaft, the event grub screw and the new grub screw were all austenitic stainless steels similar to 030400, 030430 and 030500 respectively. The material type or specifications were not known to this investigation.

**Export Control**

Private – Rolls-Royce Data

Export Control – The document does not contain any technology or data restricted by UK/EU or US export control legislation.

**Additional keywords<sup>RR</sup>** **Retention category**

A

**Circulation:**

Project	Sub-system	Process	Part number
Commercial marine	N/A	FI	N/A
Engine types <sup>RR</sup>	Engines marks/Vehicle name	Vehicle number/build <sup>RR</sup>	MSB/SL
N/A	N/A	N/A	N/A
Material	Network <sup>RR</sup>	Activity <sup>RR</sup>	Dept <sup>RR</sup>
N/A	9000602378	0020	4067








**Workfile Pages:** Page 1 of 21<sup>RR</sup>

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## 07 Major Client



## 07 Client List

	Name	Work description
	Hyundai Merchant Marine	Major steel repair renewals Mechanical repairs
	KJ shipyard	Ship Repair
	Wärtsilä	Engine commissioning
	SK Shipping	Automation Repair
	Hyundai shipyard	Machinery installation
	Burckhardt Compression	Machinery commissioning
	Sungdong shipyard	Machinery installation

# Why K&S International?

If You Need Anything Regarding  
Ship Repair....



One Calling

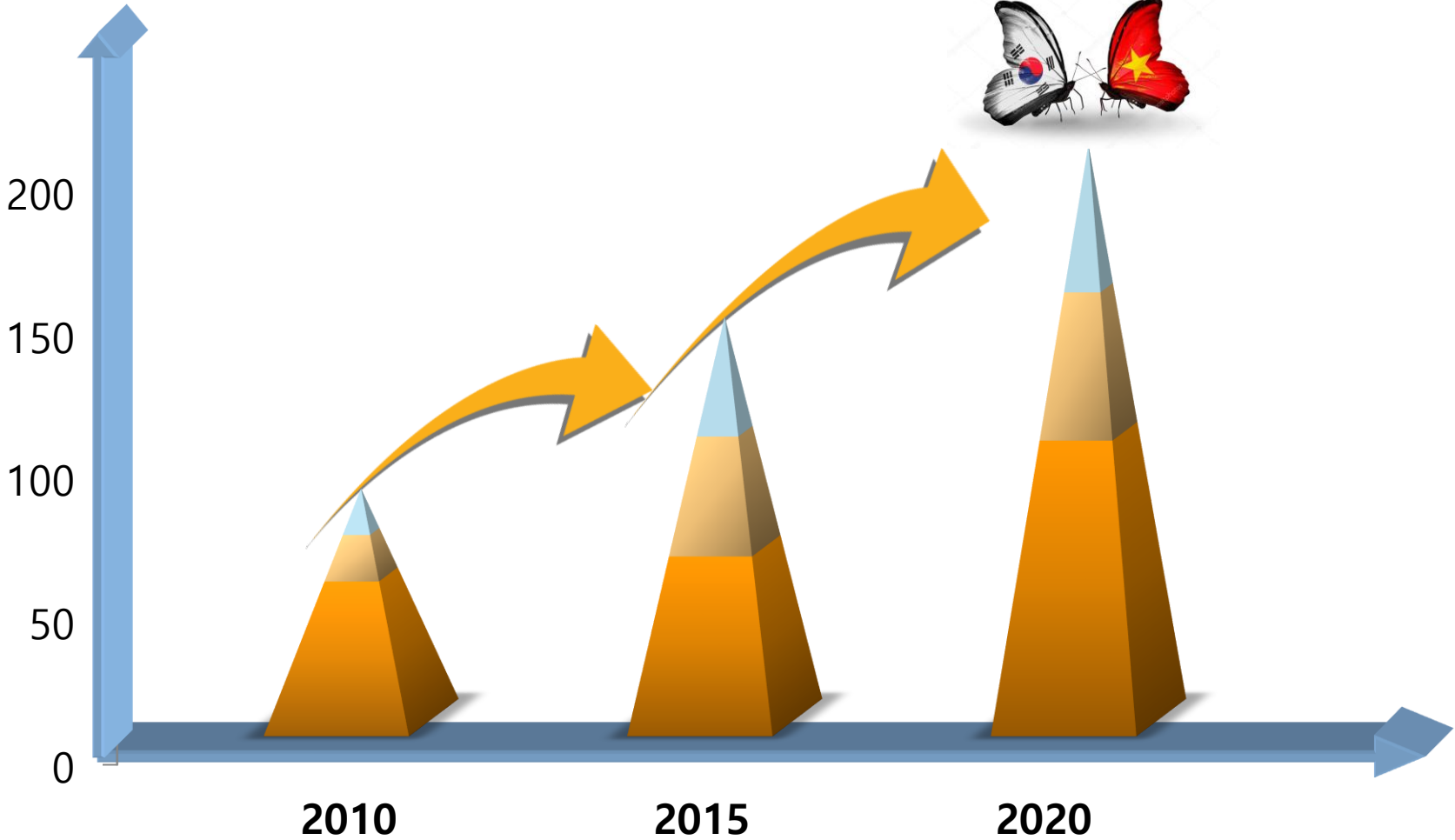
## **K&S International**


Provides following..

- \* Experienced Engineer**
- + Spare Parts**
- with Reasonable Cost**



• Revenue





Cảm ơn  
Thank You