

Specialized Service – Large Hydraulic Cylinders



Specialized Services

Applications

Activities

Service Products

5 Year CUP

Spare Part Management

Spare Part Plus

Standby Agreement

Docking Management

CIMS Mk4 Upgrade Kit



Bosch Rexroth, as a OEM for Drive and Control, has delivered on a World Wide Scale a large number custom-built (engineer to order) project related products and systems with many times **Large Hydraulic Cylinders** as a part thereof.

The competences required to engineer and produce this are concentrated in Branch groups. In Boxtel the focus is on custom built equipment **Offshore** and **Marine** applications as well as engineering and production of Large custom built Hydraulic Cylinders (LHC).

This Installed Base of this equipment represents a large investment, of which owners expect that the investment creates a lot of value for many years.

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Life Cycle Management (LCM) is an important element to keep the condition of the equipment to a stable level. LCM is often forgotten or neglected with the initial purchase of the equipment, resulting in break-down management with increased corrective costs. Service awareness or maturity of the user is vital to come to service level agreements.

To cover the service needs for the full product- and activities range, Bosch Rexroth offers 2 types of service in which customers' focus and requirements are leading:

- **Standard Service**
- **Specialized Service**

Standard Service is service on standard components and power units as close as possible to the Users, executed by local Bosch Rexroth Subsidiaries.

Specialized Service offers service on custom-built (engineer to order) project related products and systems on a world wide scale, using own Bosch Rexroth workshops as well as other certified facilities. Specialized Service has access to the engineering and production competencies of the OEM, combined with product knowledge and extensive experience, therefore fully capable in offering this service.

Both Standard Service and Specialized Service coexist and are complimentary to each other. Cooperation is obvious.



Specialized Service - Typical applications

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■Offshore

- Tensioning systems and compensators
- Skidding and Jacking systems

■Marine / Dredge

- Dredging equipment for Hopper and Cutter dredgers
- Replenishments systems
- Installation and commissioning of Drive and Control systems

■Motion systems

- 3 and 6 DOF Motion Simulators
- Wave Generators
- Ship Lifts

■Large Hydraulic Cylinders

- Civil engineering, locks, dams and bridges
- Industrial applications, presses, steel production





Specialized Service - Activities

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- Modernization
- Delivery of OEM spare parts
- Repair
- Field Service



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Modernization (Engineered Upgrade)

Modernization of Bosch Rexroth custom built Large Hydraulic Cylinders and Systems with latest technology to increase life time and performance of the equipment.

Delivery OEM Spare parts

Delivery of dedicated spare or replacement parts, such as seals and bearings for safety stock as well as necessary for repair or overhaul. Delivery of produced parts such as piston rods, with latest technology rod coatings, accompanied by the latest seal technology.

Repair

Depending on the customer's request, repair of the equipment to the original OEM status or restoration to a functional status.

Field Service

Specialized Service has large pool of qualified Field Engineers dedicated for the products:

- Hydraulic System engineers
- Large Hydraulic Cylinder specialists
- Electronic Control System engineers
- Installation engineers for piping

The majority of the Field Engineers are Offshore certified according NOGEPa, OLF, OPITO.

Besides the own Specialized Service Field Engineers, the Field Engineers of the local BR Country organizations can be mobilized.





Specialized Service - Products

Specialized Service activities are supported by Service Products, such as:

- 5 Year Continuous Uptime Program - CUP
- Spare Part Management
- Spare Part Plus
- Standby Agreement
- Docking Management
- CIMS Mk4 Upgrade Kit

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5 Year Continuous Uptime Program (CUP)

The 5 Year CUP is meant to maximize the uptime of the equipment and lines up with the 5 year major service interval of the equipment and is characterized with:

- OEM supported maintenance program
- Basis pre engineered tailor made per project activity
- Execution approx. 90% by the owner / user
- Low pre-investment relative to total maintenance costs
- Life cycle cost optimization
- Pro active approach towards service instead of reactive

→ Risk containment by pre-engineered and planned maintenance



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5 Year Continuous Uptime Program (CUP)

Customer maintenance program supported by Specialized Service to maximize uptime of the equipment during the operational life

Customer benefits

- Risk assessment by pre-engineering
- Expert knowledge to advice in critical spare parts
- Low pre-investment
 - High day rates justifies investment in quality maintenance program
 - Only necessary critical spare parts (nice to have vs must have)
- Planned activity making use of the pre-scheduled stops / transfers
- Improvements or modernizations based on feedback from inspections reports and regular presence of Bosch Rexroth specialists on the rig
- Access to Bosch Rexroth global service network



5 Year Continuous Uptime Program (CUP)

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Conditions for a 5 Year CUP contract

- Up front maintenance mind set
- Pre-agreement availability of critical spare parts (single parts or complete units)
 - Stock keeping
 - Storage
 - Insurance
 - Maintenance
- Cooperation to access the rigs for 2 / 4 years health checks
- Closed contract for all activities for the duration of the agreement, including field service, repairs, upgrades and delivery of spares
- Field service emergency stand-by agreement



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Activities – Engineered by Bosch Rexroth

- 1st line maintenance (daily, weekly, monthly, etc.)
 - Performed by onboard crew or OEM service engineer
 - Visual checks
 - Reporting

- 2nd line maintenance (daily, weekly, monthly, etc.)
 - Performed by onboard crew or OEM service engineer
 - Basic measurements & Basic functional checks
 - Oil samples
 - Reporting

- Specialized maintenance (year 2 and year 4)
 - Performed by Bosch Rexroth specialist
 - Verification of installed base
 - Evaluations of 1st and 2nd line maintenance reports
 - Health check
 - Special events log analysis
 - Additional measurements to equipment by cylinder expert

- Reporting & recommendations

5 Year Continuous Uptime Program (CUP)



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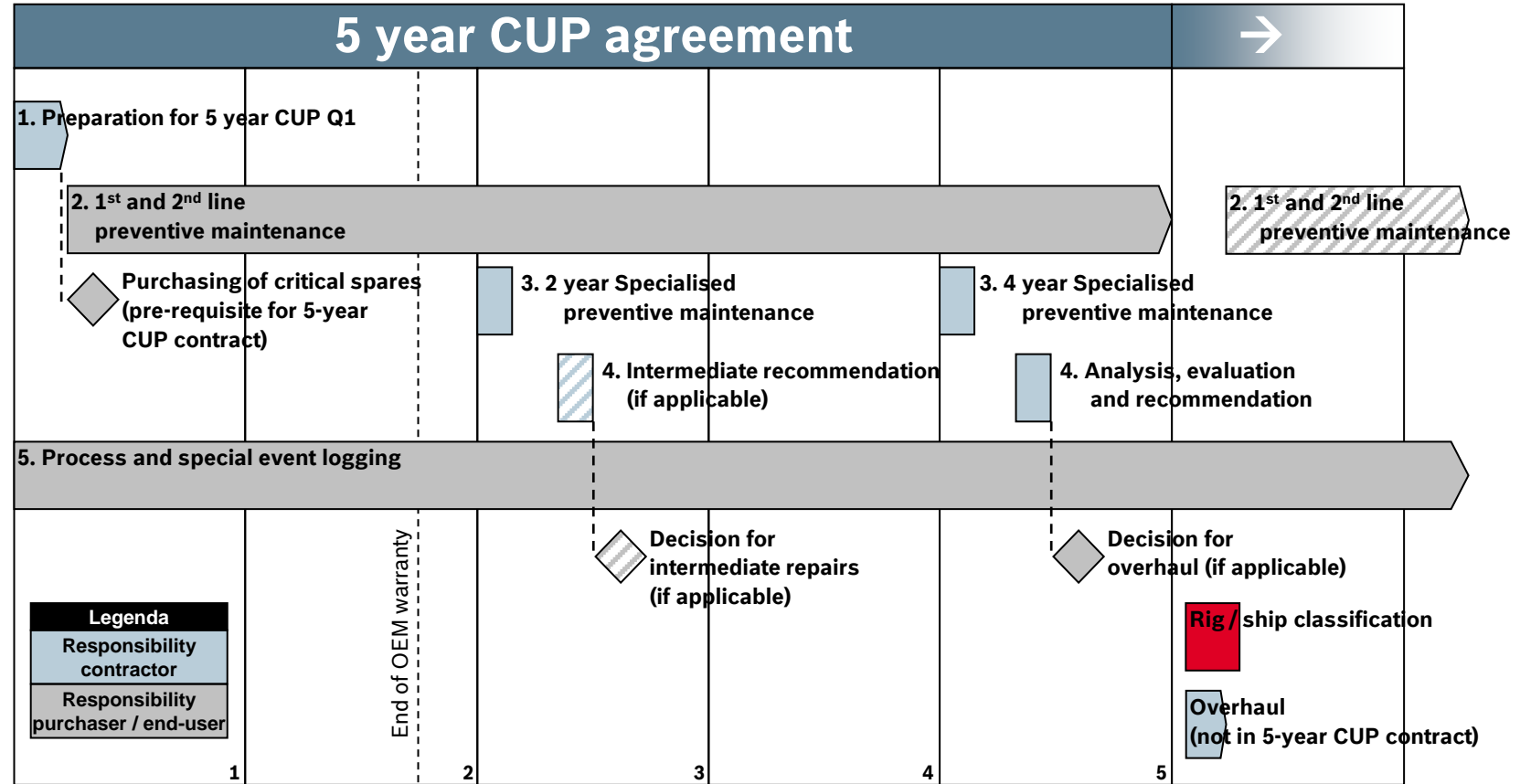
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Time Schedule





Spare Part Management

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The Spare Part Management Agreement defines a set of project related spare parts, based on the recommended critical spare parts list, held on stock by Bosch Rexroth dedicated for specific customers.

- Pre-determined critical spare parts list
- Controlled storage conditions
- Maintenance of the stored parts
- Pre-defined yearly insurance, interest, depreciation, storage and inventory costs
- Controlled replenishment of used parts (re-ordering by the customer)



Spare Part Plus

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Project dedicated set of spare / replacement parts for a repair activity on a job-site, combined with a Specialized Service Field Engineer .

- Determination and delivery of spare parts needed, based on Bosch Rexroth recommendation (experience) and Customer requirements
- Repair on-site under Customer's responsibility
- Bosch Rexroth Specialized Service Field Engineer for on-site OEM advice



Stand-by Contracts

Special agreement for direct access to dedicated service specialists.

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- Zero-inspection
- Agreement on critical spare part investment and stocking on board
- Stand-by agreement for immediate service
 - < 1 h contact with service coordinator
 - < 2 h contact with technical expert
 - < 48 h service engineer ready to depart on nearest airport
- Training End-user
- Remote access & condition monitoring



Docking Management

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Preventive maintenance using the scheduled docking period to repair / overhaul the Drive and Control equipment.

This is often based on a previously executed inspection, timely purchased replacement parts and is executed based, in close cooperation with the superintendant of the unit, on a project planning.

With this activity the owner/user of the equipment is released from the responsibility of the Bosch Rexroth scope and can focus on the other docking activities.

CIMS Mk4 Upgrade Kit

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CIMS Mk4 Upgrade Kit

CIMS is a unique position indicator system that operates with cylinders produced by Bosch Rexroth using Enduroq coated piston rods.

This complete and documented upgrade kit is meant to upgrade the existing CIMS Mk2 and Mk3 position indicator to the recently introduced CIMS Mk4 sensor unit.

CIMS Mk4 is an improved, contactless, self adjusting sensor, with the same mounting arrangement, electrical functionality as per the Mk 2 and Mk3.

