

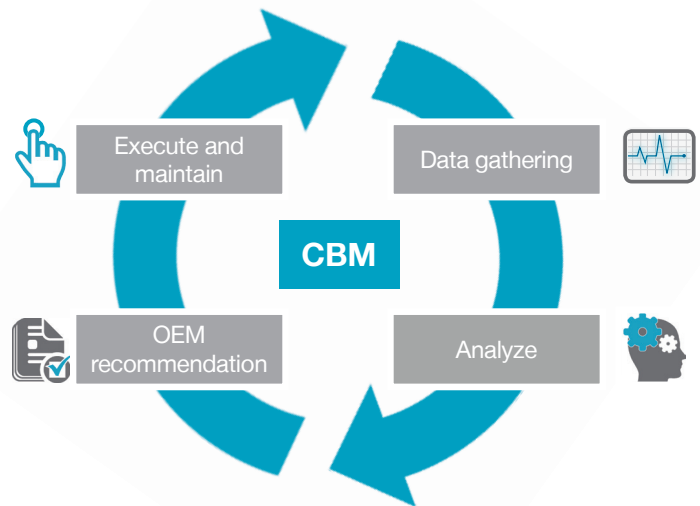
Condition based maintenance for drilling risers

MHWirth’s unique condition based maintenance (CBM) for drilling risers – the RiCon™ system – allows continuous classification of equipment based on its actual use and condition instead of rigid calendar based schedules.

MHWirth’s RiCon™ solution combines Original Equipment Manufacturer (OEM) expertise and support with information gathered from rig software and physical inspections. Data is stored in a database which is maintained and monitored on an ongoing basis, enabling continuous Certificate of Compliance (CoC) on all drilling risers.

The system consists of the following main constituents:

- A riser tally keeps track of the marine riser joints being used and their position in the riser string
- MHWirth’s Riglogger™ system collects data and replicates them to onshore server facilities for the fatigue calculations
- A fatigue calculation module
- Wall thickness measurements using internal inspection tools
- Yearly visual inspections
- Results are presented to the end user through MHWirth’s myDrilling™ system and stored in the RiCon™ database



Benefits

- The most comprehensive condition based maintenance program for drilling risers in the market
- Improves safety with continuous monitoring of load and equipment usage to ensure integrity and operations
- Improves equipment reliability and availability to avoid unplanned maintenance and non productive time
- Reduces OPEX by up to 30% over 20 year riser lifetime
- Reduces environmental impact due to optimized spare part replacement frequencies between major overhauls and reduces CO₂ emission from transportation of riser joints to shore
- Delivers Original Equipment Manufacturer (OEM) expertise and support

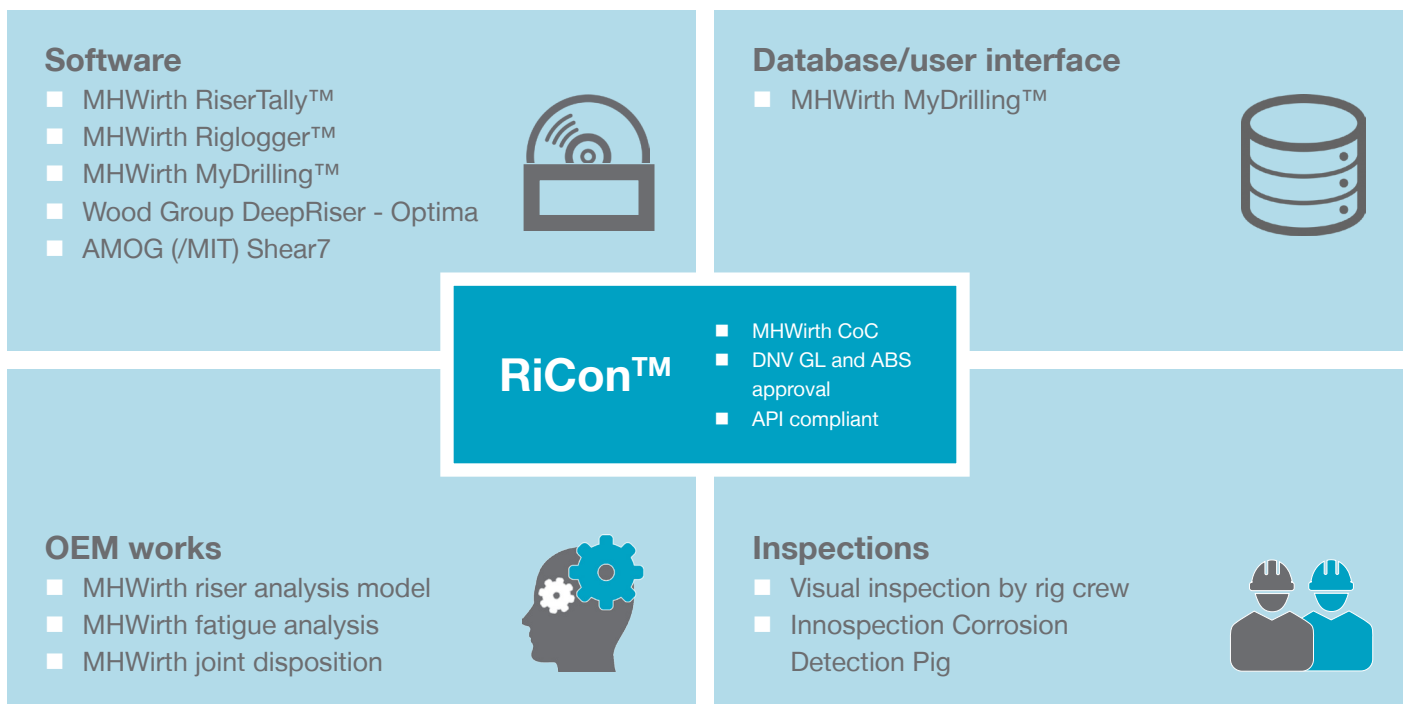


Based on our extensive experience in offshore drilling, MHWirth developed an unique riser maintenance program, the RiCon™ system. The system is approved by DNV GL and replaces the current five year certification. The RiCon™ unique methodology reduces your inspection costs, while still qualifying for DNV GL Drill and ABS CDS notations, same as with the traditional maintenance model.

The RiCon™ solution gathers data from the rig's monitoring system, the corrosion inspection tool and visual inspections. Additionally, it performs an automated fatigue analysis based on actual logged weather conditions and actual loading per joint.

Based on this data, a quarterly updated advisory report is delivered to the customer identifying the time until the next overhaul, maintenance focus areas and Certificates of Compliance (CoC). The report contains recommendations (e.g. for onshore overhaul) and additional inspections or program adjustments required to achieve the equipment's optimal performance.

The RiCon™ database is maintained by MHWirth at all times, enabling continuous CoC, including during stacked periods.



Our RiCon™ system can be easily implemented on any rig following a simple eight-step implementation model. The implementation steps are as follows:

1. Establish riser analysis model for the actual rig
2. Back calculate historical fatigue data
3. Establish riser condition from visual inspection reports
4. Riser history evaluation
5. Wall thickness measurements (no base line or special cleaning of riser joints is required)
6. Prepare riser database
7. System implementation on rig – hardware, software and interfaces
8. Onboard training