

# Hardware-In-The-Loop Testing HIL News



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## HIL Testing enables:

- Improved safety in operations
- Reduced downtime at sea
- Reduced time for commissioning at yard
- Reduced time for sea trials
- Broader, deeper and earlier testing leading to reduced life-cycle costs

## Inside this issue:

- Petrobras puts HIL in drilling unit specifications
- DNV launches ESV-DP[HIL]
- First remote interface test
- DP conference Houston
- DP System Service Agreement

## HIL workshop with Petrobras due to requirement in DP vessel specifications

In September Petrobras and Marine Cybernetics hosted a joint HIL workshop in the Petrobras office in Macaé.

The background for this HIL workshop was Petrobras interest in HIL testing which has now given the result that HIL testing is included in the new tenders for DP drilling units that was released by Petrobras in fall 2009.

Domestic and international drilling contractors and suppliers to Petrobras participated in this HIL workshop where the HIL testing service provided by Marine Cybernetics was presented and discussed.



## DNV launches new class notation



RULES FOR CLASSIFICATION OF SHIPS NEWBUILDINGS SPECIAL EQUIPMENT AND SYSTEMS ADDITIONAL CLASS

PART 6 CHAPTER 22

### ENHANCED SYSTEM VERIFICATION (ESV)

JULY 2009

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Table A1 Class notations	
ESV-DP[...]	vessels having undergone enhanced verification of dynamic positioning (DP) systems (Ch.7)
ESV-TAM[...]	vessels having undergone enhanced verification of thruster assisted mooring or automatic thruster assisted mooring (TAM) systems (DNV-OS-E301)
[...]	contain the verification method signifying the method of verification
HIL	= "Hardware-In-the-Loop" testing

This new ESV notation is based on the current Standard for Certification (SfC) for HIL testing.

DNV has launched the ESV (Enhanced System Verification) notation in order to establish a regulation framework for verification of complex computer based control systems and critical shipboard systems. This is a voluntarily class notation and will be put into effect from 01 January 2010.

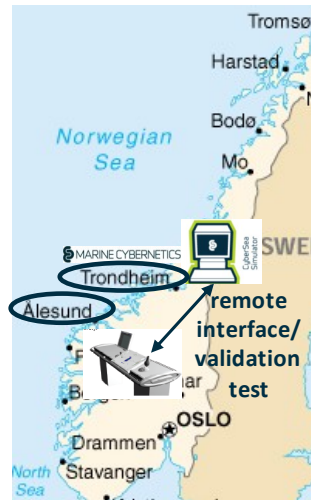
The ESV notation contains a set of requirements on how HIL testing shall be conducted and documented for testing of Dynamic Positioning (DP) systems and Thruster Assisted Mooring (TAM) systems. The ESV-DP[HIL] requirements are aligned with oil major industry requirements for additional testing.

About 60% of findings revealed by HIL testing will never be found by traditional testing

## First remote interface and validation test with Rolls-Royce Marine

During summer the first DP-HIL remote interface/validation test was successfully completed.

A test PC and interface equipment was placed at Rolls Royce Marine in Ålesund. The test was run from MC headquarters in Trondheim with the test PC remotely controlled while RRM controlled the DP.



This results in more efficient on-site testing as the interface and interaction between the DP system and the HIL simulator can be thoroughly validated before the test team arrives at the test site.

Marine Cybernetics offers HIL testing for:

- DP Computer system
- Power Management System
- Steering, Thruster and Propulsion Control System
- Drilling Control System

## Marine Cybernetics participates in the DP conference in Houston

Marine Cybernetics will participate in the annual DP conference taking place in Houston, October 13-14.

Marine Cybernetics will present a paper on experiences from Power Management HIL-testing for drilling vessels, and additionally we will be present with a stand where visitors and conference delegates can come by and discuss HIL testing of control systems and Marine Cybernetics services in general.

## DP System Service Agreement

Due to regular software upgrades or updates, operational philosophy changes, modifications, or degradation of hardware and equipment on ships in operations, Marine Cybernetics has established a new service to enable safer and more profitable operations throughout the vessels life cycle: a DP System Service Agreement.

Risk	Solution	Customer Value
Software update/upgrade Changes in operative conditions	Software change risk assessment Software testing with latest HIL technology	Reduced risk of new software failures Support in upgrade/change decisions
Problems during operation	24h Helpdesk for events, incidents, trouble shooting, operative issues.	Improved operative utilization
Customer Acceptance Tests Annual DP trials	Preparation for and participation in Customer Acceptance Tests Preparation for and participation in Annual DP trials	Reduced exclusive vessel time Less destructive testing



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