

JACKING SYSTEM ENHANCED MONITORING SYSTEM

UPGRADE



Keppel

**Offshore Technology
Development**

JACKING SYSTEM, ENHANCED MONITORING SYSTEM (EMS) UPGRADE

OTD is a leading design and engineering company with a proven record of delivering more than 4000 jacking gearboxes and associated EMS. With more than 20 years of experience, OTD holds critical rigs equipment and product designs rights including jacking system and EMS.

For a software based system, it is always important to keep the system up-to-date with the latest versions of the software. OTD offers EMS upgrade to its clients who have been using their system for number of years. The EMS upgrade will have minimum impact to the existing system and is recommended for both hardware and software upgrade. The EMS upgrade fulfils ABS Rules, Part 6, 2016, Section 9 on Jacking and Associated System. Moreover, all of our recent delivered rigs have incorporated these latest EMS features. Therefore, EMS upgrade is a necessity for your system.

Why Choose OTD?

Because we listen to our clients' feedback. The EMS upgrade shall address our client pain points such as the replacement of obsolete PC system components, new safety features such as leg flag alarm to prevent jacking accident, built-in timer for preventive maintenance, etc.

Our Solutions:

- The EMS upgrade is designed and engineered in such a way that no new cables are required to be laid. However, if the cable routing or installation is required, it will be limited within the Jacking Motor Control Center and Jacking Central Console and carried out by OTD personnel
- Work duration: 3 – 5 days based on the basic scope of EMS upgrade
- It is recommended to schedule the EMS upgrade prior to upcoming rig move in order to verify the functionality of the upgraded system in the actual operation

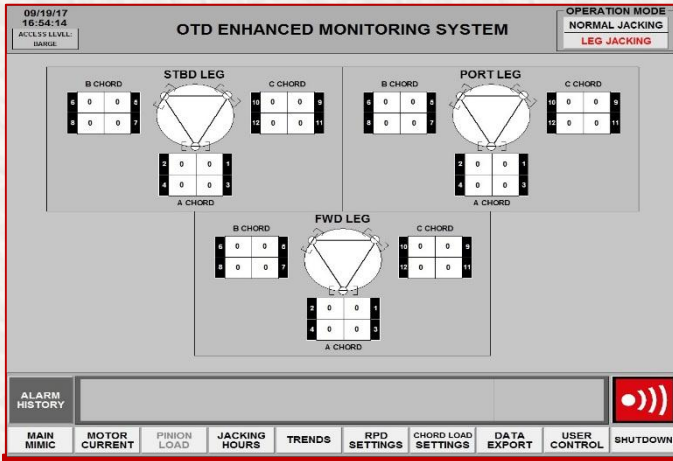
Benefits of EMS Upgrade:

- Enhanced safety, real-time monitoring
- Fulfil ABS survey and inspection requirements
- New functional features like motor current monitoring, dynamic pinion load, leg power, etc.
- Replacement of obsolete system components
- Reduce jacking down time
- Cost effective upgrade

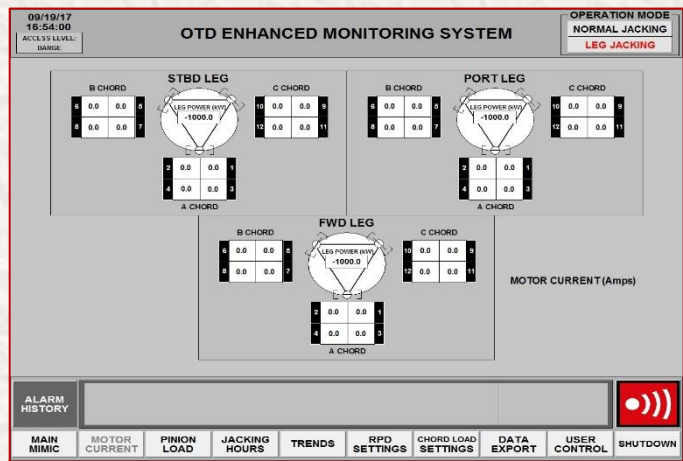
Summary of New Functions and Features Offered in EMS Upgrade

System Hardware / Features		Description	Benefits
HARDWARE & SOFTWARE	Industrial PC - Motherboard	Quad Core	Replacement of PC obsolete system components
	Industrial PC - Operating System	Windows 7	
	Industrial PC - Logging Display	Office 2016	
	Industrial PC - Hard Disk Size	500 GB	Fully compatible software and hardware with Window Supports
	Touchscreen Display Size	17"	
	HMI Software	GE ifix 5.8	
	HMI Runtime License	GE ifix 5.8	
FEATURES DEVELOPED	Motor Current Monitoring	Real time monitoring of individual motor current	Fulfil ABS Rules, Part 6, 2016, Section 9 Jacking and Associated System
	Pinion Load Monitoring	Real time monitoring of load taken by each jacking pinion	Fulfil ABS Rules, Part 6, 2016, Section 9 Jacking and Associated System
	Vessel Jacking Hours	Number of jacking hours vessel has completed	Preventive maintenance feature
	Leg Flag Alarm	Alarm alert when hull/leg reaches to maximum limits to protect against jacking accident	New safety feature
	Access Control	Different access level to prevent unauthorized access of system	New user access control feature
	Leg Load Monitoring (in KW)	Monitoring of power consumed by each leg during operation	Data Log
	Data Logging	Logging of critical parameters up to 180 days	Data Log

New jacking EMS function indicates current or torque in each motor as per ABS Rules, Part 6, 2016

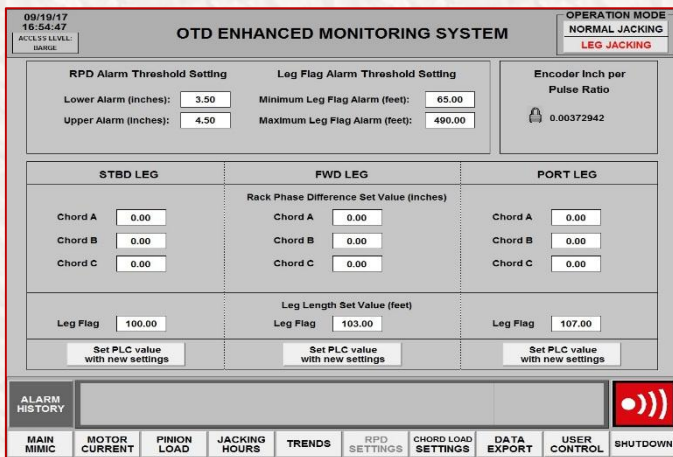


New Feature: During jacking, pinion load is shown for each jacking gearbox to ensure safe jacking operation and reduce uneven pinion loading.

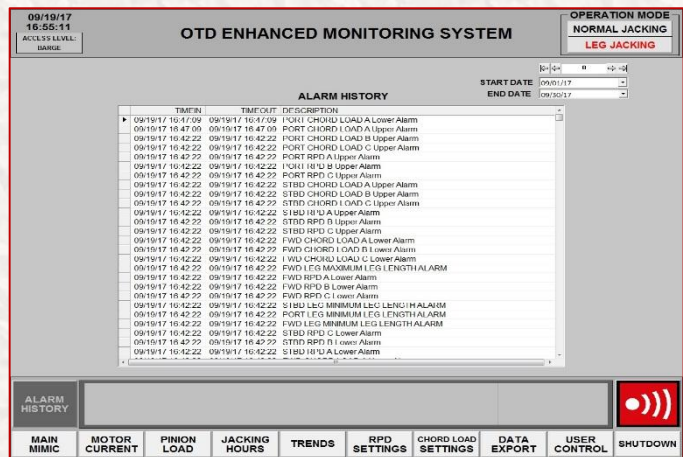


New Feature: Motor current is measured for each jacking gearbox in terms of pinion load curve.

New jacking EMS function indicates RPD alarm setting and leg flag alarm setting to alert operator

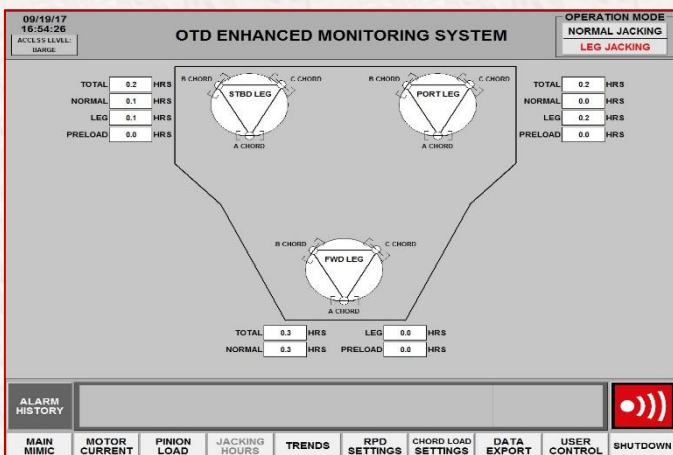


New Feature: RPD alarm setting and leg flag alarm setting are shown to alert operator on possible abnormalities during jacking operation.

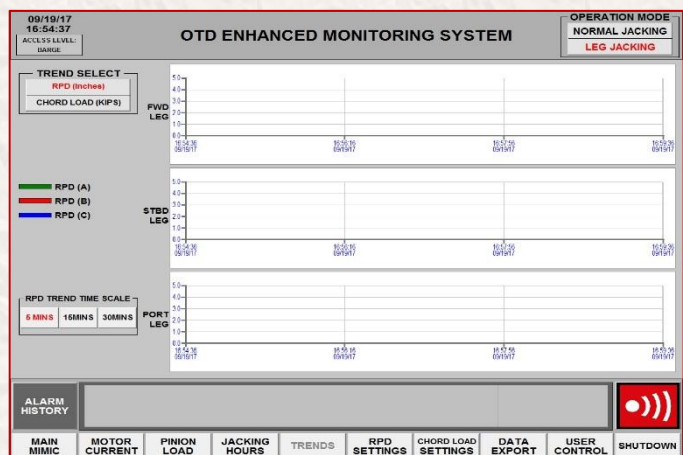


New Feature: Data log of all alarm history is shown.

New jacking EMS function indicates total jacking hours and live trending of RPD and chord load (KIPS)



New Feature: Total number of jacking hours are stored.



New Feature: Live trending of RPD & chord load (KIPS) is plotted against time.

TRACK RECORD

1998	Brage	2009	Greatdrill Chetna	2013	La Covadonga
1999	Eir	2009	Greatdrill Chitra	2013	Les Hat
2000	EnSCO 101	2010	PV Drilling II	2013	AOD III
2002	EnSCO 102	2010	Rowan Viking	2014	Arabdrill 60
2002	EnSCO 104	2010	Rowan Stavanger	2014	UMW Naga 5
2002	EnSCO 105	2010	PV Drilling III	2014	Dukhan
2003	EnSCO 111	2010	Rowan Norway	2014	EnSCO 122
2004	Tonala	2010	West Callisto	2014	Jindal Explorer
2005	Al-Hail	2011	Peter Godovanets	2014	Asian Hercules III
2005	EnSCO 106	2012	Seafox 5	2015	Yunuen
2006	Deep Driller 2	2012	SAR 202	2015	Kukulkan
2006	EnSCO 107	2012	Nezalezhnist	2015	EnSCO 110
2006	Arabdrill 30	2012	AOD I	2015	Cantarell I
2006	Deep Driller 3	2013	AOD II	2015	Cantarell II
2006	COSLCraft	2013	Ran	2015	Cantarell III
2007	Deep Driller 5	2013	Frigg	2015	Cantarell IV
2007	West Prospero	2013	UMW Naga 4	2015	PV Drilling VI
2007	Paradise 400	2013	Arabdrill 50	2015	UMW Naga 8
2007	EnSCO 108	2013	Mist	2015	TS Topaz
2008	EnSCO 109	2013	Idun	2015	Paraiso I
2008	Deep Driller 6	2013	Primus	2015	Paraiso II
2008	COSL Boss	2013	EnSCO 120	2015	Arabdrill 70
2008	Discovery I	2013	EnSCO 121	2016	Halul
2008	West Ariel	2013	Hakuryu-11		
2008	Virtue I	2013	Dynamic Vision		
2008	Ocean Scepter	2013	Odin		
2009	Deep Driller 8	2013	Laurus		
2009	COSL Strike	2013	La Santa Maria		



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