



 **OFFSHORE VESSEL  
& RIG CONNECT**  
Asia

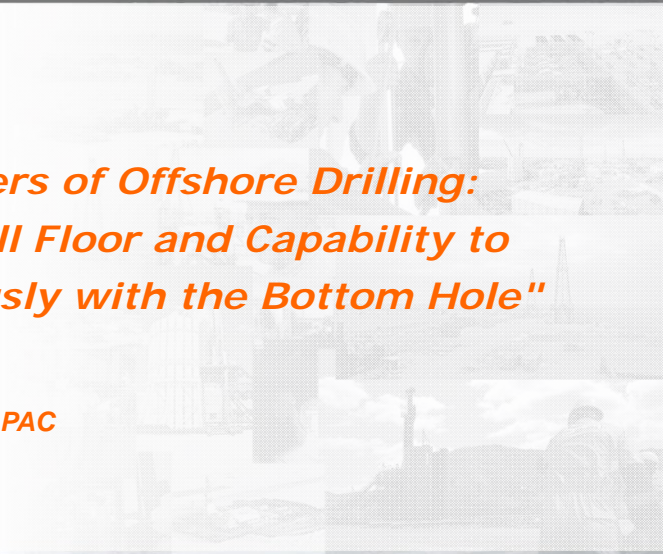


Singapore - April 20<sup>th</sup> 2016

 **OFFSHORE VESSEL  
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Asia

***The New Frontiers of Offshore Drilling:  
"Hands-Off" Drill Floor and Capability to  
"Talk Continuously with the Bottom Hole"***

***Paolo Cantalupo  
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Singapore - April 20<sup>th</sup> 2016

## DRILLMEC BACKGROUND

Headquarter  
in Italy

1,500 People

450+ M EURO  
Turnover

Oil&Gas presence  
since 1920s

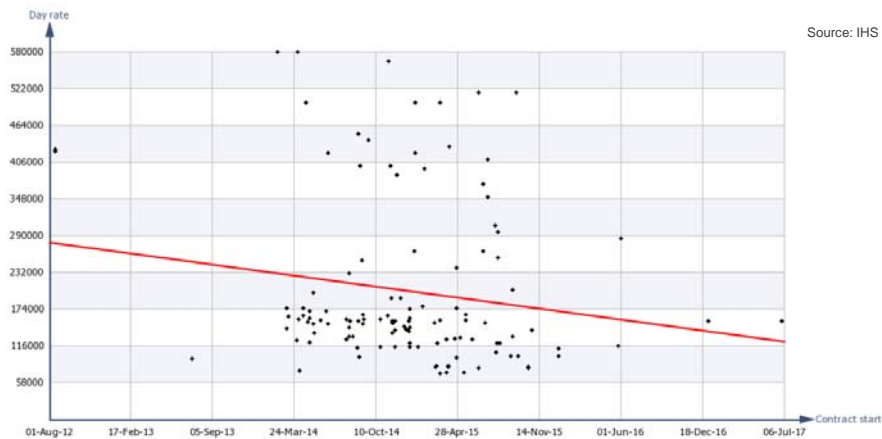
500+ rigs  
delivered

Rigs in operation  
in over 40  
countries

## OIL PRICE TREND FROM 2014 TO 2016



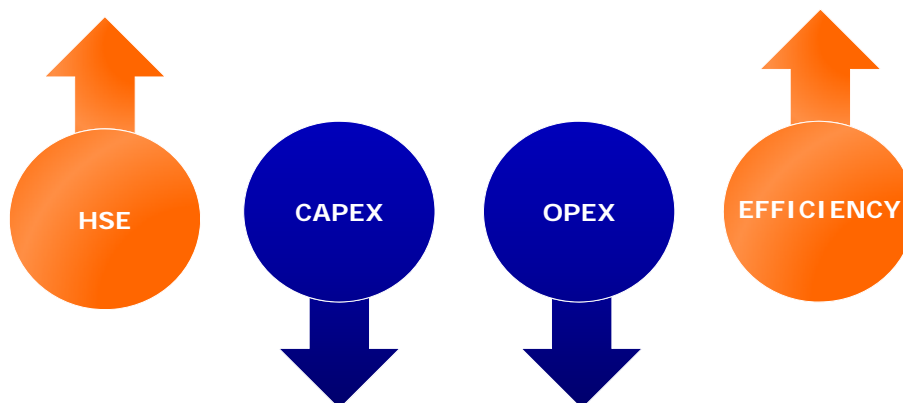
## DAYRATE DECLINE ACROSS ALL RIG TYPES



Dayrates are being pushed down to 50%

Rig utilization rates down to minimum levels

## CHALLENGES TO BE SOLVED BY DRILLING PACKAGE SUPPLIERS



4 MAJOR STEPS WE ARE TAKING TO SOLVE THESE ISSUES

IT'S THE RIGHT TIME TO APPLY MATURE UNCONVENTIONAL TECHNOLOGIES

## STEP 1 – UNCONVENTIONAL EQUIPMENT

### a. Hydraulic Hoist Towers vs. Derrick & Drawworks

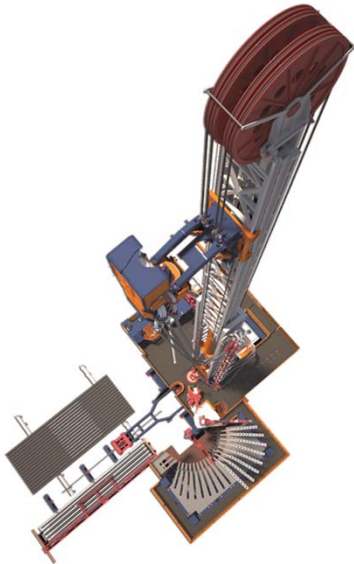


### a. Hydraulic Hoist Towers vs. Derrick & Drawworks



Hydraulic technology replacing Mechanical

Reduced maintenance operations and risks of failure



Integrated Drilling Tower :  
Derrick + Top Drive +  
Drawworks + Drill Line +  
Travelling Block +  
Deadline Anchor

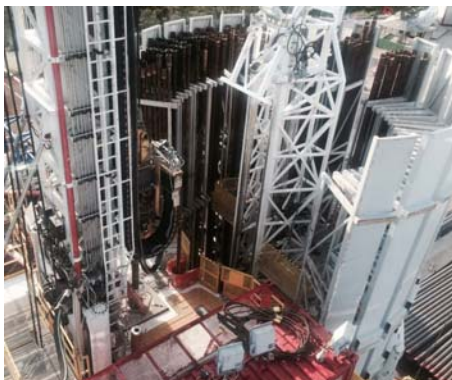
Pull Down Capacity

Weight & Footprint  
Reduction

Mast Retractable and  
Foldable



#### b. Automated setbacks excluding racking board & work in height



Setbacks and pipe storage are moved away from the drill floor:

Improved visibility and safety at each stand connection

Dropped objects risk reduced to minimum



### c. New drill floor arrangements



No personnel on the drill floor

"Hands-off" operations - Automatic & Remotely controlled

### STEP 2 – DRILL FLOOR & PIPE DECK AUTOMATION



## HH300 ATS Automatic Tripping System



### STEP 3 – INTEGRATED SOFTWARE SUPPORT

- Full Software Integration:
  - Zone Management System
  - Package fully controlled – Autodriller & Live parameters monitoring
  - Remote access from onshore for : support, troubleshooting, software intervention, real time data sharing
- Remote Drilling Controls
- Integrated Proactive Preventive Maintenance - PPM



### STEP 4 – COMMUNICATION BETWEEN DRILL FLOOR AND DOWN HOLE ACTIVITIES

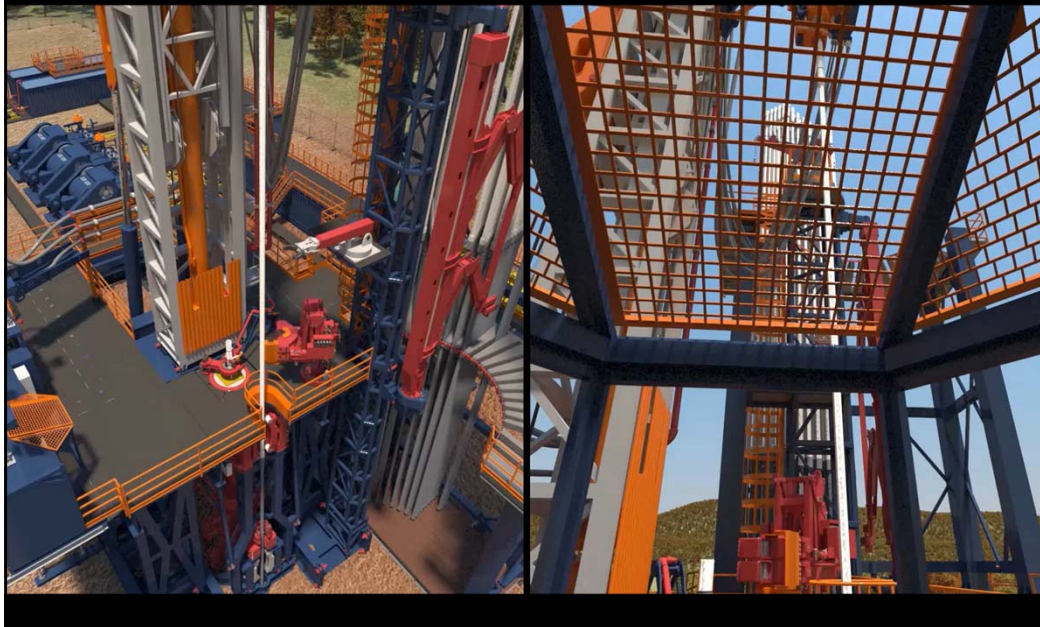
- To increase well safety & achieve full automation we need a continuous communication with the bottom hole and uninterrupted data sharing
- Implementation of 2<sup>nd</sup> constant barrier on the well (hydraulic) by Continuous Circulation technology
- Integration of Continuous Circulation equipment within drill floor automation
- New concept of Heart of Drilling (HoD) introduced and integrated in DRILLMEC latest generation rigs

A, B, C, D, E...



$\Gamma, \eta, \lambda, \mu, \theta \dots$





## CONTINUOUS CIRCULATION SYSTEM – Advantages :

### Well Control & Safety

- No kick connection
- Hydraulic barrier always present on the well

### Quality

- Improve hole condition and well bore stability
- Reduce mud losses

### Performance

- Reduced Circulating time
- Reduced typical drilling NPT
- Improved Tripping Speed & ROP

### Cost reduction

- Reduced mud costs
- Reduced well maintenance costs



## CONCLUSIONS

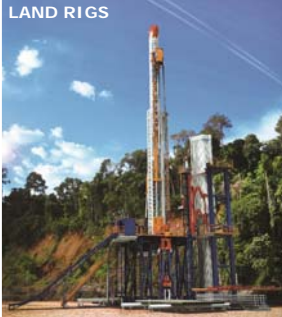
- Innovation & Automation is driving the progress
- Higher safety standards are being achieved - Autotripping, Limited Drops risk & Noise emission
- Integration of Continuous Circulation will increase well stability, downhole control and allow moving towards full automation in complete safety
- New frontier of offshore drilling from smaller drilling units & smaller vessels



- **50+ %** Personnel reduction on drill floor
- **15 – 20 %** Weight & Footprint reduction
- **10+ %** Reduced fuel consumptions
- Reduced maintenance time and operations
- **It's time for a change! Let's give new layouts and "look" to drilling rigs as we are used to know them .....**



LAND RIGS



DES  
TAD &  
FP



CANTILEVER PACKAGES  
Jack-up & Liftboat

