

Project: Marine Industry



Control Software Development to Position 700 Ton Wind Turbine Foundations

• GRAPHICAL SYSTEM DESIGN •
ACHIEVEMENT AWARDS

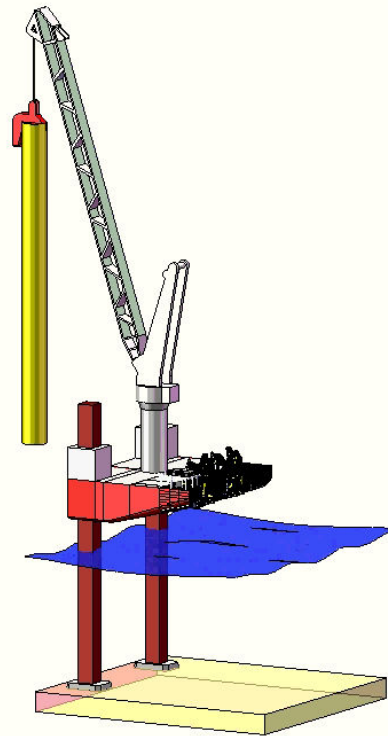
APPLICATION OF THE YEAR
AWARD



The Challenge: Installation of Offshore Wind Turbines



The Challenge



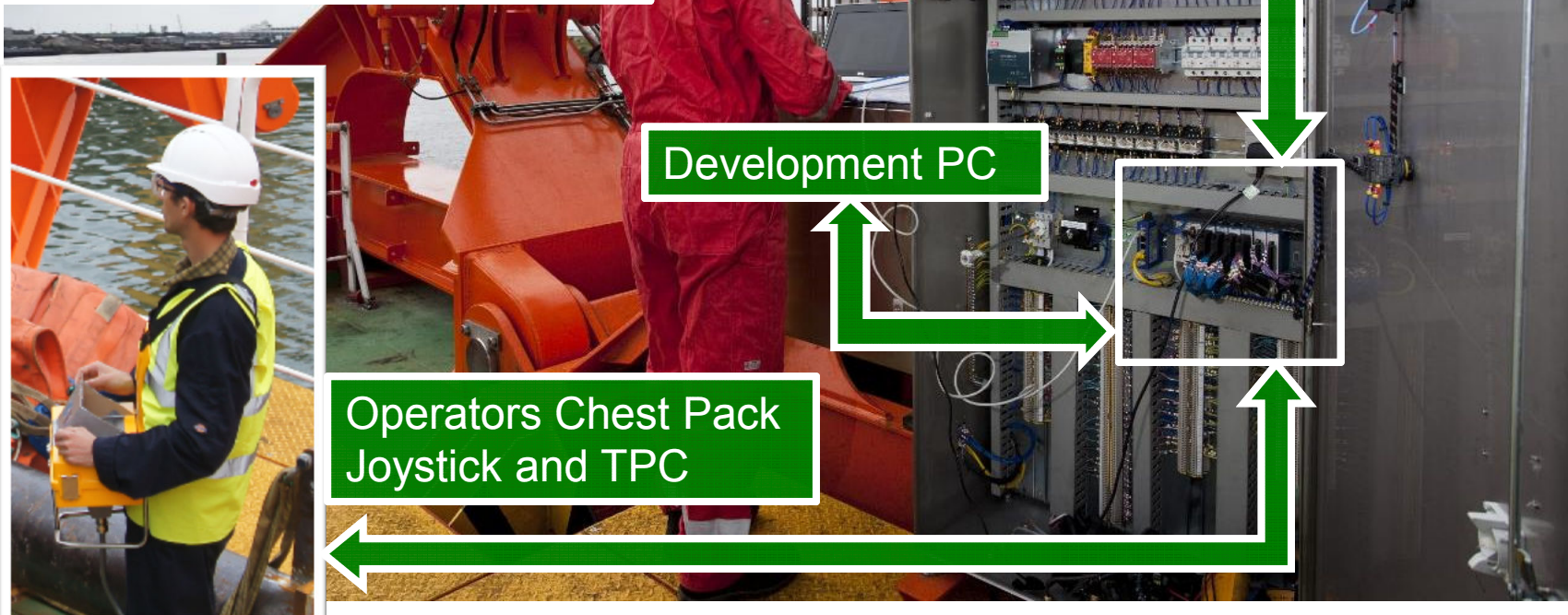
Wind Turbine Pile Gripper Arms



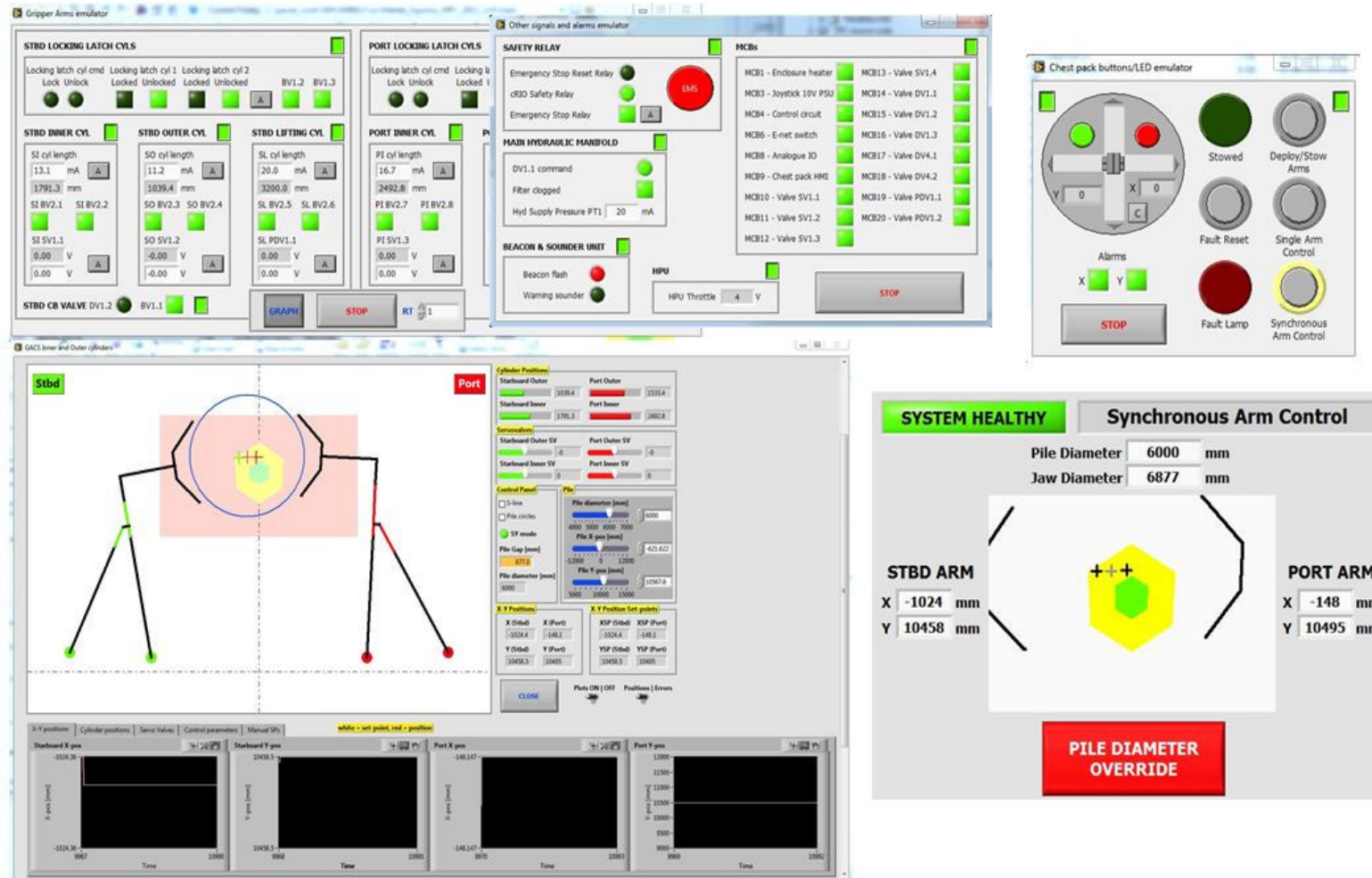
- System architecture similar to Turbine Access System:
 - ❑ cRIO (control + kinematics + operating logic + fault handling)
 - ❑ TPC for operator – as chest-pack, with joystick / buttons
- Challenges:
 - ❑ Massive – challenge mechanically.
 - ❑ Control – slow, so not so demanding. More about balancing different speeds in different cylinders, and how translates to X-Y motions.
 - ❑ Constraints – easy for gripper arm to crush pile.
 - ❑ Because so big – first opportunity to test full system will be on boat –
IMPORTANCE OF EMMULATOR FOR OFFICE-BASED TESTING

The Control System

6 x Cylinder lengths
6 x Servovalve signals
HPU pressure
Beacon/sounder
Safety relay
E-stop button
MCBs
(51xDI, 16xDO, 15xAI, 7xAO)



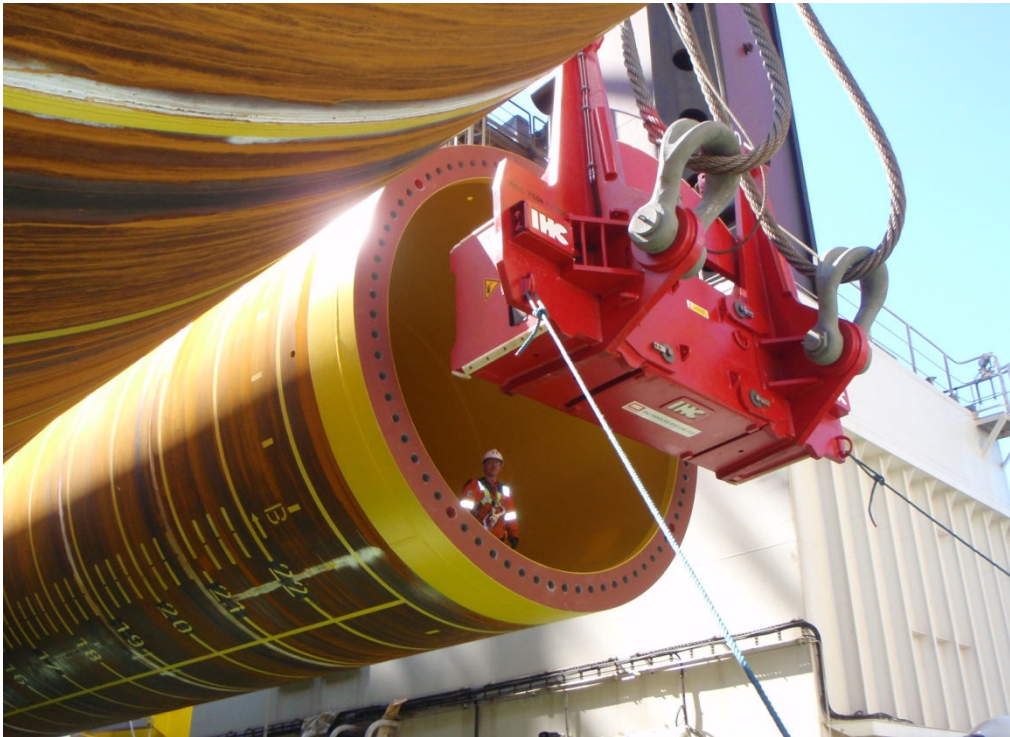
Gripper Arm Emulator



Sea Trials – Aug 2013



Sea Trials – Aug 2013



Sea Trials – Aug 2013



Sea Trials – Aug 2013



First one done ...



- MPI Discovery installed all 77 wind turbine foundations at the Humber Gateway wind farm, and is now working throughout the North Sea.