

ADECS³



MONITORING AND CONTROL FOR TOMORROW'S FLOATING DRY DOCKS

ADECS³: Automated Dock Evolution Control System, Generation 3

Integrated and Stand-alone modules for: Deflection Monitoring, Enhanced Manual Control, Attitude and System Monitoring, Alarming, Automatic Evolution Control, Data Trending, Historical and Event Data Logging, Remote Data Monitoring

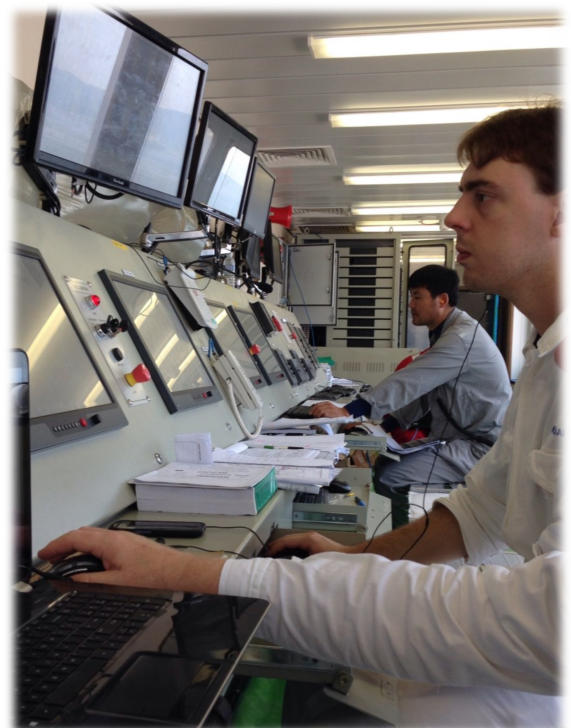
IDAC West's ADECS³ Control and Monitoring system components are scalable and cost effective for installation on docks from 1000t capacity up to the largest docks in the world. Control capabilities range from simple monitoring and notification to fully automatic operation. Modular components allow for scalable solutions and provide flexibility for the specific requirements of every floating dry dock.

Stand-alone modules

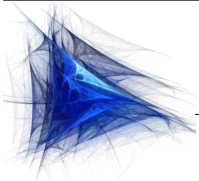
- ◇ MDM: Multi-Axis Deflection, List, and Trim Monitoring
- ◇ RDM: Enhanced Manual Operation for Control Room Direct Operation
- ◇ AAM: Attitude and System Monitoring, Alarming, and Security

Advanced and Enhancement modules

- ◇ AEC: Fully Automated Ballast and Deballast Control
- ◇ RAX: Remote Auxiliary System Monitoring
- ◇ HDL: Trending and Historical Data Logging

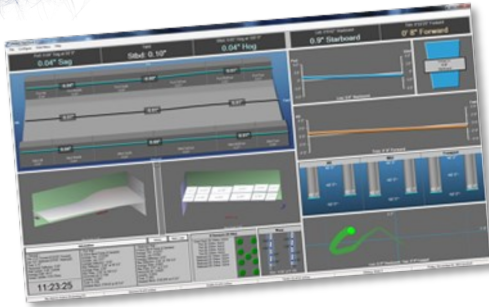


For further information see: <http://www.dockcontrol.com>



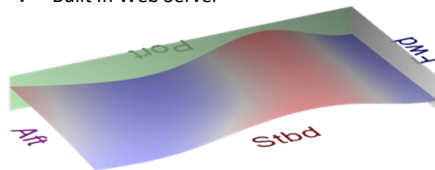
MULTI-AXIS DEFLECTION MONITORING

ADECS³: MDM MODULE



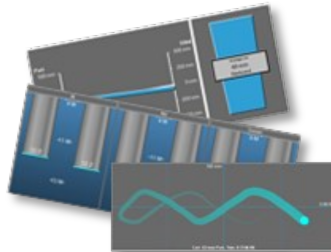
Flexible display and monitoring

- ◇ Scalable for any size floating dock
- ◇ Graphics can be configured by end user to show information as needed.
- ◇ Provides custom display components specialized for floating docks.
- ◇ Live interactive representation of the actual deflection and shape of the deck floor and tank center deflection
- ◇ Built In Web Server



Partial list of information generated:

- ◇ Trim and List
- ◇ Tilt Direction and Angle
- ◇ Longitudinal Deflection (hog/sag)
- ◇ Longitudinal and Transverse Skew (twist)
- ◇ Longitudinal Linearity
- ◇ Transverse Deflection (wall toe-in/out)
- ◇ Transverse Squareness (wall vs keel list)
- ◇ Tank by Tank Deflection
- ◇ Point of Greatest Deflection

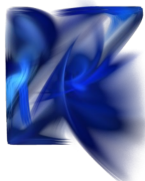


Alarming

- ◇ Flexible Multi-level alarming
- ◇ Monitors and logs critical detail and calculated elements

Sensors

- ◇ From 2 to 20 precision units usually mounted in safety deck area.
- ◇ Accuracy to 0.4mm over 20M length
- ◇ Non-Optical – no "line-of-sight" required
- ◇ Power over Ethernet - Simplifies installation

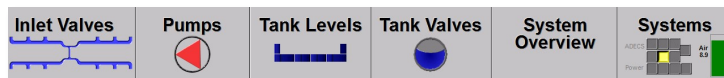


ENHANCED REMOTE/LOCAL MANUAL CONTROL

ADECS³: RDM MODULE

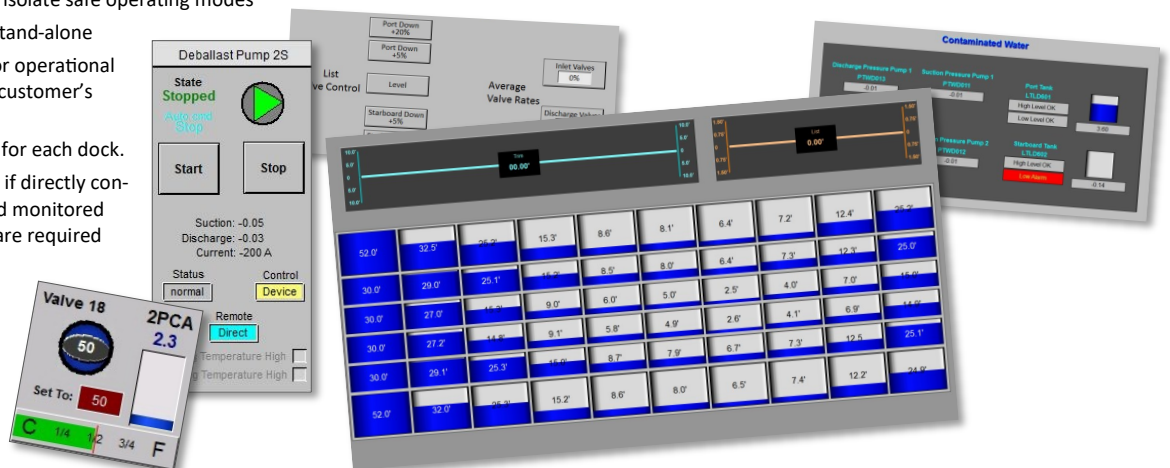
Remote (Control Room) Manual Control

- ◇ Dual (or more) redundant Industrial Color Touchscreens control the entire dock
- ◇ Replaces bulky and expensive manual control console
- ◇ On-screen buttons and selectors replace the functions of the common electro-mechanical controls
- ◇ Custom graphical gauges and indicators show status of the controlled items including pumps, tank levels, and valve positions
- ◇ Physical keyed switches isolate safe operating modes
- ◇ Simple alarming when stand-alone
- ◇ Displays are arranged for operational efficiency based on the customer's method of operation.
- ◇ Screens are customized for each dock.
- ◇ Control screens work as if directly connected to controlled and monitored items, no "controllers" are required
- ◇ When automatic operation is installed the rest of the system knows if an operator has control of a specific object and reacts accordingly.



Assisted Group Control

- ◇ Intelligent control of groups of valves and/or pumps
- ◇ List and Trim intelligent control operates the valves based on ballast/deballast direction without operator calculation .
- ◇ Set valve positions with the touch of a button based on your pre-configured values.



Auxiliary Systems Monitoring (RAX)

- ◇ RAX Addition to RDM adds another redundant monitor screen.
- ◇ Monitor for other non-evolution related systems
- ◇ Commonly controls cooling pumps, fresh water pumps, air compressors, etc.
- ◇ Can be monitoring and logging water temperature and pressure, bilges, winch tensions, miscellaneous tank levels.

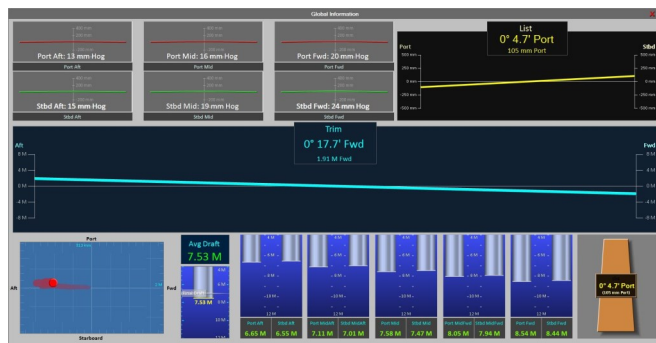


ATTITUDE AND SYSTEM MONITORING, ALARMING

ADECS³: AAM MODULE

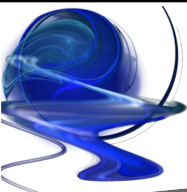
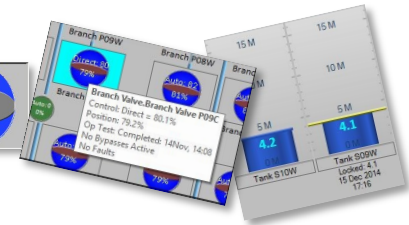
Attitude and System Monitoring

- ◇ Generates List, Trim, and Deflection from Draft readings
- ◇ Provides global overview displays of critical dock operation information
- ◇ Shows operational specifics for each item (tank, valve, pump, draft sensor)
- ◇ Flexible layout allows on-the-fly determination of what the user sees
- ◇ Designed for touchscreen operation or use with keyboard and mouse
- ◇ Data is displayed in multiple manners, for instance tanks can display level or volume, and total volume can be shown
- ◇ Tank and Draft levels have Lock-type variation alarms.
- ◇ Deflection information from MDM (if installed) is compared and contrasted with Draft based calculations



Alarming and Security

- ◇ Alarms for individual components and global values
- ◇ Alarming tracks occurrence, acknowledgement, and recovery times
- ◇ Individual or group acknowledgement
- ◇ Any alarm can be bypassed or enabled with appropriate security level
- ◇ Unlimited users
- ◇ Security levels allow determination of privileges
- ◇ User Log-in/Log-out recorded in alarm log
- ◇ Logged and stored in standard CSV format files
- ◇ Email notification based on security and alarming



AUTOMATIC EVOLUTION CONTROL

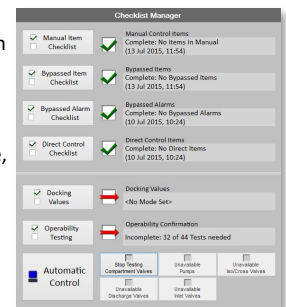
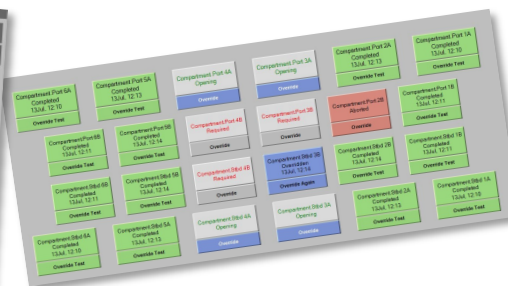
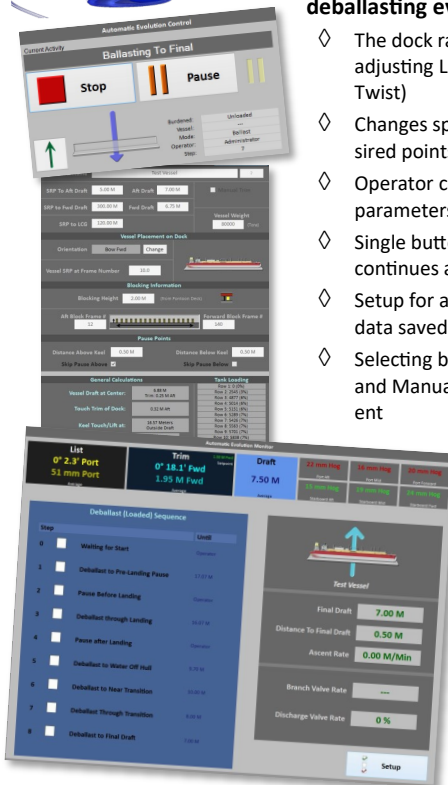
ADECS³: AEC MODULE

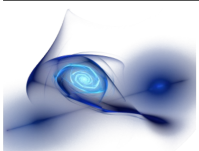
Complete automation during ballasting and deballasting evolutions

- ◇ The dock raises or lowers while automatically adjusting List, Trim, and Deflection (including Twist)
- ◇ Changes speed and activity and pauses at desired points or on-the-fly as desired by operator
- ◇ Operator can monitor and handle all critical parameters of operation on a single screen
- ◇ Single button press starts, stops, or pauses/continues activity
- ◇ Setup for any vessel is on a single screen with data saved automatically for later re-use.
- ◇ Selecting between Automatic, Semi-Automatic, and Manual operation is inherent and transparent

Safe Operation

- ◇ Uses Precursors and Checklists to verify that everything is functional and ready
- ◇ Provides automated functionality testing for all critical controlled components
- ◇ Operator can take over operation of any pump or valve at any time through RDM and ADECS will continue to adjust the others
- ◇ Items can be taken out of service, and the system will still adjust to the best of its ability
- ◇ Redundant information sources and redundant controls provide automatic backup functionality
- ◇ Alarms and real-time decisions are interactive internally and with operator



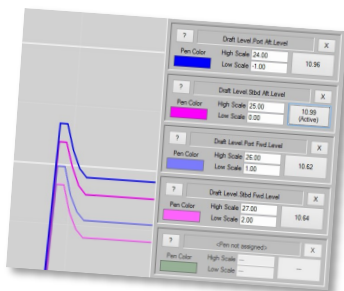


HISTORICAL TRENDING AND DATA LOGGING

ADECS³: HDL MODULE

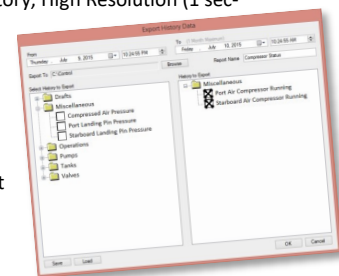
Utilities for reporting and analysis

- ◇ Flexible, on-the-fly live data trending from 5 minutes to 4 hours with automatic historical data retrieval
- ◇ Saved trend formats and information
- ◇ No pre-canned report formats
- ◇ Select data from history and export to industry standard CSV files (Excel, Open Office, etc.)
- ◇ Save selected export formats for later reporting exports

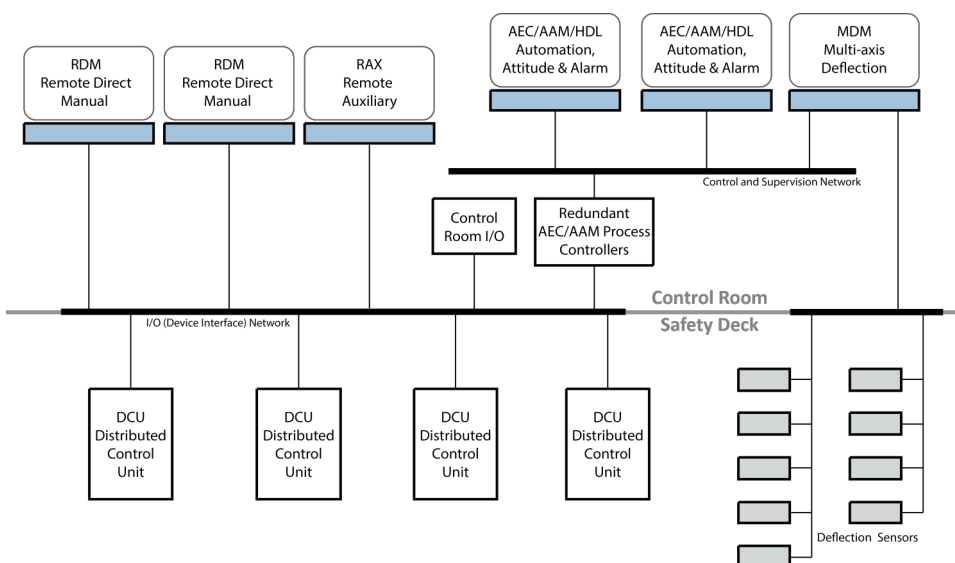


Historical and Event Logging

- ◇ 1 minute resolution for normal history, High Resolution (1 second) available for two weeks
- ◇ Unlimited event logging
- ◇ Automatic file compression and archival after 3 months
- ◇ Human readable logging format
- ◇ Standard hard drive will hold about 100 years of information



TYPICAL COMPLETE ADECS³ CONTROL ROOM AND SYSTEM LAYOUT



IDAC West has provided control solutions since 1999 for the Floating Dry Dock industry. Our systems are built for safety, efficiency, and ease of use by the operator.

We have deployed systems on dry docks that are class approved by ABS, Lloyds Register, Bureau Veritas, and NAVSEA. Our systems are the standard for the US government and are fully supported by the NSWC Naval support group.



Providing state-of-the-art systems since 1993

- ◇ Global Projects—From Silicon Valley to the South Pacific
- ◇ Principle Staff—each with 30+ years of experience
- ◇ We have written many of our customer's standards
- ◇ All of our marine customers are still our satisfied customers to this day
- ◇ Our systems are based on industry standards including MIL-STD-1625

