2015 Honeywell Users Group
Europe, Middle East and Africa

Smart Integration of Offsite Automation with EPKS
Jayaparakash R, Honeywell
Introduction

- Loading and un-loading product are key activities in off-sites operations
- Profitability depends on success of these activities
- Many challenges exist that need to be addressed

Our Goal:
Demonstrate how to address the challenges in Storage, movement, loading and un-loading products and optimize operations through improved safety, reliability and efficiency

Intelligent Business Decisions leads to improved margins
Terminal Operations Management Goals

**Safety & Security**
- Protect People, Assets and Environment
- Reduce Spills & Dangerous Mixing

**Accuracy**
- Accurate Measurement, Better Control
- Reduce loss, improve visibility

**Reliability**
- Improve Availability
- Reduce Downtime
- Reduce Demurrage

**Efficiency**
- Improve Productivity
- Reduce Cost
- Easy accounting, Unified Ops

© 2015 Honeywell International All Rights Reserved
Current Challenges

- Seamless dataflow between sub-systems
- Lack of Unified operating systems in off-sites
- Manual intervention between product movement and loading systems
- Manual intervention during reconciliations
- Downtime and Demurrages

Honeywell provides you with a comprehensive solution

True integrated systems in off-sites

Will improve safety and margins
How to Beat the Challenge?

Holistic approach:
Integrated solution, single view

Non-Integrated Approach:
Each supplier has a different view

Solution attributes:
- Single solution view
- Common design philosophy
- Integrated “out of the box”
- Less expensive to implement & manage (by as much as half)

- Multiple solution providers
- Only focus on subsystem
- Plant staff becomes the integrators
- More expensive to implement & manage

Point Solutions are Pointless...hence...we Integrate and not Interface
Terminal Manager – Smart TAS solution

- Advanced Configurable workflow engine
- Transport modes - Road, Rail, Marine, Pipeline
- Product Allocation, Reconciliation, Email & SMS notifications
- Integrated working with Movement Automation
- Common SESP programs and migrations
- VM and EBR Qualified

Built on Experion platform

“Experience a truly integrated TAS”
Benefits of Domain Expertise

Domain knowledge means ability to apply best practices
Terminal Manager - Powered by Experion

- Digital Video
- Server, network redundancy
- PLC / Controller, Wireless
- Typical SCADA functions
- Network, Cyber security, anti-virus
- Remote monitoring
- Backup control center (Disaster Recovery)
- Virtualization of server & clients
- Backup and restore
- Motor Operated Valves
- Tank Gauging
- Safety shutdown controller
- System Status, Diagnostics
- Pump control, MOV, Interlocks, wireless sensors and network
- Alarms, trends, graphic displays, history, reports
- Firewall, preventing cyber/virus attacks.

- Ghost image of server for emergency restore
- Control tank farm valves, alarms, interlocks
- Monitor tank parameters, alarms, interlocks, regulate movements
- Motor Operated Valves
- Tank Gauging

SIL3 controller for safety shutdown e.g. LPG

Live video and playback

Powered by VMware. Reducing investment and lifecycle costs

Honeywell Confidential
System Architecture – Smart Form

Control Room / Office

- TAS Server & Station
  - Experion - Real time monitoring (DSA to EPKS servers)
  - TM - Shipment handling & workflow

- Entis Pro
  - Tank monitoring
  - Tank gauge calibration

LAN

- Comms Interface / terminal Server
  - Serial RS485/422
  - TCP/IP
  - FO

Field - Loading Bay

- Flow Controller & Local HMI
  - Flow Control Valves
  - Shutoff Valves
  - Flow Meters
  - Additive Injection
  - Blending Control (optional)
  - Pump Demand (optional)

- CIU 888
  - Tank Gauging Interface
    - ENbus comms
    - Inventory calcs

- CIU Plus and CIU Prime
  - MSC-L (Load Computer)

Field – Tank Farm

- Tank Gauging
  - Radar
  - Servo
  - Pump Demand (optional)
  - Product Level
  - Average Temperature
  - Pressure (optional)
  - Water bottom (optional)
Off-sites Movements Challenges

- Line-up errors
- High workload of off-sites operators
- Increasing demand for data integration (i.e. for data reconciliation)
- Loss of expertise
- Low off-sites automation
- Manual co-ordinations
- Lack of interlocks between movement and loading/unloading

If not addressed, challenges result in incidents, reduced profitability and delays
Overcoming the Challenges

- Requires an appropriate workflow:

  Planning
  + Execution
  + Monitoring
  + Analysis
  = Optimal off-sites management

Feedback

Perfect
Plan
Perform
Integrated off site Management Helps Close the Loop From Planning to Final Accounting

ORDER MANAGEMENT
- Movement Task Management
- Loading and unloading Management

The order which is ready for execution is validated and interlocks verified.

Loading control and monitoring with alarms and safety interlocks.

EXECUTION PREPERATION
- Interlocks verified
- Product, line up verifications and readiness
- Create activity
- System readiness

Task creation, line up and hand shake signals verified.

EXECUTION MANAGEMENT
- Movement Task Management
- Loading and unloading Management

The ERP orders are in sync with all the off sites sub system.

Integrate ERP order with loading and movement system.

Movement monitoring and management with alarming.
## System Detail Mapping

<table>
<thead>
<tr>
<th>Operation</th>
<th>Movement Automation</th>
<th>Terminal Automation</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIS / ERP Order Download</td>
<td>Process</td>
<td>P</td>
</tr>
<tr>
<td>Order Activation</td>
<td>Monitoring</td>
<td>Control</td>
</tr>
<tr>
<td>Loading arm assignment &amp; permissive</td>
<td>M</td>
<td>C</td>
</tr>
<tr>
<td>Lineup</td>
<td>C</td>
<td>M</td>
</tr>
<tr>
<td>Loading Start</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Flow Monitoring</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Custody Transfer Meter Proving</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Tank Swing (Source)</td>
<td>C</td>
<td>M</td>
</tr>
<tr>
<td>Real-time Volume Reconciliation</td>
<td>C</td>
<td>M</td>
</tr>
<tr>
<td>Tank Dynamics</td>
<td>C</td>
<td>M</td>
</tr>
<tr>
<td>Stop On-demand</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Batch completion</td>
<td>M</td>
<td>C</td>
</tr>
<tr>
<td>Closeout</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Movement report to MIS/ERP</td>
<td>C</td>
<td>-</td>
</tr>
<tr>
<td>Loading report and Invoicing</td>
<td>-</td>
<td>C</td>
</tr>
</tbody>
</table>

**P**: Process  **C**: Control  **M**: Monitoring
Experion in Action

Physical Security and Video

Common View Across Facility

Integrated Blending & Terminal Automation

Planning and Scheduling

ERP Integration

Process Management

Common Platform across facility wide operations
Value Propositions

**VALUE PROPOSITION**

**Safety and Security**
- Integration with Honeywell safety manager
- Application role based security
- Access card based authentication
- Tamper proof Audit Trails
- Defense-in-depth security
- Windows Integrated Security

**Integrated System**
- Integration with Honeywell EPKS and Devices to provide unified approach
- Interface to ERP systems such as SAP
- Control custody transfer to multiple transportation types from one system
- Product inventory and common validations available across all transportation modes

**High Availability & Reliability**
- Provides decentralized design that enables each loading bay to be controlled independently so that the failure of one bay will not impact operations on other bays and ensures 99.9% availability

**DIFFERENTIATING FACTORS**

**Configurable Workflow**
Terminal Manager includes a host of configurable options to enable project engineers (not just software engineers) to truly “engineer” a workflow solution according to the operational requirements of the site. Irrespective of the number of locations, make and model of batch controllers, transaction planning options, mode of transport & so on, the configurable workflow offers a solution to meet the needs of every TAS deployment under consideration.

**Extensibility & Customization**
Extensibility feature allows users to customize workflows to suit specific needs. This allows the site system to migrate to a newer version of Terminal Manager Software with limited disruption to terminal operations. It also makes maintenance and trouble-shooting easier.
Intelligent Business Decisions leads to

• Minimize ALL types of giveaway
  – Unified approach to blending, movement and loading can reduce giveaway significantly and reap tremendous benefits

Improve Refinery Margins
THANKS

Let’s continue in the...

- Demo Room
- Consulting Corner