Drive Operator Excellence through Simulator Training

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Driving Operator Excellence through Simulator Training

- Context (simplified)
- Role of training simulators
- Software form and function
- Advanced features
- Shaping the future
- Summary
- Q&A
Overview

• Process of continuous improvement based on:
  – KPI definition
  – Scientific Measurement

• Operations Excellence
  – Safety
  – Asset
  – **People**
  – Controls

Operator Competency: Focus on People
Operational Excellence relies on Competent People
Economics of Excellence

People Impact on incidents:
• Procedural error (49%)
• Incorrect actions (22%)
• Work practices (17%)
• Installation (6%)
• Recognize problem (6%)

Equipment Impact on incidents:
• 76% operating outside of range

People Performance drive operational excellence
Achieving Excellence

Borealis OCP

- On spec. 3 days 10hrs, target 5 days
- New production target exceeded in 21 days, target 4 months
- Flaring losses 2000 Tonnes less than before
- €6 M, 1st year

Competent People Increase Level of Attainment
Agenda

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What are simulators?

The Plant

The Plant DCS

Networked Dynamic Plant Models

Operator Stations

Instructor and Engineer

Real World

Virtual World
What are the types?

- **Customized direct connect High Fidelity OTS**
- **Process Training Simulator**
- **Generic OTS**
- **Customized Standalone OTS**

**Specific**
- Complex
- Instructor

**Price**
- Single
- Advanced

**Benefits**
- Multiple
- Foundation
- General
What are the training basics?

Basic Training for New Operators

- Process/Control Familiarization: 1 week
- Initial Startup, Shutdown: 1 week
- Incident Avoidance: 1 week, 10 exercises
- Incident Recovery: 1 week, 10 exercises

Annual Refresher Training between Turn-Arounds

- Incident Avoidance: 1 week, 10 exercises
- Incident Recovery: 1 week, 10 exercises

Capture a lifetime of experience in a 4 week program
How do training simulators help?

- Training is specific:
  - Focus on start-up, recurring failures, practice difficult or critical procedures

- Training is practical:
  - Use familiar console interface with realistic plant responses

- Training is motivating
  - Goals can be achieved
  - Confidence is built
  - Experimental learning
  - Procedural learning

Simulator based training offers unique advantages
How to get started

• Plan
  – Identify a Simulation Sponsor from Operations
  – Study Business Drivers
  – Identify Risks in Startup and Operation
  – Propose Training Solutions to Mitigate Risks

• Execute
  – Scope Simulation for the Training Solutions
  – Create Schedule identifying all dependencies (Data & DCS)
  – Implementation, Delivery, Training, Turnover & Support

Careful Planning and Execution are key
How to keep going

• Sustain
  – Follow Up - Recognize Earned Benefits
  – Communicate Earned Benefits to Justify Re-Investment

Share success and continue to improve
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Honeywell Simulation Architecture

Simulation Framework

Simulation Engines

DCS/OPC Interface(s)

Instructor Station

Soft Controllers

Engineer Station

APC

Physical Properties

FOD Station

Dedicated solution architecture is required.
UniSim Operations Suite User Interfaces

UniSim Engineering Station
UniSim Instructor Station
UniSim / Experion Operator Station
UniSim Session Designer
UniSim Design Dynamic
UniSim Safety Manager Control Environment
Experion SimC300
Experion Server
UniSim / Experion DCS Interface
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Advanced Features

- Virtual Deployments
- Integration with APC
- Integration with LMS
- Integration with 3-D simulation
- Integration with Competency Management

Continuous development and investment in simulation based training solutions
VM deployment offers new opportunities.
Integration with APC

• Interfaces with one or more Profit Controllers on a single Profit Suite R410 node
• Commands & events between USO and Profit Suite
• Data communication between Profit Suite and DCS
Integration with LMS

• Simulation Server
  – Centralizes assets
  – Supports Classroom Training Modes

• Benefits
  – **Engineers** create & maintain broad solutions with better consistency
  – **Instructors** with a better view of trainee performance
  – **Trainees** supported by better instruction through Learning Management System courses
Integration with 3-D Simulation

Precise modeling, inside and outside the equipment for engineering and training with integration to MindSafe.
Competency Management inside UniSim

• **Coming in USO R430:**
  – ASMC Operator competency model integration
    ▪ Formulates competency structure for assessments and libraries
  – Comprehensive performance assessment
    ▪ Outcomes (Key Performance Variables)
    ▪ Tasks (Checklists)
    ▪ Competency (Subjective Ratings)
  – Scenario libraries mapped to competencies
    ▪ Generic libraries that can be customized and save for reuse
  – Operator performance dashboards
    ▪ For operator feedback and coaching
    ▪ As part of operator training record
Class View Summary for Selected Competency
Coming with R430 in December 2013
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Customer Requirements drive offering development.
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• Operations Excellence
  – System for improving performance
  – People play a key role in attaining organization goals
  – Training with simulators provide unique opportunities
  – Plan, Execute, Sustain
  – Communicate to shape the future

We welcome you talk to us about Operations Excellence in the Knowledge Centre
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Question & Answer