



PDO OMAN SIMULATOR



SIMUALTOR OVERVIEW

PETROLEUM DEVELOPMENT OMAN LLC (PDO), is the premier hydrocarbon exploration and production company in the Sultanate of Oman.

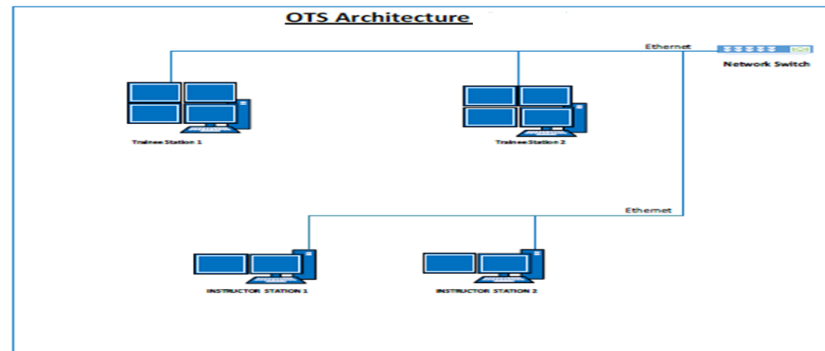
The PDO CPP OTS is designed to allow the operational staff (Control Room Operators, Shift Foremen, Senior Panel Operators, Process Engineers) to gain practical experience on how to safely and efficiently operate the process units of the Saih Rawl Gas Plant in various situations, including:

- Plant upsets and equipment malfunctions
- Process unit normal start-up and shutdown
- Emergency shutdown
- Recovery from various malfunctions and upsets
- Operator skills developed and sustained in handling emergencies, upsets, alarm management
- Improve understanding of general plant theory and concepts
- Increase knowledge of plant systems and their function and interaction with other systems
- Enhance understanding of plant control theory and operation
- Improve Operator confidence
- Faster training of new and replacement staff

SCOPE OF SIMULATOR

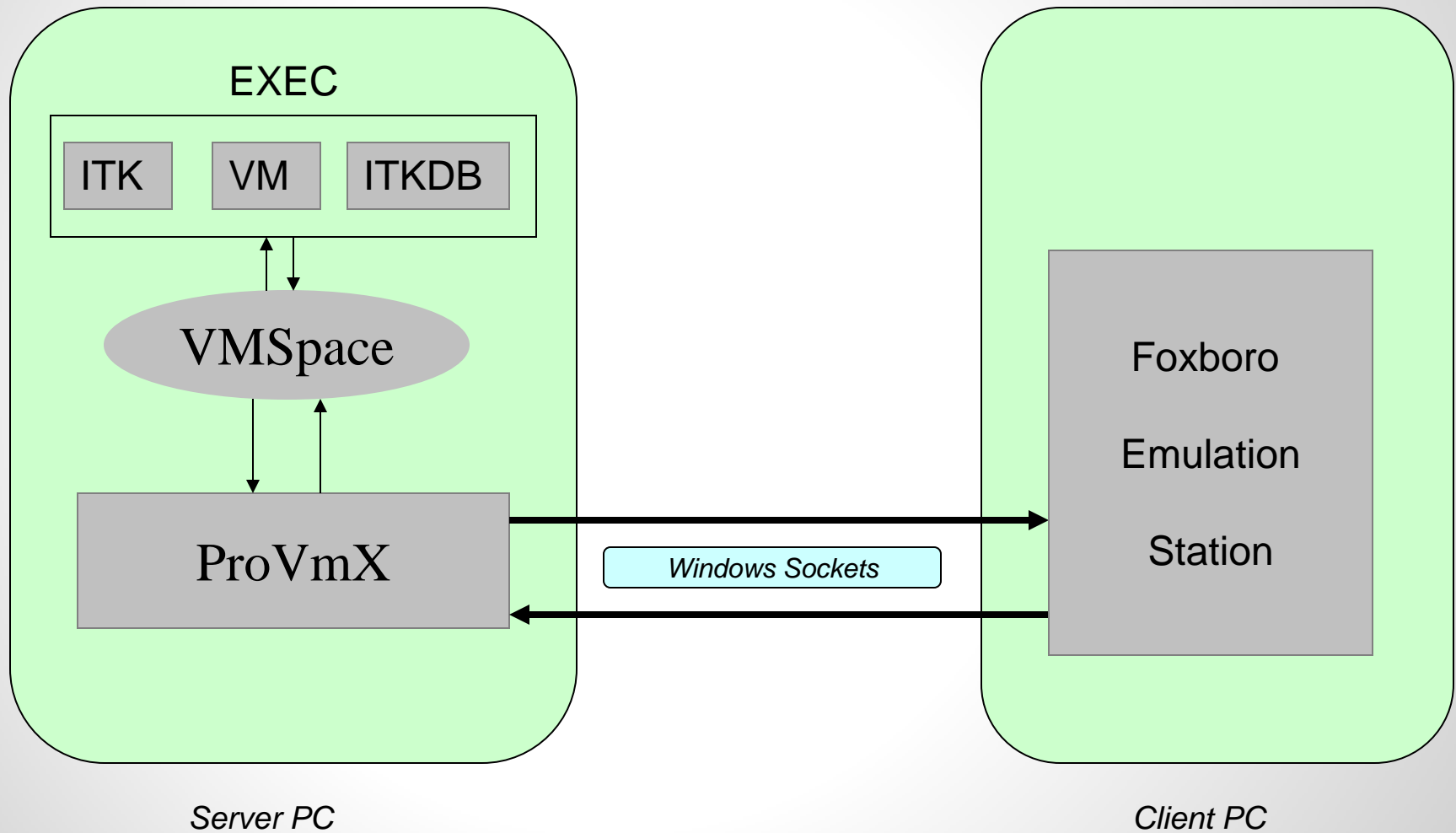
Sim Infosystems has developed simulator for CPP Gas plant facilities of PDO. The simulator was installed and commissioned during January 2012, upgraded during 2021 and consists of the following major components:

- Simulator computers and peripherals
- OmegaLand Simulation platform
- Instructor Toolkit (ITK) software
- Operator Station – Foxboro emulation
- Custom simulation model for Saih Rawl Central Processing Plant



The simulation models are developed on the state-of-the-art “OmegaLand” dynamic simulator of Omega Simulation Co, Japan. OmegaLand is an integrated dynamic simulation environment consisting of multiple functional modules including Instructor Tool Kit (ITK) and Visual Modeler (VM).

OTS ARCHITECTURE



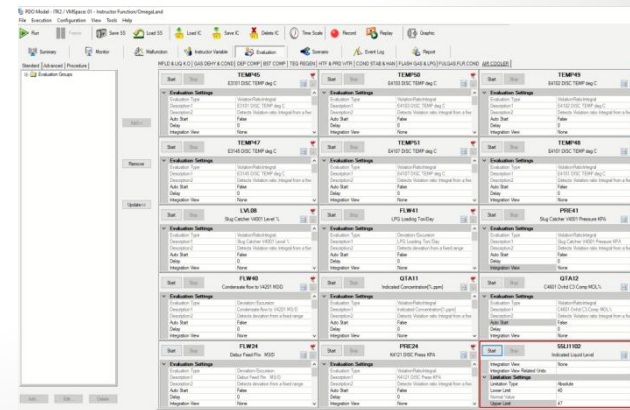
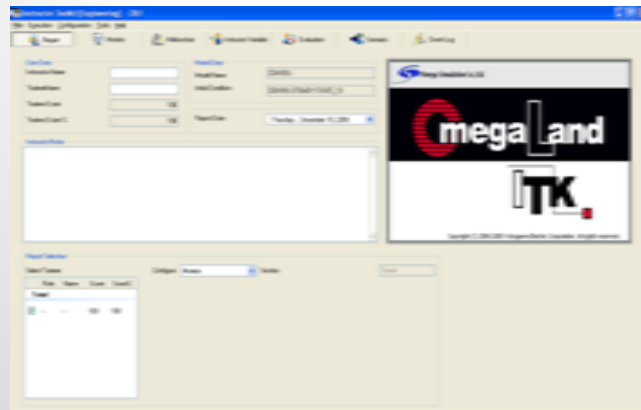
Visual Modeler (VM) is GUI based High fidelity simulation model based on rigorous application of first principle calculations. VM provides comprehensive Physical Property methods, thermodynamic calculations, process unit library, instrument / control library and Pressure - Flow network solver. The custom simulation model for CPP Gas plant is developed on the Visual Modeler platform and tuned to meet the actual plant parameters and dynamic performance. The simulated plant consists of:

- SRDC - Saih Rawl Depletion Compression
- Barik interfiled gas & condensate pipelines
- North/East/West/South Headers, Wells Flowlines
- BP Receiving Facility
- Inlet, Common incl. inlet separators
- Inlet Separation Train 1&2;
- Inlet Separators V-2401/V-2402
- TEG Common; incl. Off-Gas compressor
- Gas Processing train 1&2, incl. MRU's incl. TEG Contactor / Turbo-expander, Gas Recovery Compressor
- Slug catchers Common
- Condensate stabilisation Train 1 & 2, incl. Flash Gas compressor
- Condensate Export Pipeline
- LPG Recovery Common incl. debutanizer;
- LPG Storage and Loading
- Gas Export Common
- Booster Gas Compressor Unit A, B, C
- Gas Export Pipeline
- Hot oil system

INSTRUCTOR STATION

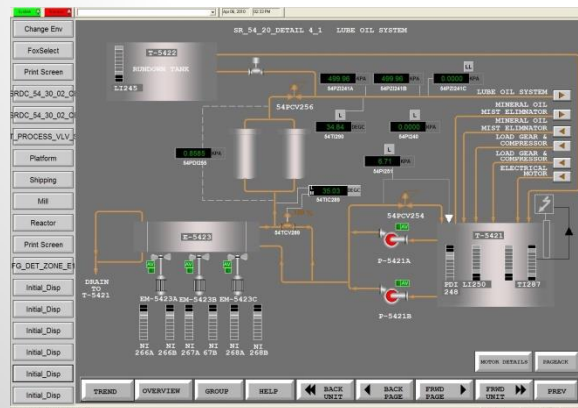
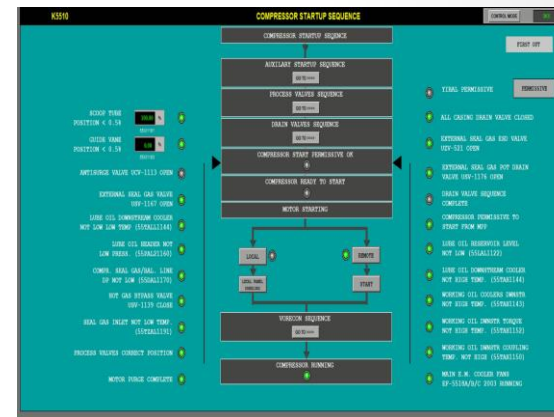
The ITK provides functions to control the execution and monitoring of Operator Training System (OTS). The major features of ITK are as given below:

- Graphical User Interface for OTS instructors
- Constructing OTS configuration for Instructor
- Monitoring the selected variables
- Activating malfunctions and instructor variables
- Activating Scenarios
- Simulation event log display
- Reporting
- Evaluation
- Record and Replay
- Self Training Exercise (Instructorless training)



OPERATOR STATION

The simulator is provided with emulation for FOXBORO DCS. All functions and features that are essential for training are included in the emulation. The ESD / PSD logics are simulated and provides exact replica of the real plant systems. The field operations are simulated through separate FOP graphics on the operator station. For each graphics page, relevant online help information is provided.



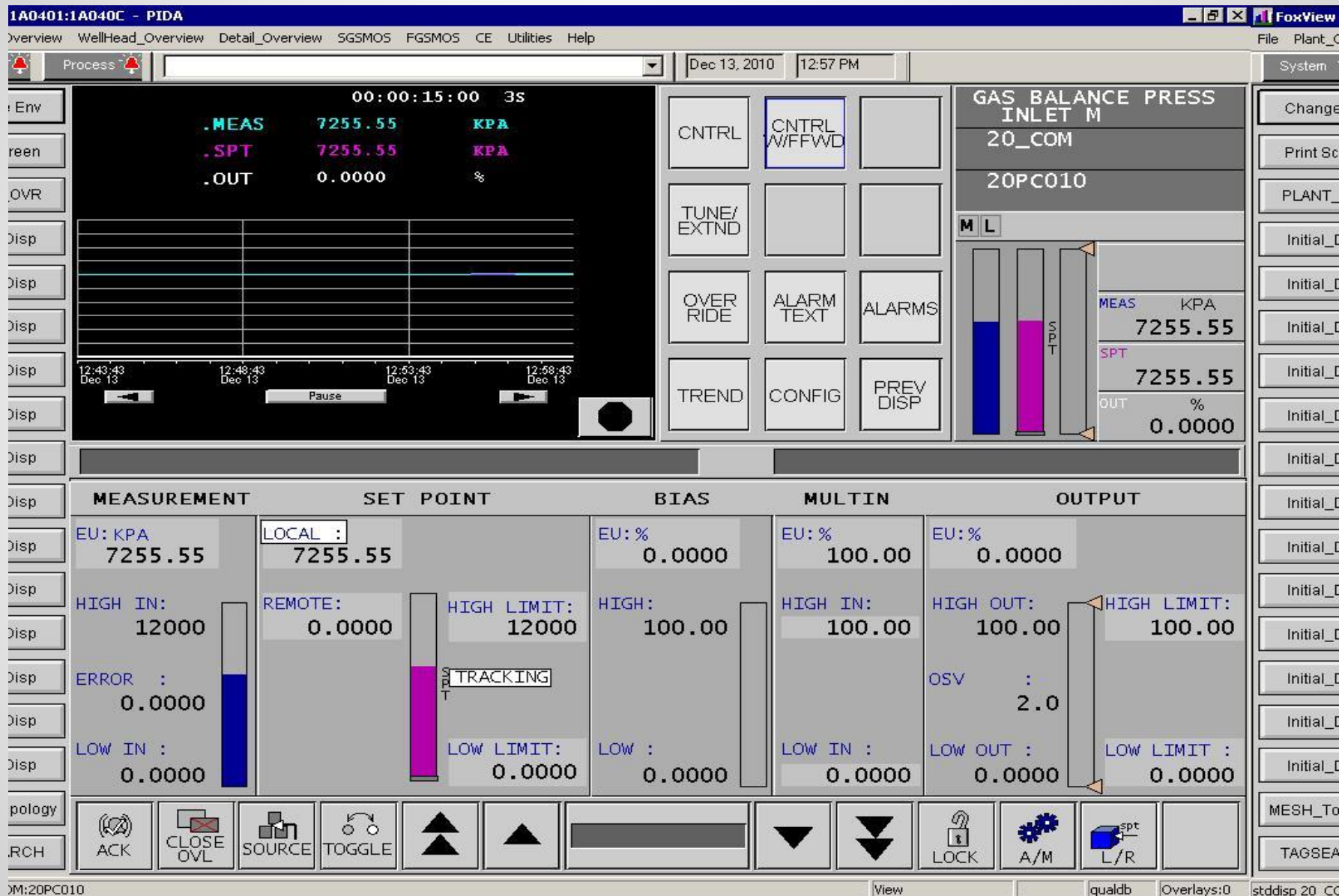
Alarm Summary

anager 1A0401:1A040B - CAD

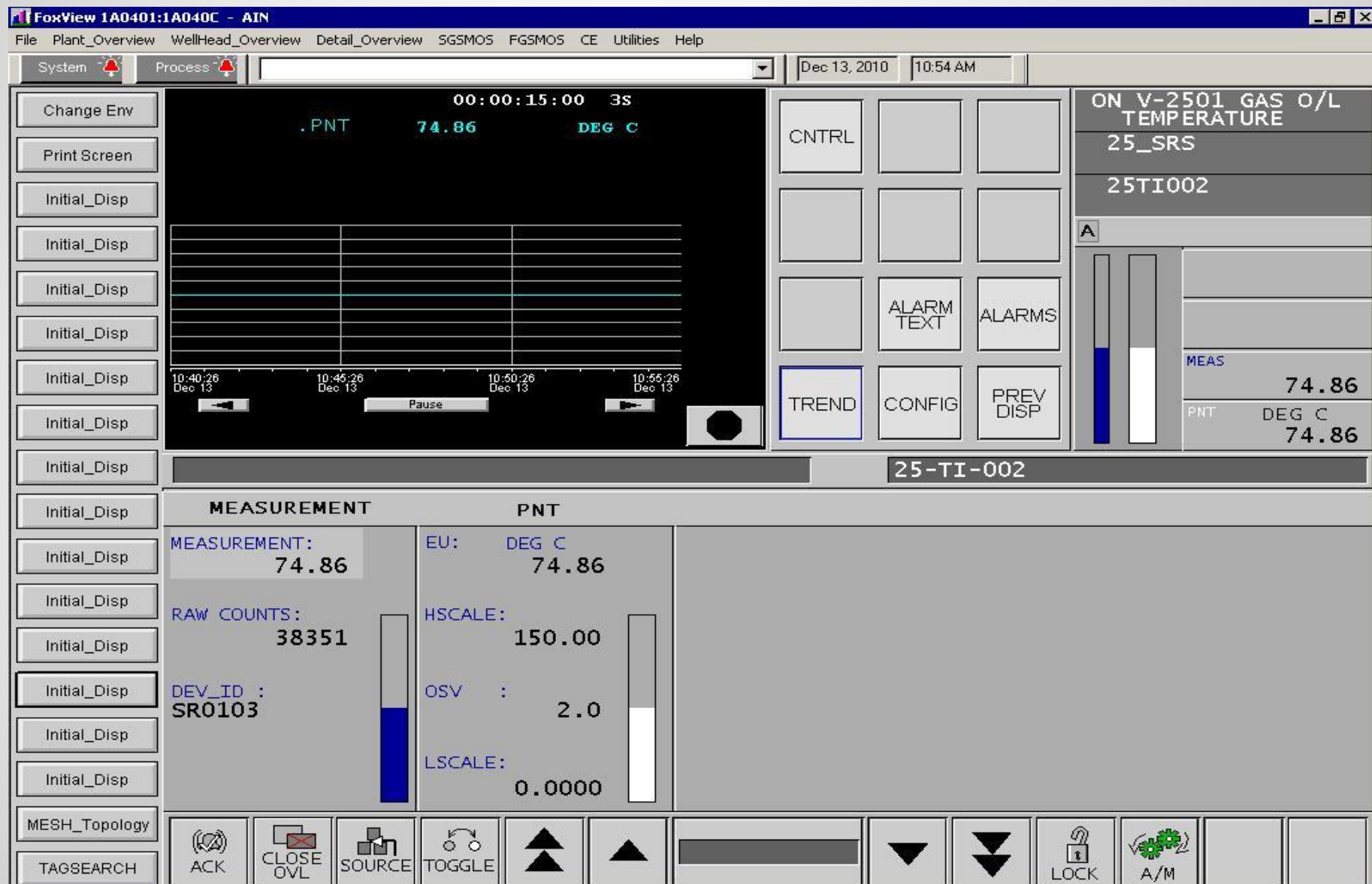
Displays Help

4 12-14-10				Current Alarms	New Alarms
6D:54XA5439B. :14:20				E-5439 MOTOR TRIPPED TRIP	STATE Pnt 1 U
6D:54XA5449B. :07:37				E-5449 MOTOR TRIPPED TRIP	STATE Pnt 1 U
0:54P5403. :51:26				54P5403 STRT COMND FROM DCS MISMATCH	STATE Pnt 1 U
1:54XZA102A3. :53:39				MOTOR EM5411-B CH. DANGER/ALARM2 ALARM	STATE Pnt 1 U
54XZA102A_B. :53:37				EM5411B VIBRATION HH ACTIVATE	STATE Pnt 1 U
ER40A:CH4_TRIP. :29:37				CHILLER # 4 IN TRIP TRIP	STATE Pnt 1 U
AI:54TICA128. :23:24	79.98	DEGC	(80.00)	E-5411 DISCH COOLR OUTLET LOW	LOABS 1 U
AI:54LICA310. :52:50	26.95	%	(27.00)	V-5431 DEP CMP SUC SCR HC LVL H LOW	LOABS 1 U
AD:FAR4_FAULT. :56:32				FAR4 PANEL SYSTEM FAULT ALARM	STATE Pnt 1 U
24XS303. :44:36				NPM ESD INPT VLV 24UZ303 CMDACTV ACTIVATE	STATE Pnt 1 U
6D:54XA195BC. :10:32				EM5417B MOTOR TRIPPED TRIP	STATE Pnt 1 U
AI:24GS004. :11:48				COMP SUCTION HDR DRAIN 24US504 FAIL TO OPEN	STATE Pnt 1 U
A:54TI217. :18:37	30.00	DEGC	(30.00)	54UIC224 TIT217 SUCTION TEMP LOW	LOABS 1 U
AD:54XAT382. :14:21				K5430 COMPRESS JRN 54TE382 FAULT FAULT	STATE Pnt 2 U
ck Alarm	Ack Compound	Ack Page	Clear Alarm	Clear Page	
urm Detail	Top Priority	User Display	Block Detail		
atch Active	Horns Muted	PAUSED	Alarm 1 of 200	11:13 12-14-10	

Detail Page-Controller



Detail Page- Indicator



Trend View



Id:/jpg_FoxView/disp/SRDC/TRENDS/HALF_SCREEN/HALF_TREND02.fdf

Process_Eng

qualdb Overlays:0

Trend Configuration

1A0401:1A040C Online Trend Configuration

1

Max 100.00

Min 0.00

Assign

X

Variable

21_TR1:21LC005.MEAS

Description :

PV FROM LC-003 V-2101

2

Max 251.00

Min 0.00

Assign

X

Variable

21_TR1:21FC003.MEAS

Description :

V-2101 CONDENSATE TO E-4103

3

Max 251.00

Min 0.00

Assign

X

Variable

21_TR1:21FC004.MEAS

Description :

V-2101 CONDENSATE TO CROSSOVER

4

Max 1.00

Min 0.00

Assign

X

Variable

21_TR1:21QIA001.PNT

Description :

V-2101 CONDENSATE OUTLET BS&W

Graph Attributes

Duration Selection...

Duration15 minute(s)

Scan Rate

3 second(s)

Graph Display

Merged

Banded

Pen 1 Scale

Auto

User Entered

CP Values

Use Current Limits

Max100.00

Min0.00

Save / Exit Choices

Temporary

Permanent

Advanced...

OK

Cancel

Apply

Help