PDO OMAN SIMULATOR

SIMUALTOR OVERVIEW

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

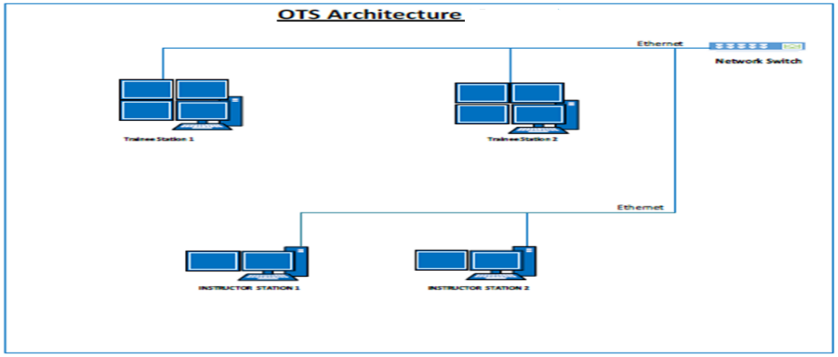
The PDO CPP OTS is designed to allow the operational staff (Control Room Operators, Shift Foremen, Senior Panel Operators, Process Engineers) to gain practical experience on how to safely and efficiently operate the process units of the Saih Rawl Gas Plant in various situations, including:

- 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

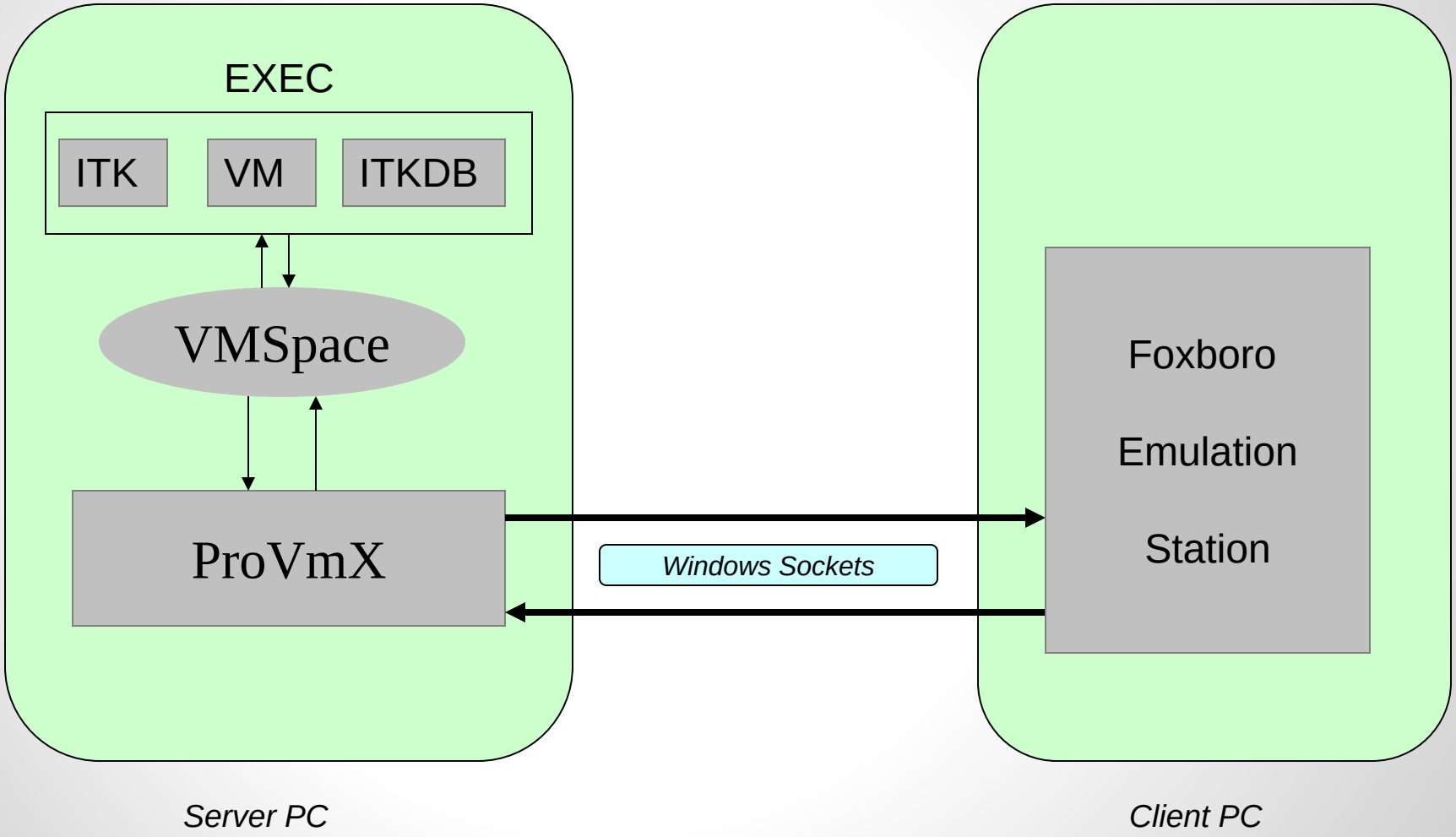
Sim Infosystems has developed simulator for CPP Gas plant facilities of PDO. The simulator was installed and commissioned during January 2012, upgraded during 2021 and consists of the following major components:

- 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



Custom Simulation Model

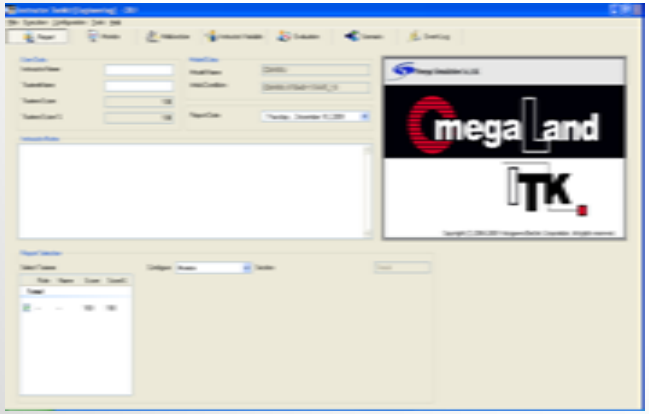
Visual Modeler (VM) is GUI based High fidelity simulation model based on rigorous application of first principle calculations. VM provides comprehensive Physical Property methods, thermodynamic calculations, process unit library, instrument / control library and Pressure - Flow network solver. The custom 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:

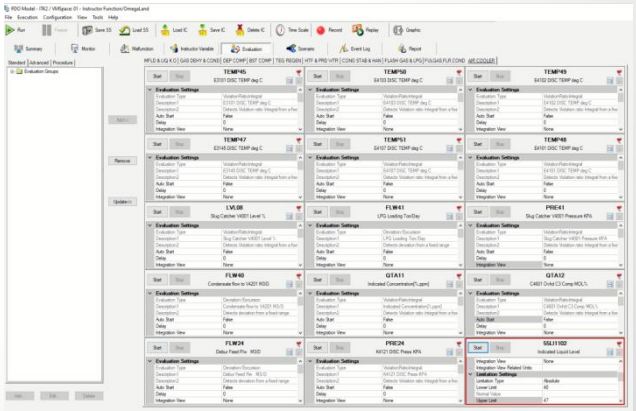
- SRDC - Saih Rawl Depletion Compression
- Barik interfiled gas & condensate pipelines
- North/East/West/South Headers, Wells Flowlines
- BP Receiving Facility
- Inlet, Common incl. inlet separators
- Inlet Separation Train 1&2;
- Inlet Separators V-2401/V-2402
- TEG Common; incl. Off-Gas compressor
- 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:

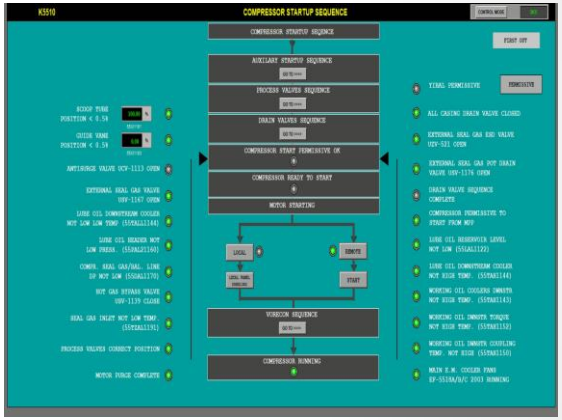
- Graphical User Interface for OTS instructors
- Constructing OTS configuration for Instructor
- Monitoring the selected variables
- Activating malfunctions and instructor variables
- Activating Scenarios
- Simulation event log display
- Reporting
- Evaluation
- Record and Replay
- Self Training Exercise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

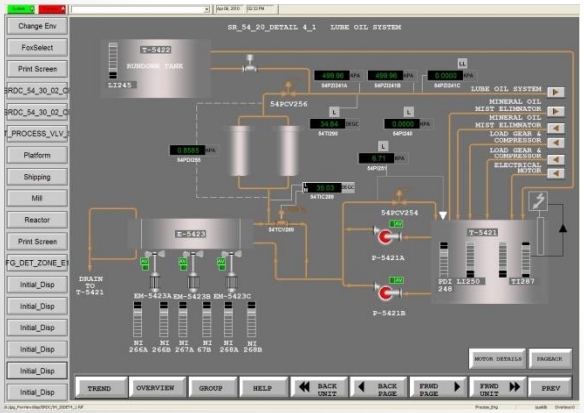




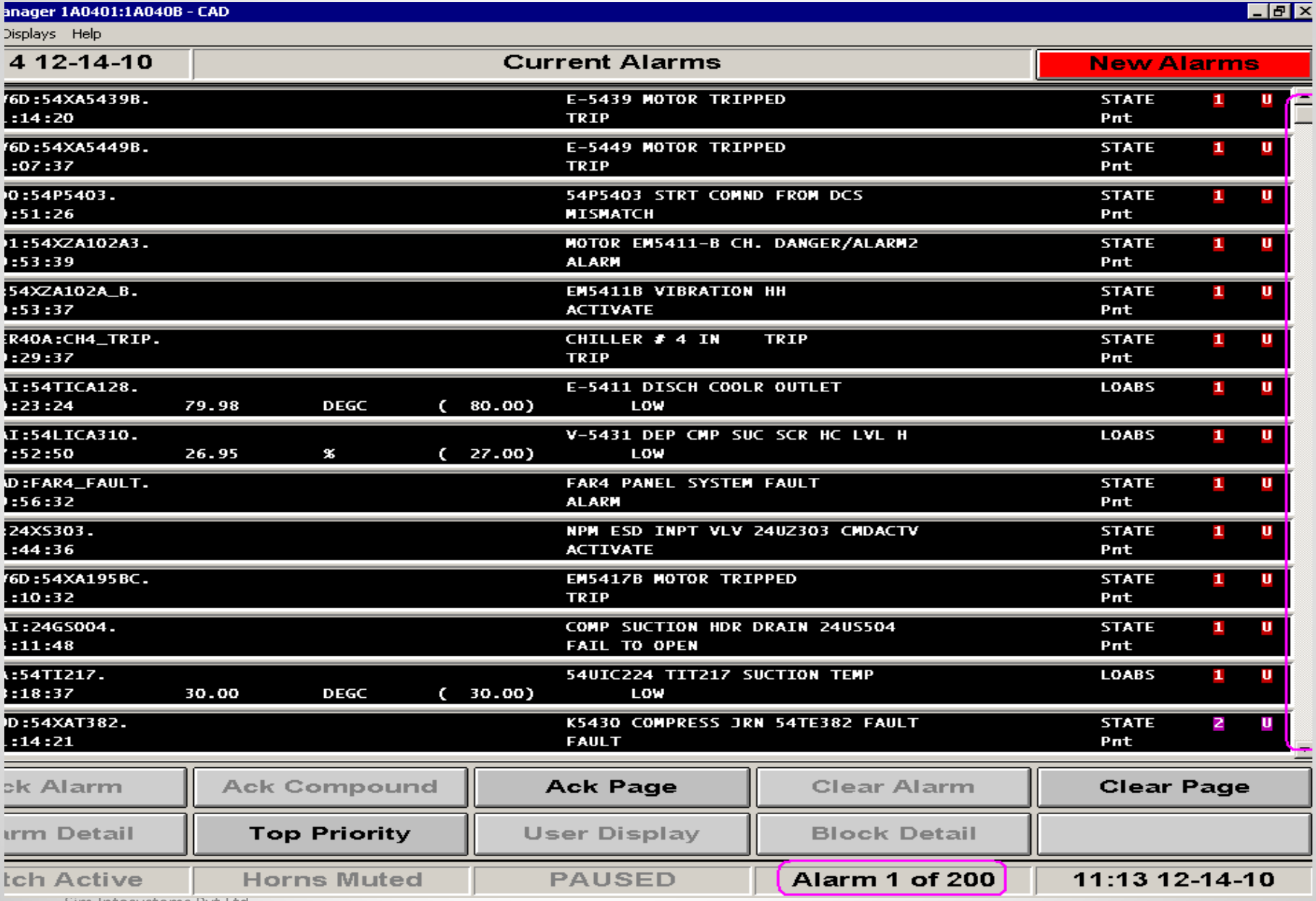
OPERATOR STATION

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.

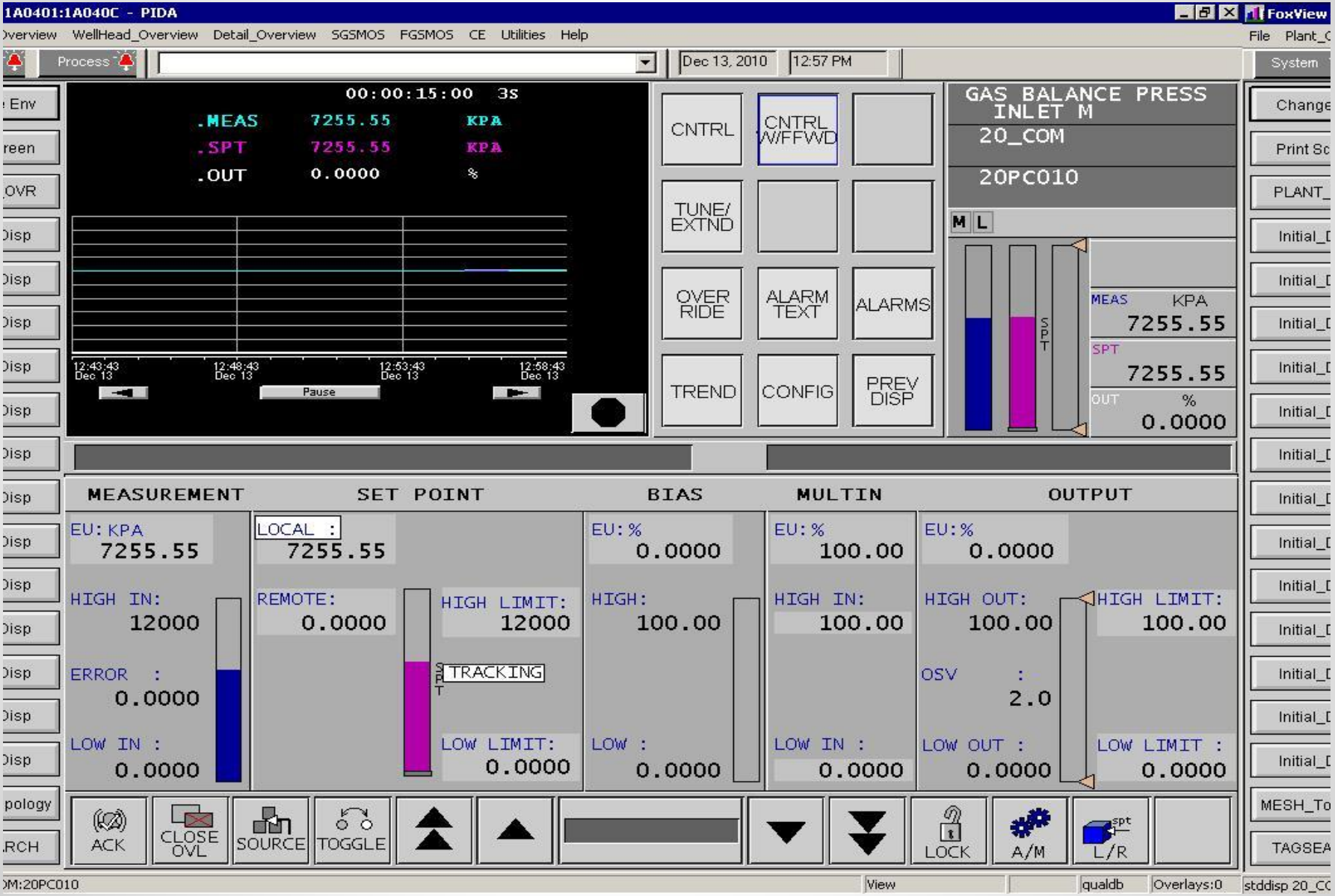




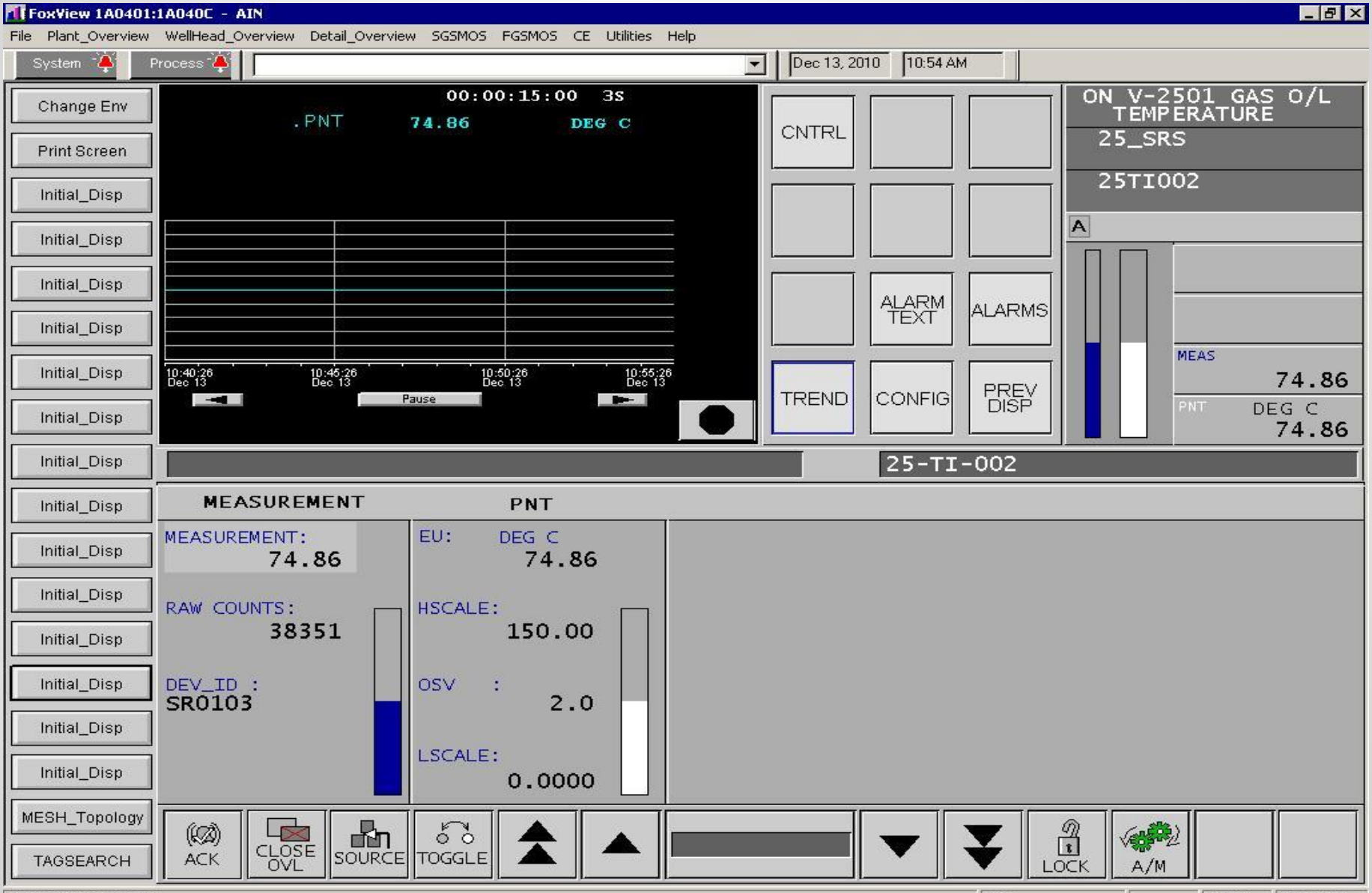
Alarm Summary



Detail Page-Controller



Detail Page- Indicator



Trend View


System
Process
Apr 06, 2010
03:19 PM
Change Env
FoxSelect
Print Screen
SRDC_54_30_02_C
SRDC_54_30_02_C
T_PROCESS_VLV_S
Platform
Shipping
Mill
Reactor
Print Screen
FG_DET_ZONE_E1
Initial_Disp
Initial_Disp
Initial_Disp
Initial_Disp
Initial_Disp
Initial_Disp
00:00:15:00 2S
15:05:06 Apr 06
15:10:06 Apr 06
15:15:06 Apr 06
15:20:06 Apr 06
Pause
327GT111TX09
65GC 1_AO
PNT
100.00
0.0000
5.0000
-5.0000
d:/jpg_FoxView/disp/SRDC/TRENDS/HALF_SCREEN/HALF_TREND02.fdf
Process_Eng
qualdb
Overlays:0

Trend Configuration