

The Virtual Process

CAPE Software

Winter 2002

VPLink® Operator Training Solutions for DCS/PLC/ESD

Many VPLink customers require training systems which include their DCS plus a PLC and/or a shutdown device. VPLink will simulate I/O values within multiple control systems simultaneously so that operations can practice emergency responses and startup procedures exactly as in the field.

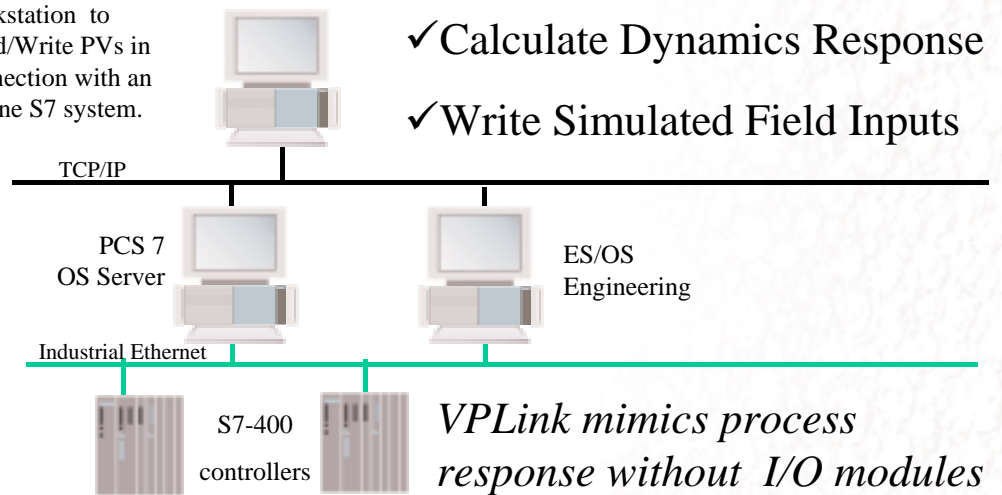
Cape Software Supports Siemens S5/S7 Series

VPLink models process dynamics to an offline Siemens Simatic PCS7 to expedite staging, minimizing costs, while increasing the quality application logic. The Simatic OPC server supports I/O tags so that VPLink can simulate the process variables bypassing I/O hardware. This solution is applicable across the S5/S7 series.

VPLink for Simatic PCS 7 Systems

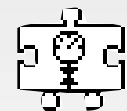
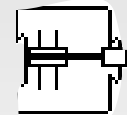
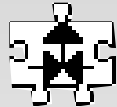
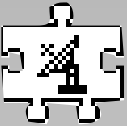
VPLink executes an OPC client on an NT workstation to Read/Write PVs in connection with an offline S7 system.

- ✓ Read Outputs
- ✓ Calculate Dynamics Response
- ✓ Write Simulated Field Inputs



VPLink® Solves Simulation Needs Using OPC Interface to Simatic PCS 7

Cape has delivered solutions to plant sites implementing Siemens S7-400 processors. The solution includes all the facilities to (1) create the VPLink configuration file automatically from the OPC database (2) transparently disable I/O hardware scan enabling "simulation mode" for PVs (3) high speed read/write rate for a 100% I/O test across the global database minimizing costs while achieving Six Sigma Objectives.



Supported Systems

Honeywell FSC
 Siemens - Moore APACS
 Foxboro I/A Series Systems
 Honeywell TPS
 Triconex
 Honeywell Plantscape
 RA Allen Bradley PLC5& SLC500
 Siemens TI Series 5x5 PLC
 GE Fanuc Series 6 and 90
 Modicon 984 and Quantum
 Rockwell Automation PLX
 Rockwell Automation CLX
 Bailey F&P System 6
 ABB Mod300
 Fisher Provox
 ABB IMS Advant
 Emerson Process DeltaV
 Siemens Simatic S5/S7 Series

Cape Welcomes ...

DOW Chemicals - Alsip, IL
 Coors Brewery - Golden, CO
 Coors Brewery - Memphis, TN
 CCA - Johnson City, TN
 Rockwell Automation - Phoenix, AZ
 Kimberly Clark - Mexico
 BASF TDI - Geismar, LA
 Hoffman LaRoche - Nutley, NJ
 The Stellar Group - Jacksonville, FL
 Kerr McGee - Hamilton, MS
 Huntsman Rubicon Plant - Geismar, LA
 Reliant Energy - Houston, TX

Plug in the Process... ... The Virtual Process

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The Virtual Process newsletter is published for the benefit of friends and users of VP Link®. Edited by Michael Sullivan.

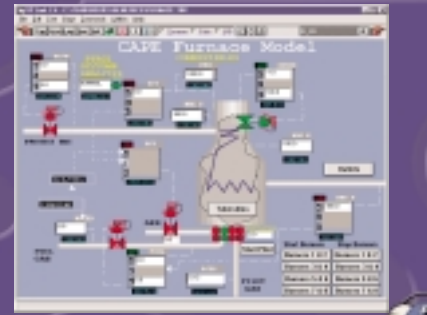
Case History

During Foxboro's I/A User's Conference 2001, VPLink was showcased as the preferred simulation solution for I/A customers. Below is a summary of a joint presentation by Kerr McGee and Cape Software describing some of the training simulator requirements and quantifiable benefits within their plant in Hamilton, MS.

KERR-McGEE Requirements

- System must be cost effective
- System must be user friendly
- System must be realistic

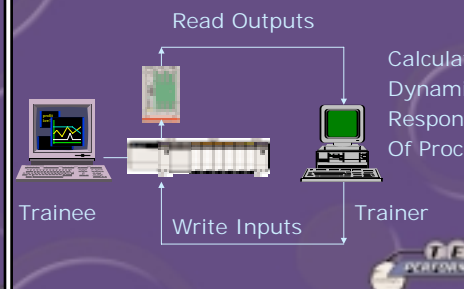
Typical Instructor's Display Manipulate Inputs Replay Fault / Malfunction Scenarios



KERR-McGEE Requirements: Digital Logic in Separate PLC while Analogs within I/A

- Process simulation must drive I/O to the offline I/A Series systems as well as a PLC simultaneously
- Trainee works from I/A displays which include PLC points
- Interlock logic works exactly as configured for the field
- Also shows configuration of AB gateway points

VPLink's Loop in Connection with I/A + PLC



KERR-McGEE Test Node Justification

- Engineers can develop Off-Line
- System serves as spare parts
- New configuration testing
- Operators learn new skills

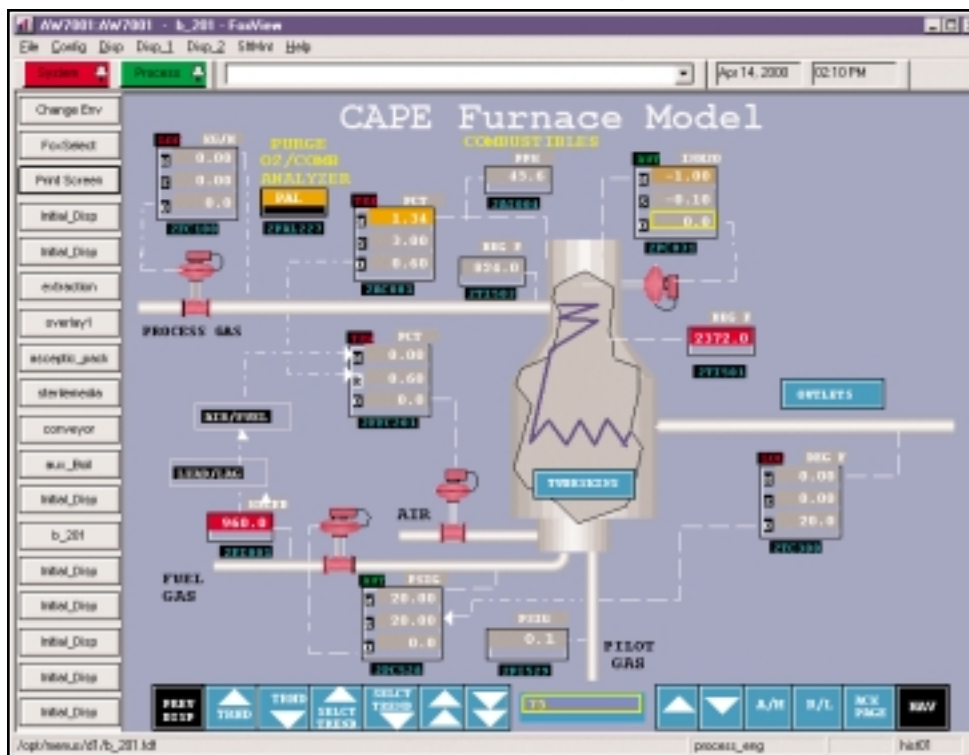
KERR-McGEE Test Node

- Realistic simulator
- Easy/user friendly to program
- Cost effective
- Limited by imagination

Of particular interest, note how the needs of the hybrid system (DCS +PLC) are solved simultaneously. Often, we see this when Motor Controls are separate or Emergency Shutdown code is executed within a separate processor. Also note that Cape Software delivers these solutions across all major DCS /PLC/ESD platforms. Also note how the offline system will often serve multiple purposes (Change Management, Operator Training, hot spares) so that the cost can be spread appropriately. In addition to the VPLink product, Cape Software delivers the expertise required to solve your needs as a turnkey package.

Low Cost Operator Training Solution

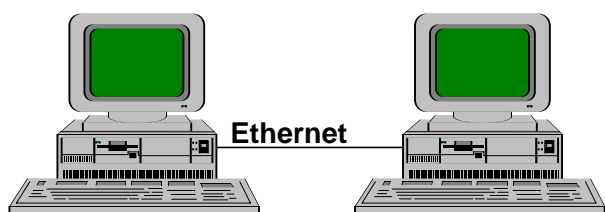
Cape Software has developed generic models for major unit operations. These include: Furnace, Distillation tower, Liquid phase reactor train, gas phase reactor, compressor train, and boiler. Two PCs are required, as shown, one of them executing VPLink and the other your control system's emulator (or equivalent). Prices start at \$8,000, including the license, the VPLink model, and control configuration.



Shown to the left is the trainee's process display: trends, alarm pages, tuning functions, controller mode changes, etc. The instructor works at the VPLink interface with a duplicate graphic plus additional buttons to enact fault/upset scenarios.

During training, VPLink responds with the dynamic response of the process variables while the trainee works through standard operating procedures. When the instructor enacts an excursion, the trainee must respond.

VPLink Trainer



VPLink on PC
(Trainer)

DCS Workstation PC
(Trainee)

- Execute Process Model
- Inject Faults & Malfunctions
- Playback scenarios



VPLink executes on a PC in connection with an offline control system. Many DCS/PLC vendors offer an emulator to execute their control logic within a PC environment (*call for more info) this enables a low cost offline system for training needs.

The example illustrated above shows a Foxboro I/A Display running on their AW70 NT platform. Cape Software delivers the display files, overlays, and control configuration files needed for the generic training models executing on the PC.

Plug in the Process... ...The Virtual Process



VPLink Solves Dynamic Simulation Needs for Engineers:
Control System Validation and Software Verification and
Operations: Board Level Certification for Console Operators.

CAPE Software

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Look Inside For:

Siemens S5/S7 Systems Support

Case Study: Kerr McGee Training System - During Foxboro I/A Conference

Operator Training with Low Cost Generic Models