



## Benefits

- High Fidelity
- Validated
- Microsoft Hosted
- Large Systems

- Simulates CIU
- INICT03 or CIU04
- Serial or SCSI
- Connect EWS
- Connect Console
- No SEMAPI
- No ABB HW

Previs Inc

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### Validated High Fidelity PC Based Bailey DCS Simulator

Our Bailey DCS Simulator provides a **high fidelity** simulation of Bailey DCS controller behavior. This simulation is **PC Based** and is **validated**. Lets examine what that means for your operator training simulator.

First.. We offer a **high fidelity** simulation of controller behavior. Each control block is faithfully executed, with simulation of inputs, data types, specifications, tunable specifications, adapted parameters, outputs, output quality, exceptions, alarm states, modes and more. Each logic segment in each module is executed at the correct time interval, even including startup delays. All permissive logic will work like in the real DCS, and each control loop will have the same dynamic behavior.

Even the PCU structure of your DCS is emulated, with exceptions being subscribed from one module to another through the PCU.

We can support 400,000+ blocks in up to 100+ controller modules, all operating together, producing outputs matching the real DCS.

Same timing. Same outputs. Now that's performance.

The simulator is **PC based** and executes with Microsoft Windows 2003 or XP Pro (Windows 7 will be available in 2011). Running as a service, the simulator is simply a network component.

Lastly, our simulator behavior has been fully **validated**, through an extensive series of **repeatable automated validation tests**.

We validate the simulator in a special purpose validation test environment, in which we run the simulator side by side with real ABB/Bailey control modules. We control the inputs so that both simulated and real controllers have the same input. We stimulate EACH input to EACH block, and ensure that each block operates in EACH of its operating modes. We then monitor for ANY material deviations in block outputs. We monitor not only the block output, but also output quality, alarm state, and each individual bit of each exception generated.

We produced a large control logic program, designed to exercise each block type through all of its states and input ranges and to monitor the outputs. This program executes in lock step in

both simulated and real modules, so that outputs can be compared. Stepping automatically through 2<sup>14</sup> test steps in 16 hours, each input state of block is simulated. Deviations are automatically recorded for later analysis.

Multiple instances of the most complex blocks ensure that they are subjected to hundreds of thousands of test states.

Each new version of the Bailey DCS Simulator is regression tested prior to release using this fully automated and unattended test. New tests are added as new blocks are supported, or as any weaknesses in previous tests becomes apparent.

Our validation test is designed to constantly push our simulator to higher and higher levels of simulation fidelity, to ensure that we find simulator bugs in the lab, so you don't find them in the field.

Our high fidelity design approach, combined with our very extensive validation testing means that our DCS simulator offers behavior so close to native behavior that you can feel confident to use it to test new control logic before you place the logic in your real DCS.

### Full CIU Emulation Supports Connection of Real Infi 90 Peripherals

Our high fidelity simulation approach extends to the CIU devices themselves where we support up to 8 CIU (Computer interface Unit) devices.

Using the PC COM ports, we emulate NCIU04, INICT01 and INICT03 serial RS-232 communications, at baud rates to 115+ kilobaud. With added hardware which we supply, high speed SCSI communication is available.

With our emulated CIU, you can connect Infi 90 operator consoles including OIS 1x, OIS2x, OIS4x, PCV, Conductor NT and Process Portal A and B consoles, or our own OPsCon operator consoles and other third party consoles.

Our emulation of the CIU communicators protocol is sufficiently complete that your operator consoles will function as if they are connected to a real Bailey DCS. We support all exceptions, polling, alarms, controls, and tuning functions. As a result, not only will your operator console show the correct DCS data for all P&ID graphics, but trend screens will show the right trend data and alarm screens will show the right alarms. All operator controls, and mode controls will function normally. Even console tuning functions will work.

The CIU emulation also supports EWS functions. Connect your Composer EWS, or the older

WinCAD (WinTools) EWS, or other software like WindowView trending or CADEWS and they will work as if connected to a real DCS. Load and unload controller CFG files with ease. Change controller mode from the EWS. Monitor a CAD sheet in real time. Tune any tunable specification.

Connect up to 8 devices (console or EWS) to the Simulator to work together at the same time.

We do it all while saving you money, as there is no need for expensive ABB SEMAPI or ICI emulation hardware or software. Simply use your existing EWS and consoles, as is.

- Execute CFG
- No Translation
- Use Native EWS

- Pause & Resume
- Snapshot
- Backtrack
- Replay
- Logging
- Easy to Use

- Our experience
- Our laboratory
- Our Simulator
- Our Console
- We solve
- We warrant

## Execute Control Logic As-Is Without Translation

In most operator training simulators, the Infi 90 control logic files are translated into an intermediate form to be executed within the suppliers own execution engine.

We don't do this.

Instead, we simply load the control logic CFG files and execute them, as-is... without change.. And without translation. Our Bailey DCS Simulator provides a

virtual machine, actually executing your control logic in exactly the same CFG file format that you would normally load into your real controller modules.

What does this mean to you?

Combined with our high fidelity simulation, and our full CIU simulation as well, this means that you can use your operator training simulator NOT ONLY to train

operators, but also to develop new control logic when you need to as well.

Connect your EWS tools, make the required logic change in your CAD files, compile them to create the controller CFG files, load them, execute them, monitor actual logic states directly in your own CAD files, tune the logic, all in the same way as if you were connected to the real DCS.

## Feature Rich for Your Operator Training Simulator

Our Bailey DCS Simulator is rich with features to support your Operator Training Simulator.

Core operator training simulator support, *under your control*, includes:

- Pause process state
- Resume operations
- Save process snapshot
- Restore saved snapshots
- Backtrack to saved state

- Speed from 0.1 to 10X
- Read any block value
- Watch a whole set of blocks
- Log alarms
- Log control actions
- Replay previous actions
- Read/Write any IO values
- Force ANY DCS block IO
- Set DCS externals
- Engineering Units IO

In addition, we do our best to make our simulator easy to use. Like a simple INI file to set up and configure the DCS and normal simulator functions. And our extensive diagnostic messaging. And we'll deliver you a list of all the IO that you'll need to write to the DCS. And we give you a full API (application programming interface) to read, write and control as easily as possible. Add to this our easy to use existing Windows client functions.

## Buy The Simulator and Get Our Full Support with It.

Integrate our simulator into your operator training simulator and you'll get our full support with it.

Through us you gain access to our well equipped Bailey lab, our extensive Bailey DCS contact base around the world, our ability to deliver the Bailey DCS equipment or services you may require, and our ability to solve any Bailey related technical issue. With our simulator you get a fully

functional Bailey DCS in your lab, without the need for ANY Bailey hardware at all.

With our operator console you also get a fully functional operator console to connect to the Bailey DCS in your lab.

Delegate the Bailey issues to us. With our experience skills and resources we can deal with them. We warrant everything we do.

We stand behind our work and our products and have excellent references to prove it.

**Products & Services  
for Bailey DCS Systems**

## Previs Inc

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Previs provides products & services for ABB/Bailey Net 90/Infi 90/Harmony DCS systems. Including:

- OPsCon Operator console replacement
- OPC Server
- Bailey DCS Simulator
- Modules and components

Contact us for further information.