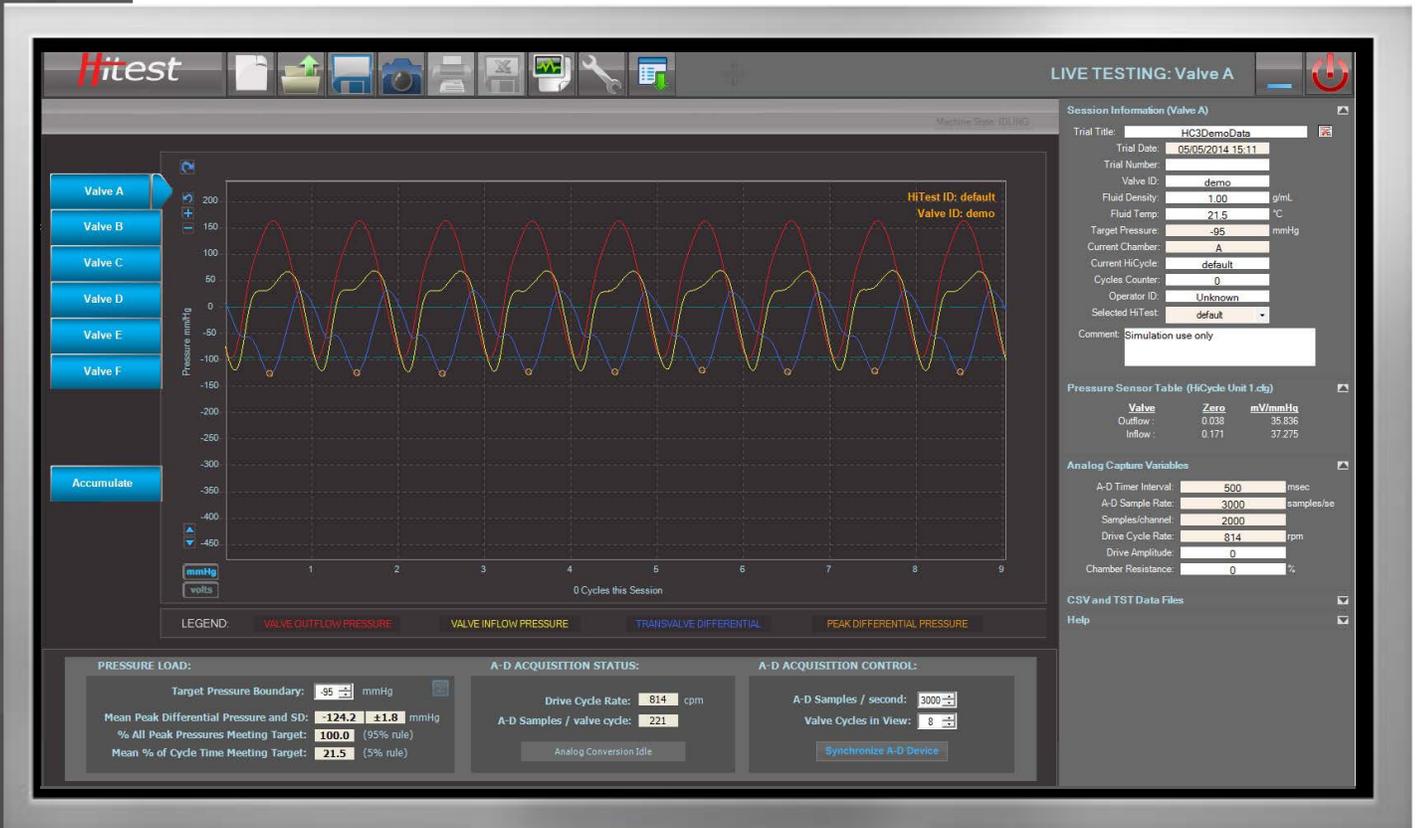# DATA ACQUISITION SOFTWARE (DAS)

ViVitro offers a family of quality data acquisition software products to aid in collection of data to meet ISO 5840 requirements.

Specifically we have developed three software products: ViViTest, HiTest and QCTest. The software is pre-installed on a laptop and tested with all hardware and A-D converters prior to shipment. Each complete system is supplied with the following components to make up a functional system:
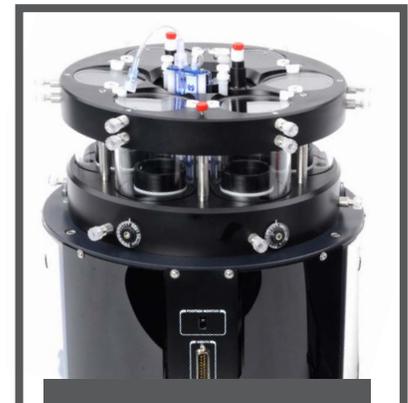
- I/O Module – inputs/outputs signals from the software
- AmPack Pressure Measuring System including transducers and amplifier
- Laptop
- Connecting cables
- Software (ViViTest, HiTest or QCTest)

LIVE TESTING: Valve A

Machine State: IDLING

Valve A
Valve B
Valve C
Valve D
Valve E
Valve F

Accumulate

HiTest ID: default
Valve ID: demo

Pressure mmHg

200
150
100
50
0
-50
-100
-150
-200
-250
-300
-350
-400
-450

mmHg
volts

1 2 3 4 5 6 7 8 9
0 Cycles this Session

LEGEND: VALVE OUTFLOW PRESSURE   VALVE INFLOW PRESSURE   TRANSVALVE DIFFERENTIAL   PEAK DIFFERENTIAL PRESSURE

Session Information (Valve A)

Trial Title:	HC3DemoData
Trial Date:	05/05/2014 15:11
Trial Number:	
Valve ID:	demo
Fluid Density:	1.00 g/mL
Fluid Temp:	21.5 °C
Target Pressure:	-95 mmHg
Current Chamber:	A
Current HiCycle:	default
Cycles Counter:	0
Operator ID:	Unknown
Selected HiTest:	default

Comment: Simulation use only

Pressure Sensor Table (HiCycle Unit 1.ckg)

Valve	Zero	mV/mmHg
Outflow :	0.038	35.836
Inflow :	0.171	37.275

Analog Capture Variables

A-D Timer Interval:	500	msec
A-D Sample Rate:	3000	samples/se
Samples/channel:	2000	
Drive Cycle Rate:	814	rpm
Drive Amplitude:	0	
Chamber Resistance:	0	%

CSV and TST Data Files

Help

PRESSURE LOAD:
Target Pressure Boundary: -95 mmHg
Mean Peak Differential Pressure and SD: -124.2 ±1.8 mmHg
% All Peak Pressures Meeting Target: 100.0 (95% rule)
Mean % of Cycle Time Meeting Target: 21.5 (5% rule)

A-D ACQUISITION STATUS:
Drive Cycle Rate: 814 cpm
A-D Samples / valve cycle: 221
Analog Conversion Idle

A-D ACQUISITION CONTROL:
A-D Samples / second: 3000
Valve Cycles in View: 8
Synchronize A-D Device

HiTEST

When coupled with the HiCycle or the Real Time Wear Tester, HiTest provides the most powerful, user-friendly tool for durability testing.

Operators are able to monitor pressure and collect data through an intuitive user interface. HiTest provides accurate pressure data and statistical analysis to ensure the tested devices are meeting ISO 5840 standards. The results highlight the percent of cycles and percent time per cycle the device is meeting or exceeding target pressure. HiTest is source code developed software (unlike Labview), meeting stringent design verification, validation and testing in accordance with ISO 5840 requirements.

HiTEST
+
HiCYCLE

ViViTEST

ViViTest provides the most powerful and user-friendly tool for hydrodynamic testing when coupled with the ViVitro Pulse Duplicator.

ViViTest software controls the SuperPump while simultaneously measuring pressure and flow data. It monitors, processes, and reports data allowing for easy calculation of regurgitant fraction, effective orifice area, and many more valve performance indicators. ViViTest is source code developed software (unlike Labview) that can meet stringent design verification, validation and testing in accordance with ISO 5840 requirements. A calibration wizard walks new users through the set-up process thus facilitating a wide array of data collection options. Output files are available in versatile formats for easy analysis in Excel and MatLab.

ViViTEST QCTEST + PULSE DUPLICATOR

QCTEST

The ViVitro QCTest software is the only turnkey function test software available. The software is easy to use and can be paired with a specific Function Tester Load Assembly on the ViVitro Pulse Duplicator, for quick valve change-outs.

This allows ViVitro to provide a turn-key solution for one of the most time-consuming and burdensome aspects of production to validate. First in meeting QC production needs, the QCTest software system was developed as a quality control tool to specifically meet the demands of QC performance testing heart valves (function testing). Meeting the highest levels of validation, this production tool enables you to provide fast, reliable results, for a fraction of the cost it would take to design and validate an in-house system. QCTest is tailored to measure valve performance in accordance with regulatory requirements. QCTest meets production needs by including security, risk management, a simplified user interface, error checking, control steps and standard outputs. The software is scalable to include interfacing with various electronic DHR systems and bar code reading. QCTest function test software is source code developed meeting validation requirements outlined in the FDA General Principles of Software Validation.