UC35C—Universal Cycler System

AFFORDABLE SOLUTIONS FOR TODAYS PRODUCTION

UC35C—Universal Cycler

- One Tester does it all! Machine control with data acquisition. The JDS Universal Cycler system is the platform of choice for easy to use, affordable and highly flexible automated testing. The system is a combination of efficient hardware design combined with powerful software that is sure to increase the accuracy and through put of your automated testing operations.

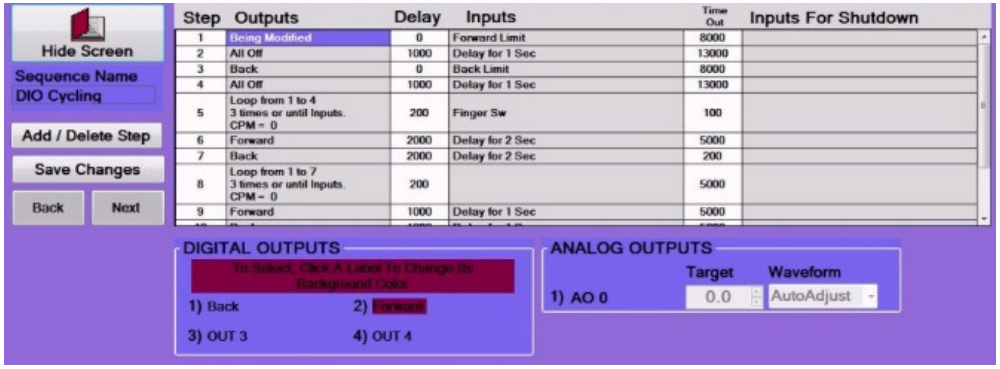
- This PC based system uses highly sophisticated algorithms to program and control the hardware and to give clarity to the collected data.

- The system is customizable and stores multiple configurations to support all your automated testing needs.

UC35C—Universal Cycler Features（1）

FEATURES 1 – Easy to Use

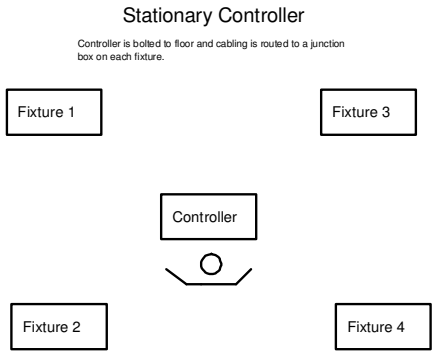
- No programming experience needed
- Click labels on screen for user defined IO points
- Operator messages and built in error handling
- Built in power supplies for powering transducer and field IO
- 20 years of applications and field testing with feedback from customers
- Implementing this simple system will not take an army of technicians and engineers.

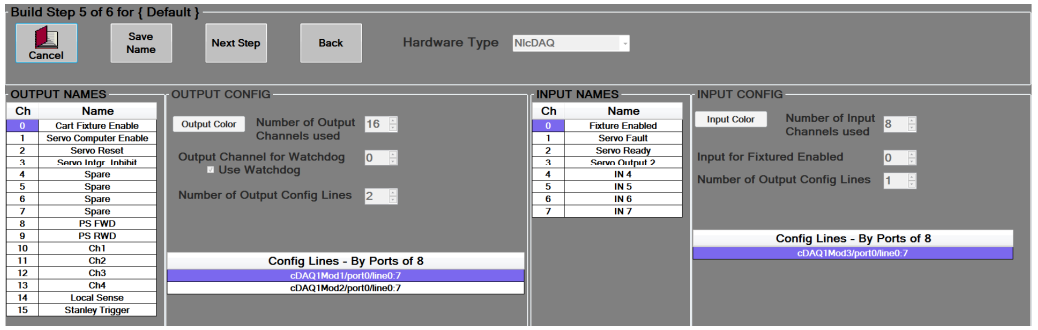


UC35C—Universal Cycler Features（2）

FEATURES 2 - Configurable

- Hardware uses National Instruments CompactDaq form factor with USB connection to PC. IO modules can be added as needed
- Software has a hardware configuration screen used to interface different fixtures to test logic
- Save capital investment by allowing one controller to manage multiple fixtures. Our easy change over process makes this not only possible but practical. A perfect solution for low volume— high mix operations.

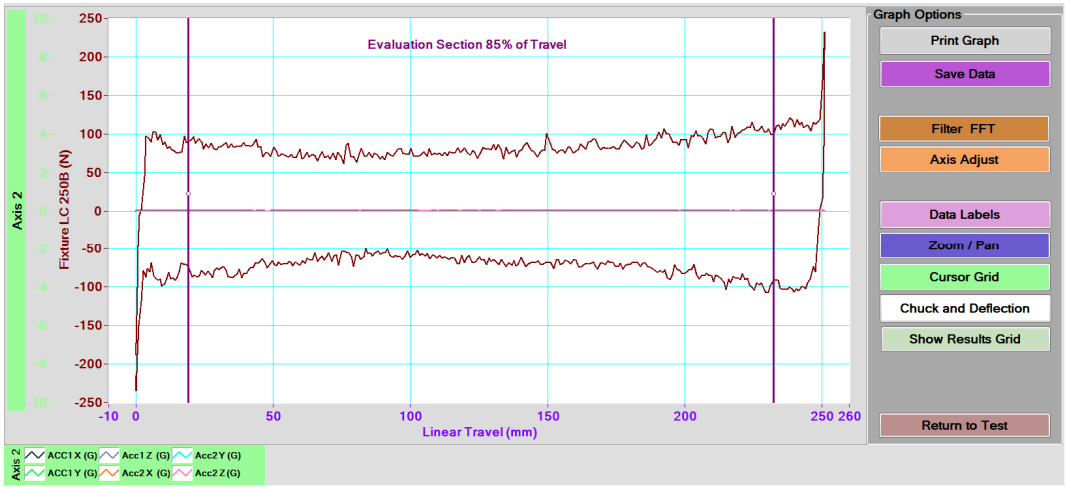




UC35C—Universal Cycler Features（3）

FEATURES 3 – DAQ with machine control

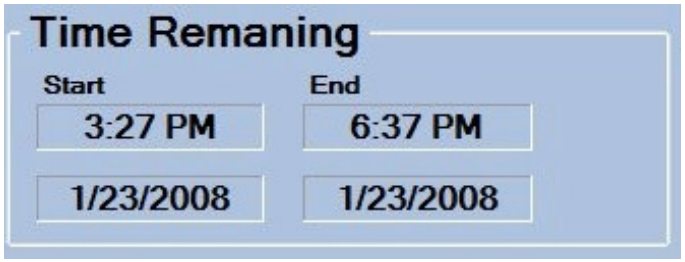
- At the heart of the UC software is a digital storage oscilloscope
- See a graph of analog channels in real time
- Use software to do engineering analysis of test cycle
- Post processing filtering and analysis
- Create report quality diagrams from the tester

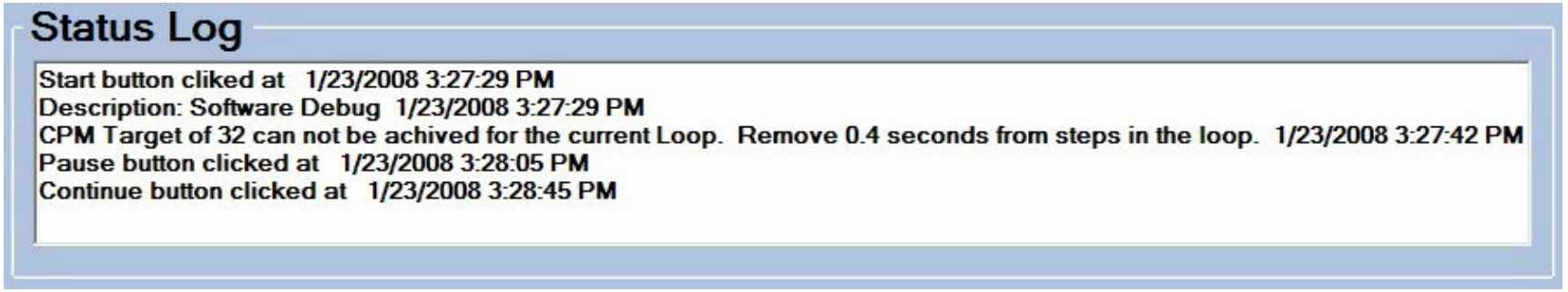


UC35C—Universal Cycler Features（4）

FEATURES 4 – Durability Testing

- Status log to record testing milestones.
- Include status log in test report as proof of test
- Automatic cycles per minute delay
- Expected completion reporting
- Save test by user defined names
- Nested looping

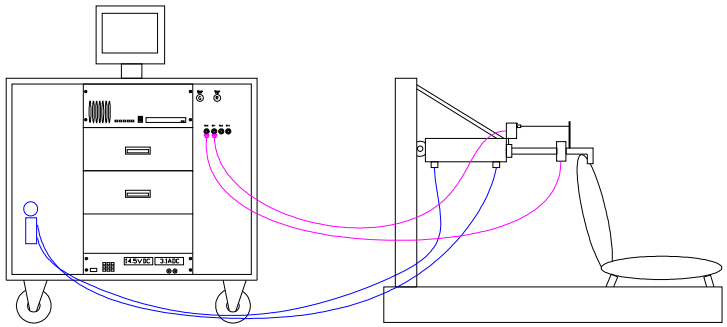




UC35C—Universal Cycler Features（5）

FEATURES 5 – Expandable

- Add new fixtures by creating a new hardware configuration
- We are constantly updating the software with feedback from our customers.
- Software shell is maintained for the ever changing windows operating system
- The flexibility of the system allows for a wide range of potential applications. Once you have used this tool you will never want to be without one in your shop again.



UC35C—Universal Cycler System Parameter(1)

Model	UC35C	UC35C-HD	Notes
Enclosure			
Dimensions / Weight			112cm W x 154cm L x 202cm H / 256 Kg
Fixture Connectors	Multi Turn	Multi Turn	Amphenol
Safety			Fixture Disable and Safety Interlock
Electrical Service			
Standard 120v Service	Included	Included	120v 15A 60Hz—Fused, Grounded, GFCI
DC Power Supplies			
Digital IO Power	24v 3A	24v 6A	
Analog IO	24v 2A	24v 3A	
Analog Secondary	N/A	+/- 15v 1A	

UC35C—Universal Cycler System Parameter(2)

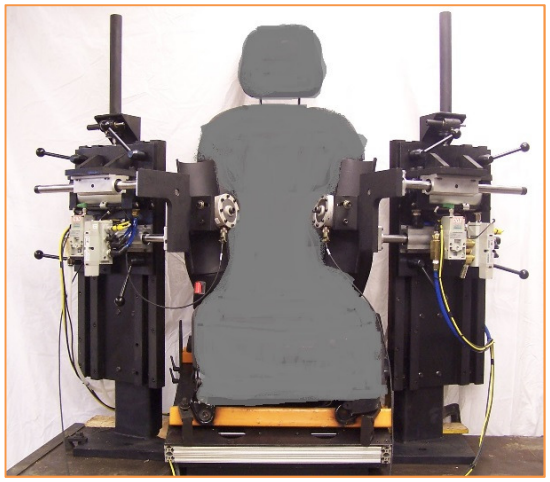
Model	UC35C	UC35C-HD	Notes
Data Acquisition Controller			National Instruments cDAQ
Rack Slots	4	8	
Digital Inputs	32	64	24v Sinking
Digital Outputs	32	32	24v Sourcing
Sourcing Current	250	250	mA per channel
Analog Inputs	16	16 (32)	Doubled in single ended mode
Analog Input Resolution	12 bit	16 bit	
Analog Outputs	0	4	
Onboard Processor			Windows 7 System—2G memory—DVI video
CPU	Atom	Atom	Or higher (w/ KB, Mouse and Monitor)
LAN / Wireless	Included	Included	802.11 b/g wireless— 10/100 mhz

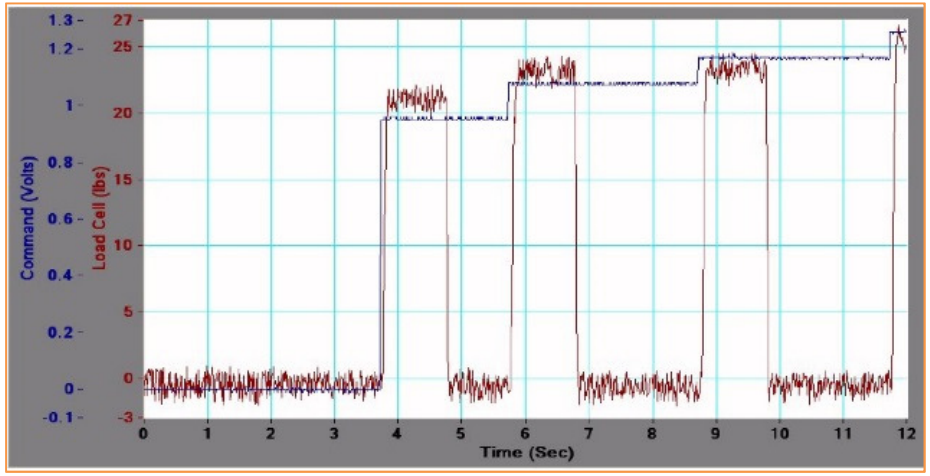
UC35C—Universal Cycler System Parameter(3)

Model	UC35C	UC35C-HD	Notes
USB Ports USB	2	4	
Software			
JDS Universal JDS	V3.5c	V3.5c	
Resolution	1600 x 900	1600 x 900	Requires 19” or Larger monitor (included)
Users	Unlimited	Unlimited	
Fixtures Supported	Unlimited	Unlimited	Selectable—can only run one fixture at a time
Power Loss Recovery	Included	Included	
Simple Closed loop Control	No	Yes	Analog outputs required

Seat Tester —Case Study（1）

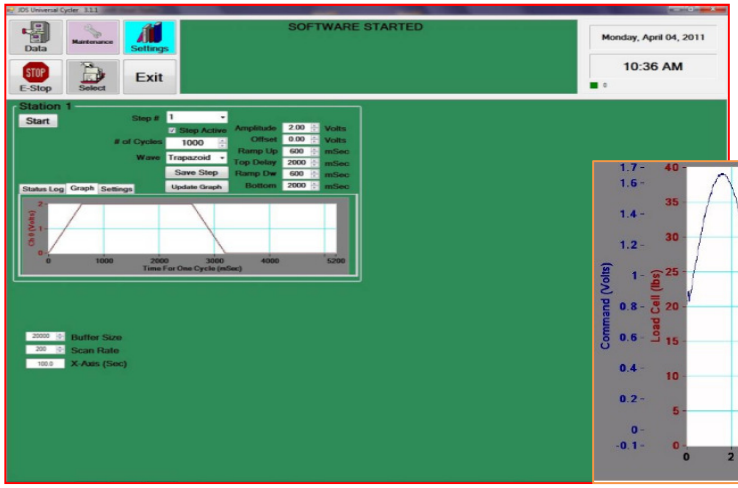
- Use the Cycler algorithm to create a self adjusting sequence
- Electronic pressure regulators are used to auto adjust the load
- Testing is stopped if the load is outside the desired tolerance
- Grab graph snap shoots at a periodic rate for use in test report

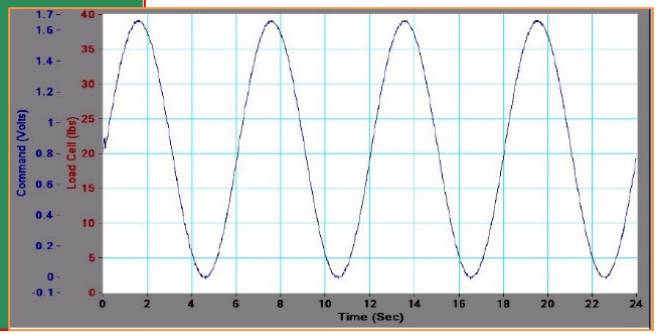


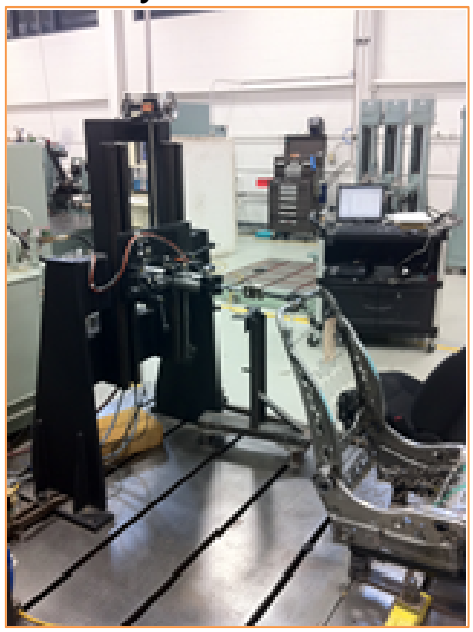


Block Function——Case Study(2)

- Sine, trapezoid or triangle wave durability
- A separate controller is used as a four-channel function generator that can be controlled by the host VB program. The VB host program will have the capability to independently control four(“4”) stations.
- Fatigue fixture using a pneumatic servo-valve to control a pneumatic cylinder.







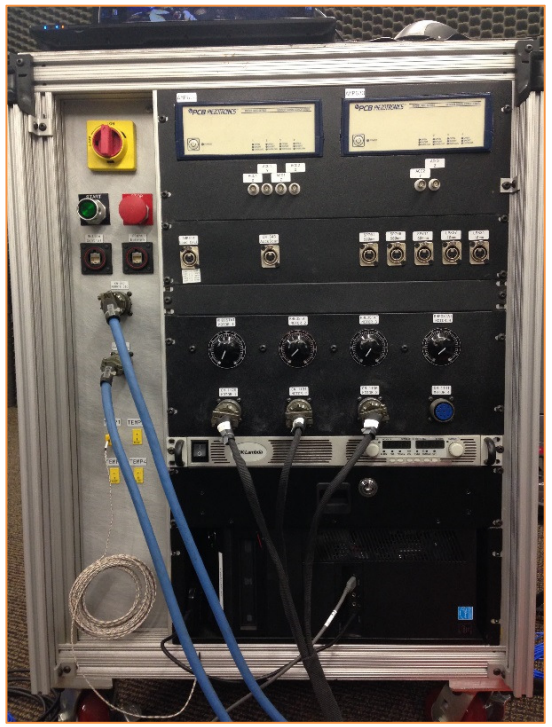
Strip Recorder—Case Study (3)

Strip recorder algorithm modified to be used for speed, effort and other forms of performance testing of seats.

- Data Acquisition channels used:
- 2 load cells
- 6 string pots
- 1 inclinometer
- 2 linear potentiometers
- Remote power supply to measure amps and volts
- 4 channels for memory motor verification
- 4 K type thermocouples
- 2 tri-axis accelerometers
- Motion control command

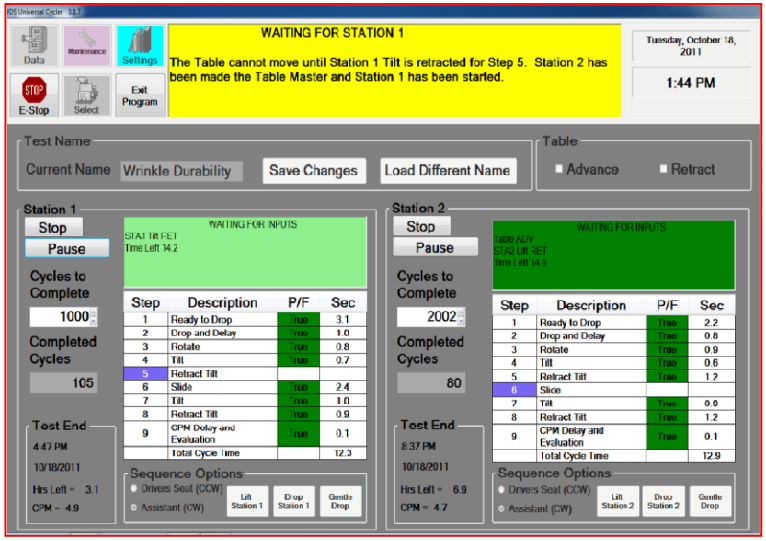
➢ Automated current speed test for power seats, 4 channels.

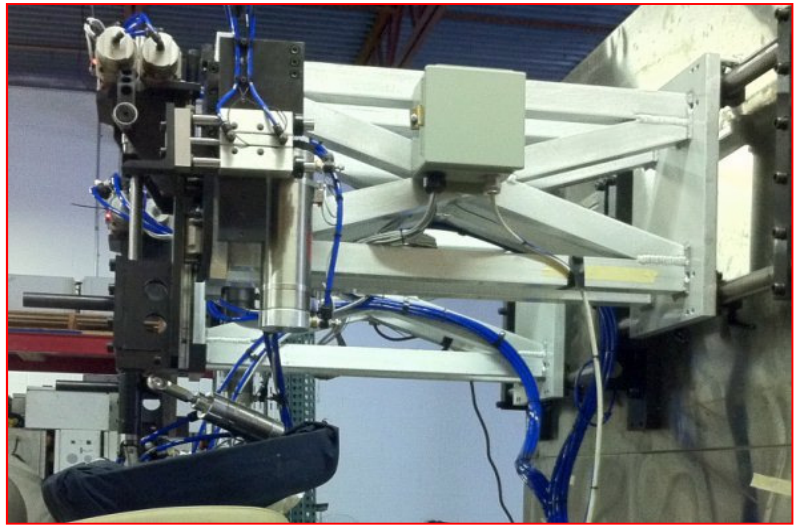
➢ Chuck and Deflection test with integrated servo motor and motion control.



Ingress/Egress—Case Study (4)

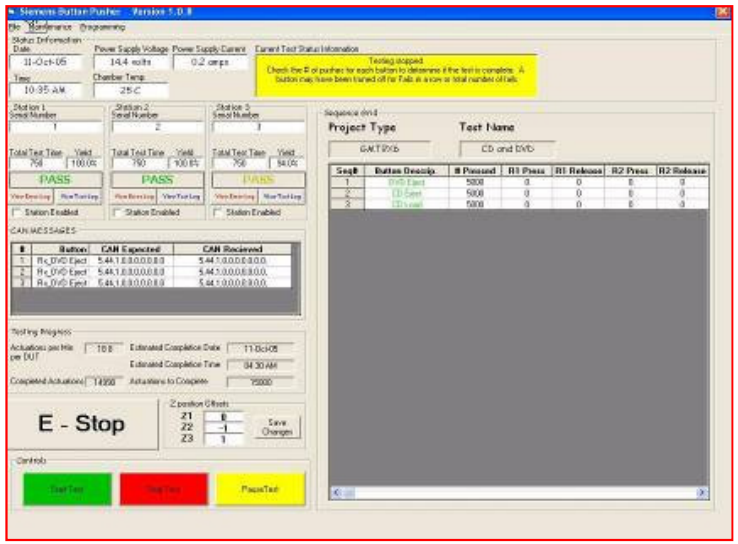
One controller used for a Jounce table and a two station Ingress/Egress fixture. Old fixture was redesigned to improve test sample loading and set up and to provide error handling and test sequence verification through the use of proximity switches.

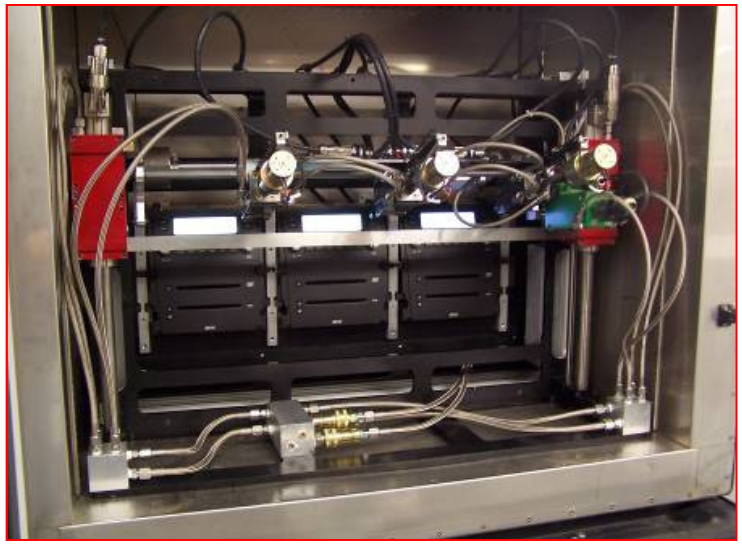




Radio Button Presser—Case Study (5)

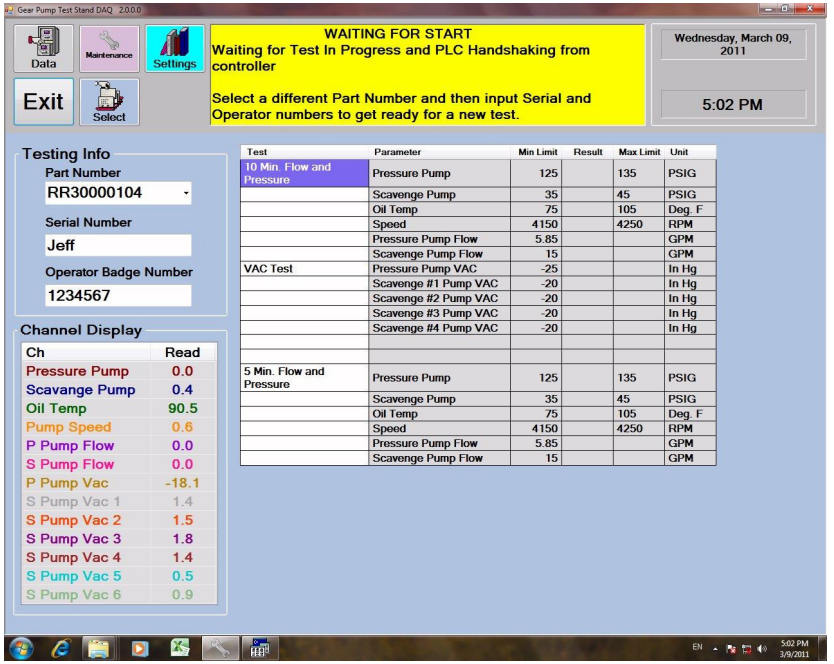
Four 4-axis gantry system using liquid cooled linear servo-motors to cycle radio's from -40 to 80 . Each button on the radio was pressed and the CAN message from the radio was verified. Button positions programmed by manually moving motors into place and clicking a save position button on the software. A CAN message was then programmed to the button position.





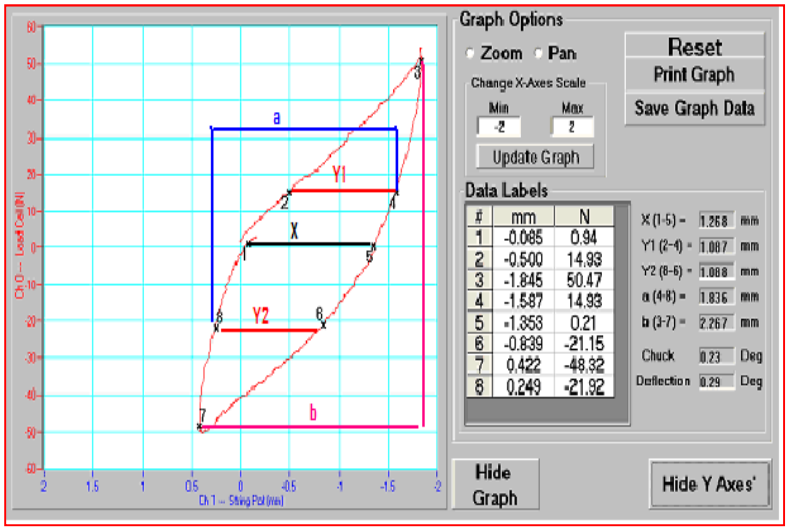
Helicopter Gear Box Tester—Case Study (6)

Set up for a military contactor (Triumph Gear). Strip Recorder algorithm was modified to interface with a PLC. PLC ran test cycle, PC collected data. 11 channels of DAQ to measure pressure, flow and temp for a 15 minute test of an oil pump used in a gear box. All data saved to an Excel file



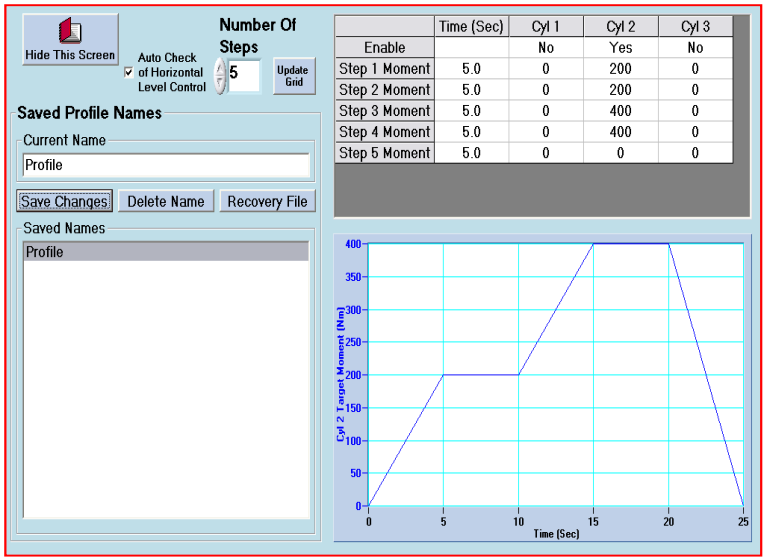
Chuck and Deflection Tester—Case Study (7)

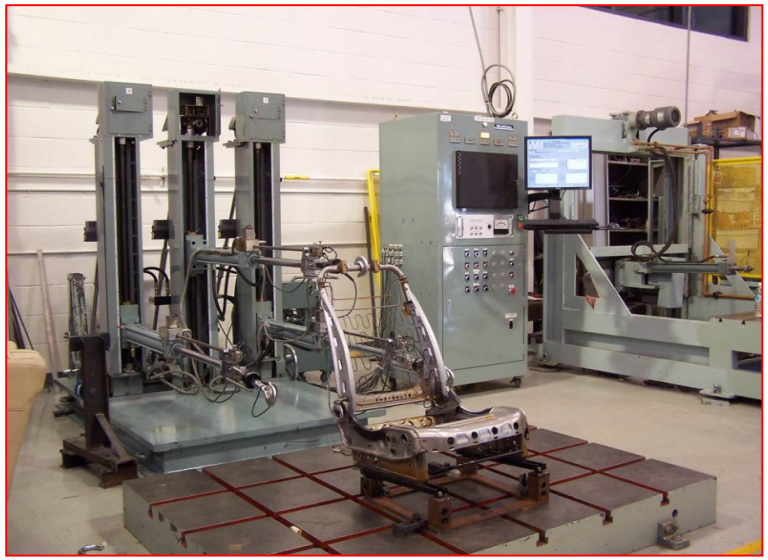
Servo-motors slowly pull and push on seat back. Data is recorded and the software determines chuck and deflection calculations.



4 Cylinder Frame Fatigue—Case Study (8)

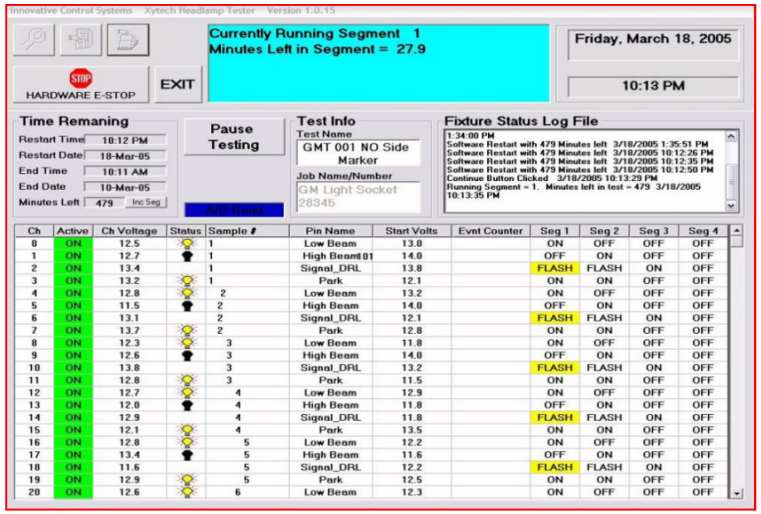
3 ram hydraulic stand. Tester originally built in Japan. Manual controls were replaced with PC based system with separate motion control





Head Lamp Cycler—Case Study(9)

Power cycling to headlamps while they were being environmentally exercised for vibration and thermal cycling. Customer needed to prove out intermittent connections being found in production units.



Power Supply Interface Application— Case Study（10）

Application created to communicate with an In Touch (PLC GUI) application using a DDE(dynamic data exchange) connection and eight Sorenson remote programmable power supplies using GPIB.The App sends the commands to set voltage and current on the supplies and returns the measured voltage and current. Two versions used, one for the Wind Tunnel test cell and the other for the Soak Room test cell. This system replaced a NI Lab View application that had intermittent faulting and prevented remote control of the power supplies during overnight tests.

Thank you for your attention!