Model 622
Automatic Airflow Test Stand
Dimensions: 67" H x 57" W x 42" D
1702mm H x 1448mm W x 1067mm D

GAS TURBINE AND JET ENGINE COMPONENT TESTING

Mass Airflow Test Stand

PRODUCT REQUIREMENTS

Multiple manufacturers in the Aerospace industry required Airflow Test Stands to calculate Mass Airflow and test equations. Flow test sequences, called "circuits," can automatically flow air with multiple test steps and various airflow equations (such as specialized reduced airflow measurements). CCDI was first in the industry to offer such test equations, and has continued to do so for over 40 years. The Automatic Airflow Test Stand is now available in the Model 622.

A VERSATILE SOLUTION

CCDI has been developing Airflow Test Stands since 1976 and automated units since 1986. The years of experience resulted in a refined design of a product that considers the fast-paced nature of the industry. CCDI continues to satisfy customers by adding new test requirements from various turbine manufacturers.

FEATURES

- Accuracy: +/- .50% Standard
- Repeatability: +/- 0.25% Standard
- Latest version of Windows Based Software
- Preloaded with your manufacturers Test Specs and Formulas, automatic correction
- 6 Nozzle design with ability to combine nozzle brings maximum measuring range
- Internal air volume reduction for fast production and realistic testing time
- Circuit switching, pressure control and acceptance, fully automatic
- EDI feature for piping data to network systems
- Will operate on Notebook Computer
- Configurations Available: 622L, 622M, 622H, 622XH

SYSTEM SPECIFICATIONS

NIST Traceable Air flow Measurement
Flow Measurement Accurate to +/- .50%
Flow Measurement Repeatable to +/- 0.25%
GE, PW, ABB, Honeywell, Siemens, Rolls-Royce, and Solar Parts Testing
Automatic Flow Correction Equations according to mfg specs.
15 to 30 Seconds per Flow Test
Manual/Automatic Operation
Internal Sonic Nozzles (4 to 6)
Automatic Single or Double Nozzle Select
Part Test Profiles
English and SI Units
MS Windows Based Part Test Software
QC Report, Label and Data Acquisition File
Can also flow small Effective Flow Area measurements
Data Acquisition File compatible with Excel
Operator Training, Testing and Certification
Dual Monitor Display optional
Two-Year Warranty on Parts and Labor

Options
Additional Flow Ports B & E
Low Pressure P3 0-2 PSIG, 0-55" H2O (0-13.8 kPa)
Bar Code Reader
Label Printer and Bar Code Software Output
Printer
Enhanced Report Software (8.5 x 11" or A4)
Wireless Network Option
Dew point Meter w/Warning
Data Conversion
Low Pressure Warning
Lockout Box
Side Table (Left or Right)
Statistical Software (with additional monitor)
Networked Results Server
LED Display on ergonomic mounts
External Verification Master Nozzles
Air Dryer Systems available as an option
300 Gal. Accumulator tanks sold in pairs as an option
Lifetime annual calibration packages available

Flow Capabilities

0.000119 to 0.154153 Pounds per Second, 0.000054 to 0.069922 kg/s (Greater range with XH Series)
0.000189 to 0.244840 Flow Parameter W * sqrt(T) / Pa
Sonic Nozzle P1/P2 pressures are monitored during testing and provide a real time "Not-Sonic" message
if the nozzle is not in a "choked" state.
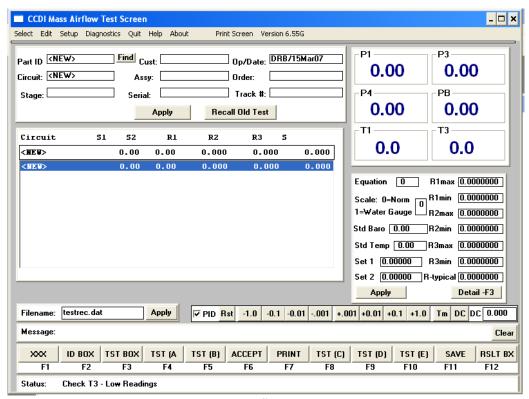
FACILITY REQUIREMENTS

Electrical Power and Air	100-250 VAC Single Phase, 50-60 Hz, 5A Service Pressurized air at 100 psig, dry to 0° F Dew Point
Pressure Range	0.5 to 50 PSIG – Standard 0-50 Inches Water Gauge – Optional
Temperature Ranges	T1 Upstream Temperature 46-120°F (8- 49 °C) T3 Part Downstream Temperature 46-120°F (8- 49 °C)
Internal Gauges-Specification	P1 Upstream Pressure 0-100 PSIG (0-690 kPa) 0.10% FS P2 Downstream Pressure 0-100 PSIG (0-690 kPa) 0.25% FS P3 Part Pressure 0-50 PSIG (0-345 kPa) 0.10% FS P4 Probe Pressure 0-30 PSIG (0-207 kPa) 0.10% FS* PB Barometric Pressure 26-32"HgA 0.10% FS T1 Upstream Temp 46-120°F (8- 49 °C) +/- 1Deg F T1 Downstream Temp 46-120°F (8- 49 °C) +/- 1 Deg F

*Probe pressure is optional

SOFTWARE

CCDI Airflow Test Stands have basic operation screens and a calibration screen.

Test Screen - Users operate the machine from this screen.
Setup Screen - Contains the machine configuration and calibration data.
Diagnostic Screen - Displays state of valves and nozzles used.

Test Screen

Menu Bar - Allows navigation to other screens, selection of part test programs, finding information.

Identification Box - In the upper left corner box, fill in details associated with the airflow test that gets recorded and printed. This information is also kept with files that can be transmitted to a network.

Test/Log Box - CCDI machines can have up 64 test sequences (or increased as needed) for a single part. The first box (short) is the real time results box that shows the test data in operation. The second box (long) is the log of the test results. Some software versions have three result boxes for parts that use "Exit Flow" measurements. The log provides a summary of test data.

Gauge Displays - Gauge measurement readings. They are automatically converted to units that match the parts being measured.
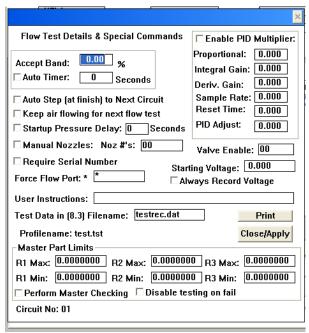
Test Parameters Box - Right corner box allows the test parameters and limits to be entered. Selecting "Detail", which will open the detail box, you can enter even more information.

Filename - This allows selection of a filename for the test data. The filename can be stored in the part "profile" - A file recipe in the hard drive for the next time you test.

PID Control Box - Displays activity of the pressurization controller and allows user to adjust values.

Message and Status Boxes - Messages from the system and operator instructions can be posted here.

Function Key Menu - Our test screen can be operated by mouse or function key.

Flow Test Details & Special Commands

Accept Band: 0.00 %
Auto Timer: 0 Seconds

☐ Auto Step (at finish) to Next Circuit
☐ Keep air flowing for next flow test
☐ Startup Pressure Delay: 0 Seconds
☐ Manual Nozzles: Noz #'s: 00
☐ Require Serial Number
Force Flow Port: * *

User Instructions:

Test Data in (8.3) Filename: testrec.dat

Profilename: test.tst

Master Part Limits
R1 Max: 0.0000000 R2 Max: 0.0000000 R3 Max: 0.0000000
R1 Min: 0.0000000 R2 Min: 0.0000000 R3 Min: 0.0000000
☐ Perform Master Checking ☐ Disable testing on fail

Circuit No: 01

☐ Enable PID Multiplier:
Proportional: 0.000
Integral Gain: 0.000
Deriv. Gain: 0.000
Sample Rate: 0.000
Reset Time: 0.000
PID Adjust: 0.000

Valve Enable: 00

Starting Voltage: 0.000
☐ Always Record Voltage

Print

Close/Apply

Detail Box

From this screen, you can adjust percent error allowed on set points and the "Auto Timer" to shut off the air for a certain period of time. This will end the test after the pressure is consistent for the selected time interval.
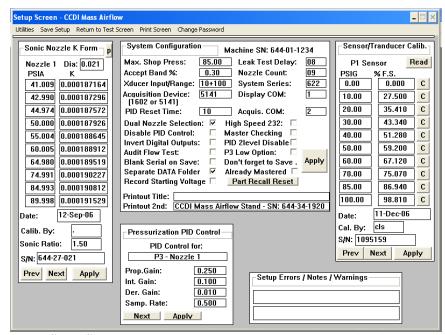
Auto-step allows the next flow sequence to proceed automatically. The Startup Delay makes time at the beginning of the test to stabilize.

Manual Nozzle allows the user to select the nozzles. The system defaults to set point and flow limit information. The Master Parts Limits section is to be completed by the user as well.
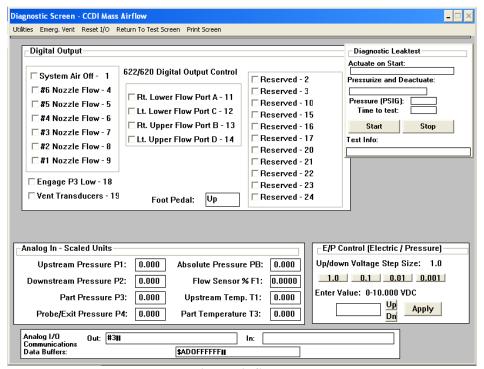
The PID Control (Pressurization) can be finely tuned for the most demanding production lines. Note: Fixtures/Tooling varies in volume. These parameters are adjustable to achieve the best response

Flow Testing Features

- CCDI Airflow machines were the first machines on the market with automatic sequencing.
- If you test a part in various manufacturing stages, the old data can be recalled at a later time to fill-in the blanks.
- Automatic or Manual, Single or Dual Nozzle Selection Available
- Two-stage cancel button can temporarily stop a test and restart; a second cancel can discard the results to start over.
- Beginning of a test can be paused for a specified number of seconds.
- Test results record all gauges and K values making analysis simple for auditing.
- In a Flow Restriction Test, the PID control can be turned off in order to monitor for flow restriction cause by external tooling.
- The program has leak tests that check for internal and external leaks at various stages
    - Our leak testing sequences can be automated
    - Volume based leak tests allow for fixed volume entry in testing parameters.
- The Diagnostic screen is great tool for technicians and makes understanding of the equipment easy for maintenance

Setup Screen: Contains nozzle calibration, transducer calibration, system configuration data, and built-in pressurization tuning information.

Diagnostic Screen

From the Diagnostic Screen, you can operate the valves, take pressure measurements, check data-communications, and control output pressure. Very useful for troubleshooting.

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DRAWINGS

Top view

30″

48″

Left view

38″

35″

Front view

67″

48″

57″

Right view

42″