



FCI connects the world.

introducing
the
FCI USA Inc.
ENGINEERING
TEST LABORATORY
Manchester
New Hampshire
USA



LABORATORY MISSION STATEMENT

We are committed to provide independent, unbiased, complete and accurate test services to all of our customers.

We will maintain an awareness of all relevant domestic, international, industry and agency test standards and procedures.

We shall actively monitor advancements in the test and measurements field in order to provide our customers with the state of the art test facility for the testing of electrical connectors and installation tooling .

We will continue to be a dedicated resource to all the units of FCI providing expertise and recommendations in the development and testing of our products.

We are committed to being responsive to the company's needs and to contributing to the overall success of the organization.



THE LABORATORY

- A vital part of product research & development
- Provides support to engineering
- Responds to changing markets
- Stays abreast of revised regulations
- Uses State of the Art test equipment
- Tests new connector designs
- Tests new tools
- Tests existing products

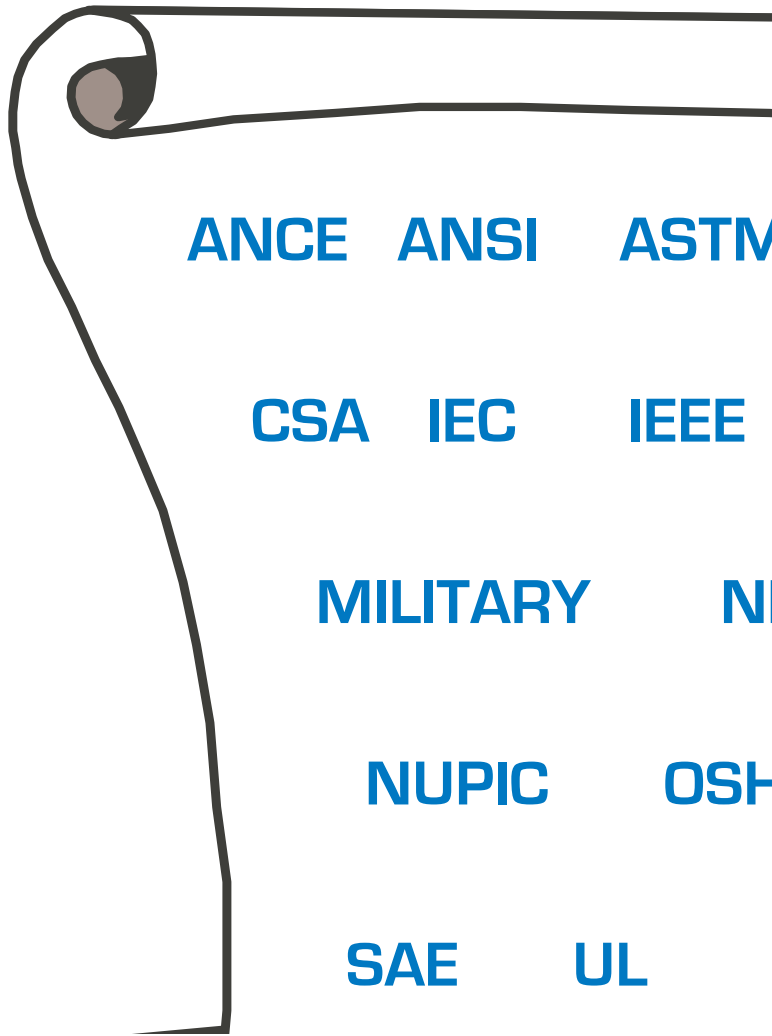
THE LABORATORY TEAM

- Skilled technicians
- Experienced senior staff
- Total of 60 years of experience



CERTIFICATION

The FCI Laboratory at Manchester certifies and tests Tool and Connector Products to the following standards:



ANCE ANSI ASTM

CSA IEC IEEE

MILITARY NEMA

NUPIC OSHA

SAE UL

TEST LAB

Capable of performing many types of tests using only quality test equipment .

Test types include:

- **MECHANICAL**
- **ELECTRICAL**
- **METALLURGICAL**
- **ENVIRONMENTAL**



CURRENT CYCLE & DIELECTRIC TESTING

The Current Cycle Room contains 12 banks. Each bank is monitored for temperature (up to 20 points) and resistance (up to 25 locations) concurrently.

Current cycling, the application of electrical current for the required number of cycles determined by the specifications. Each cycle consists of current on and current off period. Current on causes heating and material expansion. Current off allows cooling to occur resulting in material contraction.

Current cycle testing is controlled by a data acquisition computer that is capable of controlling all 12 banks simultaneously. The computer regulates current and time duration as well as recording temperature and resistance. Specific pass fail criteria to the required test standards are evaluated.

SHORT CIRCUIT TESTING

The Short Circuit Tester is used to apply current to grounding connectors. The system capacity is 144 kVA with a 12 V maximum output at 12 000 amps. The test is computer controlled.



DIELECTRIC TESTING

AC Dielectric Testing of up to 100 kVac @ 5 kVA used to test the integrity of insulated products.



MECHANICAL TESTING



Universal Machine, used to test the integrity of connectors and materials. This machine is capable of applying a force (tension or compression) of up to 120 000 lb (534 kN).



Horizontal Tensile Machine, used for testing high tension overhead splices. This machine applies force up to 100 000 lbs (444 kN) and is capable of pulling test samples up to 50 ft (15.2 m) in length.



Tensile Compression Machine, used for testing smaller gauge wire connectors and materials. This machine can apply force of up to 5000 lb (22.2 kN).

METALLURGY TESTING



Grinding, etching and polishing cross sections of metals is the function of the metallurgy lab. The cross sections are tested for hardness and various other properties to determine their suitability for use in new designs and material failure analysis.



Microscopes with magnification capabilities of up to 500x are used to analyze metallurgical sections. They can produce both digital and photographic imagery.



Optical Comparator, a computer controlled device with fiber optic pick-up that measures radii, depth and angles. Used for inspection of parts to determine whether they meet specifications.

ENVIRONMENTAL TESTING



Salt Fog Chamber, used to expose materials various percentages of salt solution at elevated temperatures. The exposure will determine the corrosive effects and resistance changes of the test materials to the ASTM B-117 salt fog test.



Heat Chambers, used to condition parts and products before testing to determine the effects of temperature. Maximum temperature of the chamber is 350° F (177° C).



Humidity Chamber, used to expose parts and products to moisture for predetermined periods of time. The relative humidity range is from 20% to 98% and the temperature ranges from 0° F to 200° F (-18° C to 93° C).



Hydraulic Test Machine, conducts life cycle testing of tool heads by applying pressure ranges of 10 000 lb/in² (68.9 MPa) to 27 000 lb/in² (186.2 MPa). This type of testing is done to evaluate the life of existing tools and new tools.



Model Shop where test fixtures and prototypes of new product designs are machined.



Model Shop - CAM (Computer Assisted Machining). Prototype made from Pro-Engineer solid model electronically transferred to the equipment.



MECHANICAL

TENSILE/COMPRESSION:	Capable of tests up to 120 000 lbs (534 kN) providing stress-strain curves and Young's modulus.
DIGITAL SCALE:	0-25 lb., newtons, grams
TORQUE WRENCHES:	0-150 lb-ft and 0-3600 lb-in.
TRANSDUCERS:	0-30k lb (electronic force gauge) button type.
FORCE GAUGE:	0-500 lb, mechanical spring type with push rods and hooks.
SECURENESS TESTER:	Performs UL/CSA secureness tests.



ELECTRICAL

AC/DC CURRENT:	Tests to 12kA AC and 3 kA DC @ 0-10 000 amperes.
OSCILLOSCOPE:	Measures voltage and frequency.
CURRENT TRANSDUCERS:	Several units with different turn ratios used for monitoring current.
HIPOT TESTERS:	Perform dielectric breakdown of insulating material and arc over up to 100 kV.
TRANSFORMERS/ VARIACS:	Used for short circuit, heat cycle testing and control circuits.
COUNTERS:	Count simple cycles in circuits, as well as some with contacts for advanced circuit test capabilities.
TIMERS/RELAYS:	Time circuits and control as in counters.
DATA ACQUISITION:	Computerized collection of temperature and resistance measurements to UL, CSA and ANSI specifications.
MISCELLANEOUS:	Ability to build special test set-ups, using items such as switches, bus bars, fuse blocks, meters, gauges, cable and bridge rectifiers.



METALLURGY

HARDNESS TESTER:	Rockwell scale abilities.
MAGNA FLUX TESTER:	Structure evaluation.
GRINDING BENCH:	Several grits of sand discs and solutions.
MICROSCOPES:	Complete range of power and eyepieces.
FUME HOODS:	Used for chemical containment Units equipped with hot water cold water, compressed air and propane gas. Used for acid etching flame and chemical exposure.



OTHER CAPABILITIES

HEATING CHAMBERS:	Ambient to 350°F (176°C) for sample conditioning.
HUMIDITY CHAMBER:	A programmable chamber that tests relative humidity.
HOT/COLD CHAMBER:	Programmable temperature for automatic cycling.
CRESS FURNACE:	Heat treating to 2000° F (1093C).
HYDRAULIC BURST TEST:	Chamber for testing hoses and fittings to failure.
HYDRAULIC FATIGUE:	Cycle tests hydraulic tool heads.
BUCKET TRUCK SIMULATOR:	Capable of simulating hydraulic tool operation from bucket truck .
SALT SPRAY CHAMBER:	Conditioning tests with salt water & temperature for accelerated aging.
MISCELLANEOUS:	Air gauges, in-line tools, remote heads, cutters, dies, pumps and various BURNDY® Catalogue items.



IF YOU HAVE ANY QUESTIONS OR NEED INFORMATION
PLEASE CALL:
603-647-5000 AND ASK FOR THE LAB