



DEPARTMENT OF SCIENCE AND TECHNOLOGY (DOST)  
METALS INDUSTRY RESEARCH AND DEVELOPMENT CENTER (MIRDC)



METALS INDUSTRY RESEARCH AND DEVELOPMENT CENTER  
***AUTO-PARTS TESTING FACILITY***

***The Metals Industry Research and Development Center (MIRDC), an agency of the Department of Science and Technology (DOST), is the sole government entity directly supporting the metals and engineering industry with services designed to enhance its competitive advantage.***

## **HISTORY**

To develop and expand the metals industry of the Philippines, Republic Act No. 4724, dated June 18, 1966, established the Metals Industry Development Center (MIDC). The Center was primarily tasked to work for close rapport between the government and the industry in order to foster the advancement of metals engineering, and allied industries in the country.

This was amended by Republic Act No. 6428, dated May 31, 1972, reorganizing and renaming the MIDC into Metals Industry Research and Development Center (MIRDC), giving it corporate existence and enlarging its powers. The administration of the Center and the exercise of its corporate authority were vested exclusively in a Board of Trustees organized under this Act.

Later presidential issuances reflected the Center's change of thrust and direction. These were Executive Order No. 602, transferring the MIRDC from the then National Science Development Board (now Department of Science & Technology) to the then Ministry of Trade & Industry (now Department of Trade & Industry) for policy and program coordination and direction; Presidential Decree No. 1765, reorienting its thrust from research and development to direct assistance to the metals industry; and Executive Order No. 128, transferring the Center from the Department of Trade & Industry to the Department of Science & Technology as a separate and attached agency.

Finally, Executive Order No. 494 dated December 6, 1991 transformed the MIRDC into a regular government agency attached to the Department of Science and Technology. This was fully implemented on 27 May 1993.

## **VISION**

"Center for excellence in science, technology and innovation for a globally-competitive metals, engineering and allied industries by 2025."

## **MISSION**

"To provide both government and private sectors in the metals, engineering, and allied industries with professional management and technical expertise on the training of engineers & technicians; information exchange; quality control & testing; research and development; technology transfer; and business economics advisory services."



## BACKGROUND

The Philippine automotive industry is relatively small when compared to its ASEAN neighbors such as Thailand, Malaysia and Indonesia in terms of numbers of manufacturing and production size. Knowing the backward and forward linkages of the sector, there is a need for government to continually exert efforts in promoting the expansion and improvement for technological advancement to achieve competitiveness of the local automotive industry.

The reason why this project was conceptualized is to address the challenges being faced by the automotive industry firms, both assemblers and parts manufacturers, in terms of product improvement. The "One ASEAN" policy that is implemented starting this year is one of the major reasons why this project was developed. Local parts manufacturer shall be able to produce products with high quality at a competitive cost against imported automotive parts and components manufacturers from other ASEAN member countries.

In order to develop a more competitive automotive industry in the Philippines, the DOST funded a project headed by MIRDC in coordination with the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD). The "Auto-parts Testing Facility of MIRDC" (MIRDC-ATF) was born aiming to provide testing facility for local parts manufacturers so that expenses from imported testing requirement of their products will be minimized. MIRDC launched the program, "Establishment of an Innovation Center for Motor Vehicle and Parts Development (IMoVE)," wherein the MIRDC-ATF is part. The MIRDC-ATF expanded the capabilities of MIRDC's Analysis and Testing Division to handle the testing of parts and components specific to the automotive industry.

The Analysis and Testing Division (ATD) of MIRDC is responsible for the provision of quality control, testing and calibration requirements of both government and private sectors in the metals, engineering and allied industries.

The ATD maintains ISO/IEC 17025:2005 accredited laboratories since 1996. This ensures that all test results generated by the ATD laboratories are conducted by competent personnel, use calibrated equipment, and issue results comparable with most laboratories worldwide. Laboratory accreditation is provided by the Philippine Accreditation Bureau (PAB), a signatory to the Asia Pacific Laboratory Accreditation Cooperation Mutual Recognition Arrangement (APLAC-MRA).

ATD consists of three sections; Physical Laboratories Section (PLS), Physico-Chemical Laboratories (PCL) and Instrumentation and Metrology Section (IMS). These sections are also available to support the needs of automotive industries for their testing needs where existing capabilities are already offered to the different industries.

# THE PROJECT TEAM



MIRDC-ATF Project Team headed by Dr. Agustin M. Fudolig (at the center)



Instrumentation and Metrology Laboratory Accreditation Certificate



Chemical Laboratories Section Accreditation Certificate



Physical Laboratories Section Accreditation Certificate

# AUTO-PARTS TESTING FACILITIES OF MIRDC

## MIRDC – ATF

### *I. MATERIAL TESTS*

Defines the physical properties and chemical composition of materials. This will guide raw material users for the appropriate type of materials to be used based on the physical properties required on their products.

#### Tension/Compression/Flexure/Deflection Test



200T Universal Testing Machine

Equipment: Universal Testing Machine

Brand	: Zwick/Roell
Type	: Electro-mechanical
Load Detector	: Load Cell (interchangeable)
Capacity	: 10kN & 2000kN
Testing Table Size	: 2826 mm x 1200 mm
Max. Crosshead Travel	: 1200mm
Max. Crosshead Speed	: 300 mm/min
Gripping System	: Hydraulic Grips upto 2000 kN
Extensometer	: Automatic extension and transverse strain

Test Standards Conformance: ASTM, JIS, ISO/EN

Test Specimen:

Metallic material sheets, thin and thick plates, small and large pipes, solid wires (low and high strength, small and large diameter round bars, reinforcing steel bars (small to large diameter), welded specimen (thin and thick joints), ordinary and high-strength bolts, other metallic products, etc.

Special Features:

- Measures drawability property of metallic materials using both extension and transverse strain measurements
- Without the hydraulic grips, crosshead travel can reach upto 2000mm
- Automatic extensometer attached to the specimen until fracture
- Zwick's "Force Constant Hold" force stabilization system reliably protects the specimen from unwanted tensile or compression forces due to material flow or grip deformation during the closing and clamping process
- Strain rate control compliant to EN/ISO 6892-1: 2009 and ASTM E8-09

# Hardness Testing of Metallic Materials

## Equipment:

### 1. Portable Brinell Hardness Tester

Brand : King  
Model : AA-49  
Hardness Scale : HB  
Max. specimen thickness : 330 mm

### 2. Nose-type Rockwell Hardness Tester

Brand : Zwick/Roell  
Model : ZHR – 8150SK  
Hardness Scale : HRA, HRB, HRC, HR15T, HR30T, HR45T, HR15N, HR30N, HR45N

### 3. Fully-automatic Vickers Hardness Testers

Brand : Zwick/Roel  
Model : ZHV50A  
Hardness Scale : HV  
Special Features : Fully-automatic calibration and measurement system, hence operator's error is omitted.  
- With photo stitching functions

### 4. Fully-automatic MicroVickers Hardness Testers

Brand : Zwick/Roel  
Model : ZHV $\mu$ -A  
Hardness Scale : HV & HK  
Special Features : same features as the ZHV50A above

### 5. Portable Leeb Hardness Tester

Brand : Proceq – Equotip 3  
Hardness Scale : HL  
Impact Device : C

Test Standards Conformance: ASTM, JIS, ISO, DIN

## Test Specimen:

Metallic materials, metallic products, cast iron, steel/C.I./aluminum castings, weld joints, pipes, gears, shafts, valves, cylinder sleeve, plating and anodizing material, etc.



Brinell Hardness Tester



Rockwell Hardness Tester – Nose Type



Vickers Hardness Tester



Vickers & Knoop Micro-Hardness Tester



Portable Leeb Hardness Tester

## Hardness Test of Rubber



Durometer (Shore A)

Equipment: Durometer

Brand : Bareiss

Hardness Scale : Shore A

Test Specimen : Rubber Materials

Special Features: Portable-type

Test Standards Conformance: ASTM

Test Description:

Measure the hardness of rubber materials

## Microscopy & Metallography

Equipment: Metallurgical Microscope (Upright)

Brand : Optika

Model : B-500 MET

Magnifications: 50x, 100x, 200x, 500x, 1000x

Test Standards Conformance: ASTM

Special Feature: with C-mount cameras for video and still image capturing (resolution: 2048 x 1536; 3.2 MPixel)

: with OPTIKA VISION SOFTWARE PACKAGE

Test Specimen:

Metallic Materials/Products



Metallurgical Microscope (Upright)

## Portable Elemental Analysis

Equipment: Portable X-ray Fluorescent

Brand : Thermo Scientific

Model : NITON XL3t w/ GOLDD Technology

Standard Excitation: 50 kV/2 W, 200µAmax

Elements Suites:

Calibration Element Set (Metal Analysis):

Sb, Sn, Pd, Ag, Mo, Nb, Zr, Se, Bi, Pb, Ta, Hf, Re, W, Zn,

Cu, Ni, Co, Fe, Mn, Cr, V, Ti, Ru, S, P, Si, Al and Mg

Calibration Element Set (Plastic Analysis):

Cl, Ti, V, Cr, Fe, Ni, Cu, Zn, Br, As, Se, Cd, Sn, Sb, Ba, Hg,

Au, Pb, Bi

Test Specimen:

Metal and Plastic materials and products



X-ray Fluorescent / (PMI)

## Bend Test for Pipes

Equipment: Pipe Bending Machine  
Type : Servo-hydraulic  
Bending Angle : upto 120°  
Pipe Sizes : ½" Ø – 2" Ø

Test Standards Conformance: ASTM A450/A53, PNS 26

Test Specimen:  
Metallic pipe and tubings



Pipe Bending Machine

## Surface Inspection

Equipment: Magnetic Particle Test Bench  
Brand : K + D Flux-Technic  
Accessory : UV Light, Photometer/Light meter

Method of Application and Color:  
Wet Magnetic Particle, pouring, Fluorescent-  
Yellow Green

Test Specimen:  
Magnetic products and materials



Magnetic Particle Test Bench

## Base Metal Thickness Measurements

Equipment: Ultrasonic Tester Thickness Gage  
Brand : Olympus  
Model : 38DL PLUS  
Thickness Range: 0.2 - 5 mm

Capabilities: Thickness measurements of coated metallic  
materials without coat stripping

Probes: 5 MHz Thru Coat  
: 20 MHz single element transducer

Special Features: Measures thickness of coating and base  
metal without paint stripping



UT Thickness Gager



## Roughness Testing



Roughness Tester

Equipment: Roughness Tester

Brand : Taylor Hobson  
Model : Talysurf Ultra RF-2000S  
Capability : Ra, Rz  
Transverse Length : 0.1-50mm  
Nominal Measuring Range (Z): 1mm  
Stylus Arm min. : 2  $\mu$ m

Test Standards Conformance:

ISO 4287, ISO 13565-1-2, ISO 12085

Special Feature: Fully computerized with software

## Vibration Test

Equipment: Vibration Testing Equipment

Brand : Shinken  
Model : G-0210N  
Max. Force Output : 10 kN, vector sine  
: 7 kN, rms random  
: 15 kN transient shock  
Max. Acceleration : 908m/s<sup>2</sup>  
Bare Table : 153m/s<sup>2</sup>  
Vertical Table : 416m/s<sup>2</sup> Cubic Fixture  
Max. Displacement : 51mm  
Max. Payload : 150 kg

Test Standards Conformance: IEC, MIL, JIS



Vibration Testing Equipment

## Data Monitoring and Analysis

Equipment: Data Recorder/Analyzer

Brand : National Instruments  
Model : CRIO-9082  
Sampling Rate: 50 ks/s per channel  
Sensors : Torque Sensor (100-1,000 in-lbs)  
Accelerometer (10mV/g) Strain  
Gages (Resistance-120 $\Omega$ , gage  
length-5mm) Load Cell (1T, 5T &  
10T)

Test Specimen:

Wheel Axle, in-vehicle vibration and strain  
monitoring, etc.



Data Recorder/Analyzer with Accelerometer, Load Cell and  
Torque Sensor

# Repeated Loading Test



Fatigue Tester

**Equipment:**

Electro-Mechanical Actuator

Servo-Hydraulic Actuator

Brand : Zwick/Roell  
 Model : BX1-EZ010.A4K-001  
 Stroke : 400mm  
 Max. Force : 10,000 N  
 Test Speed : 15,000 mm/min.  
 Max. Frequency :

: Shimadzu  
 : EHF-JF-20kNV-100-A10  
 : 1000 mm  
 : 20,000 N  
 : 10 Hz @ 1mm stroke

Test Standards Conformance: UNECE, FMVSS

Special Feature: Provided with T-slotted base plate capable to set-up different load orientations  
 : Both electro-mechanical and servo-hydraulic actuators are provided with Separate test stand.

**Test Specimen:**

Car Seats, Head Rest, exhaust system assembly, etc.

## Friction Test of Brake/Clutch Lining



Friction Materials Test Machine ("Chase" machine)

Equipment: Friction Materials Test Machine

Brand : Greening  
Model : 1050  
Variable Speed : 3-1500 rpm  
Max. Friction Load : 1330 N  
Maximum Drum Temp. : 510 °C

Test Standards Conformance: SAE J661

Special Feature: test drum temperature is monitored using a thermocouple  
: With coalescing filter that reduces the accumulation of water

## Seat Belt Wind Round Force Tester

Equipment: Retraction/extraction force stand

Brand : Atos  
Model : RF-2000S  
Displacement Range : 0-2000mm  
Max. Force : 50 N

Test Standards Conformance: UNECE R16

Special Feature: Fully programmable high accuracy extraction/retraction speed  
: Servo-motor driven displacement

Test Specimen:  
Seat Belt mechanism assembly



Retraction/extraction force test stand

## Seat Belt Angle Lock Tester

Equipment: Retractor Tilt Locking test stand

Brand : Atos  
Model : RT-24SE/AVZ  
Angle Accuracy : 0.1°  
Fully Automatic Testing: 1 – 24 directions

Test Standards Conformance: UNECE R16

Special Feature: Fully programmable lock detection system with load cell and programmable lock threshold  
: Servo-motor driven displacement

Test Specimen:  
Seat Belt mechanism assembly



Retractor Tilt Locking test stand

## Simulated Crash Analysis

Equipment: Transport Body Impact Tester  
Type : Pendulum Type  
Variable Energy : upto 54 kJ

Accessories:

High Speed Camera : 1280x1024 pixel  
: 2,000 fps  
Data Logger : Sirius-HD 16xSTGS  
: Linear Strain Gages  
: Accelerometer

Special Feature: impact simulation of chassis body; i.e. jeepney, mini-bus, truck, etc.

Test Specimen:

Body/Chassis of vehicles, i.e. customized road vehicles, trucks, bus and cars



Transport Body Impact Tester

## Tire Endurance Testing



Drum Testing Machine

### 1. Drum Testing Machine

Brand : Allwell  
Model : AW-TT-1A-150/10,000-M2 (Truck & Bus Tire)  
Suitable Tire Size: Tire Width : 200-400mm  
Tire Diameter : 850-1200mm diameter  
Test Stations : Two positions  
Test Speed : 20-150km/hr  
Test Load : 1000-10,000 kgs by hydraulic oil cylinder  
Tire Broken Detector: 1. Detecting Bar - near O.D. surface of tire  
2. Proximity Switch - to check over stroke of tire

Test Standards Conformance: UNECE R54

### 2. Drum Testing Machine

Brand : Allwell  
Model : AW-TT-4A-300/2800-M2 (Passenger, Light Truck, Motor Cycle and Scooter Tire)  
Suitable Tire Size: Tire Width, max. : 350mm  
Tire Diameter : 350-800mm diameter  
Test Stations : Two positions  
Test Speed : 40-300km/hr  
Test Load : 110-2,800 kgs by hydraulic oil cylinder  
Tire Broken Detector: 1. Detecting Bar - near O.D. surface of tire  
2. Proximity Switch - to check over stroke of tire

Test Standards Conformance: UNECE R75, UNECE R30

Test Specimen : Light Trucks, Passenger Car, Motor Cycle and Scooter Tire conforming to the tire size above.



Portable Coating Thickness Tester

Equipment: Portable Coating Thickness Tester

Brand : ElectroPhysik

Model : MiniTest 720

Measuring Principle: magnetic induction and eddy current method

Measuring Range : 0 – 5 mm (F5 Sensor)

: 0 – 2.5 mm (N2.5 Sensor)

Test Standards Conformance: ASTM B499

Test Specimen:

All automotive painted components

## Accelerated Corrosion Tests

Equipment: Cyclic Corrosion Tester

Brand : Atlas

Model : CCX 2000

Exposure Volume : 20 cu. ft.

Internal Dimension : 50"x29"x25"

Features: Automatic cycling between salt fog, high humidity, dry-off, dwell and optional cycles

Exposure Zone: Temperature up to 71 °C

Test Standards Conformance:

SAE J2334, Ford BI-123-01, Ford APGE, GM9540P

Test Specimen:

All automotive components as long as it fits inside the chamber



Cyclic Corrosion Tester

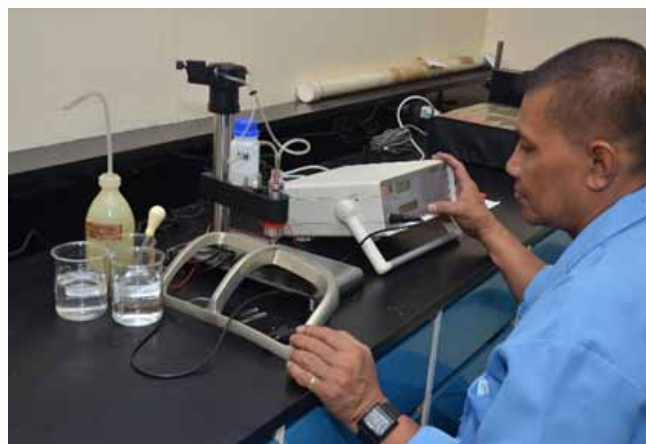
## Coating Thickness Measurement

Equipment: Galvano Test

Brand : ElectroPhysik  
Model : Galvano Test 3000  
Measuring Principle: coulometric de-plating method  
Measuring Range : 0.05 – 75  $\mu\text{m}$

Test Standards Conformance:  
DIN 50 955 and ISO 2177

Test Specimen:  
All electroplated automotive components



Galvano Test

## High Temperature Coating Test

Equipment: Furnace

Brand : Linn High Therm  
Model : KK-500.27  
Heating Power : 25 kW  
Inner Dimension: 610 x 900 x 920 mm  
Maximum Temp.: 1340  $^{\circ}\text{C}$

Test Standards Conformance: SAE, ASTM

Test Specimen: All automotive coated components



Furnace

# OTHER ATD TESTING SERVICES

## I. MECHANICAL TESTING

### Tension/Compression/Flexure/Deflection Test



50kN UTM

#### Equipment:

- 2000kN Universal Testing Machine
  - Brand : Shimadzu
  - Type : Servo-Hydraulic
  - Load Detector : Pressure Cell
  - Capacity : 2000kN
  - Testing Table Size : 850mm x 850mm
  - Maximum Crosshead Travel : 300mm
  - Maximum Crosshead Speed : 100mm/min
- 50kN Universal Testing Machine
  - Brand : Shimadzu
  - Type : Electro-mechanical
  - Load Detector : Load Cell
  - Capacity : 50kN
  - Testing Table Size : 450mm x 220mm
  - Maximum Crosshead Travel : 900mm
  - Maximum Crosshead Speed : 500mm/min

Test Standards Conformance: ASTM, JIS, ISO

#### Test Specimen:

Metallic material sheets, pipes, solid wires, small round bars, small reinforcing steel bars, small welded specimen, small bolts, other metallic materials and products

### Hardness Tests of Metallic Materials



Vickers and Rockwell Hardness Testers

#### Equipment:

- Rockwell Hardness Test
  - Rockwell Hardness Scales: Regular Rockwell (HRA, HRB, HRC)
  - : Superficial Hardness (HR15T, HR30T, HR45T, HR15N, HR30N, HR45N)
- Vickers Hardness Test, HV
  - Load Range : 1-50kg
- Portable Ultrasonic Contact Impedance (UCI) Hardness Test
  - Hardness Scale : HV convertible to HRC, HRB, HRA, HBW

Test Specimen: Large forging, Machinery parts, Shaftings

Test Standards Conformance: ASTM, JIS, ISO

#### Test Description:

Measure the hardness of surface under test and establish hardness profile on a weld joints

#### Test Specimen:

Metallic materials, forged products, heat treated mechanical parts; i.e. gears, shafting, valves, etc.; other metallic products, weld joints, etc.

## Impact Test of Metallic Materials



Charpy Impact Tester

Equipment: Pendulum Impact Tester

Brand : Amsler

Model: RKP300

Test Standards Conformance: ASTM, JIS, ISO

Test Description:

Establishing the rate of crack propagation under dynamic loading conditions either at room or at low temperature

Test Ambient Conditions:

1. Low Temperature (up to  $-65^{\circ}\text{C}$  using Ethanol Bath cooled using solid carbon dioxide, dry ice, continuously agitated) and,
2. room temperature

Test Specimen:

Metallic Materials, Metallic Products, Weld Joints, etc.



## II. NON-DESTRUCTIVE TESTING

### Ultrasonic Test



Ultrasonic Inspection

Equipment: GE Inspection Technologies

Model Base Metal Thickness : USM 35X

Range of detection : 8-9999 mm

Capabilities : Flaw Detection for weld joints, casting, forged materials, thickness gauging of base material

Probes: Normal (Single & Dual Crystal), Angle (45°, 60° & 70°)

Special Features: Distance Amplitude Curve (DAC) based on AWS and JIS

: Semi-automatic calibration

### Radiographic Test

Equipment: 300 kVA GE Siefert X-Ray Machine

- Agfa Strukturix Film Dryer
- Transmission Densitometer
- Radiographic Film Viewer

Recording Media:

- Agfa D7 Film
- Agfa Developer & Fixer

Penetrameters:

- ASTM Standards
- DIN Standards

Test Description:

Can detect internal defects on products and materials

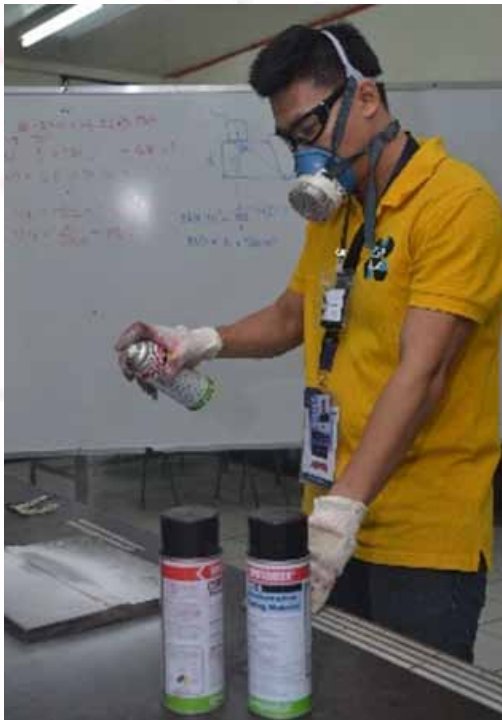
Test Specimen:

Metallic products and materials including aluminum, bronze, brass, steels, weld joints, composites etc.



Radiographic Testing

## Dye Penetrant Test



Dye Penetrant (Wet-visible) Inspection

### Equipment:

- UV - Light
- Photometer/Light meter

### Classification:

1. Type I - Fluorescent Penetrant Examination;  
Method C – Solvent Removable
2. Type II - Visible Penetrant Examination;  
Method B – Solvent Removable

### Test Description:

Can detect open-to-surface indications on non-porous materials

### Test Specimen:

Metallic products and materials including aluminum, bronze, brass, steels, weld joints, etc.

## Magnetic Particle Test



Magnetic Particle Inspection

### Equipment:

- Electro-Magnetic Yoke
- UV - Light
- Photometer/Light meter

### Method of Application and Color:

1. Wet Magnetic Particle, Spraying, Visible-Black
2. Wet Magnetic Particle, Spraying, Fluorescent-Yellow Green

### Test Description:

Can detect open-to-surface and near surface indications on magnetic materials

### Test Specimen:

Magnetic products and materials.

### III. PHYSICO-CHEMICAL ANALYSIS

#### Wet Analysis



Titrimetric Analysis (Cr, Mn, Sn)



Electro-Gravimetric Analysis (Cu)



Gravimetric Analysis (Si, Ni, Ag)

#### Instrumental Analysis



Atomic Absorption Spectrophotometer, AAS  
(Alloying elements)



Carbon-Sulfur Analyzer



Optical Emission Spectrometer, OES – Spark (Ferrous &  
Nonferrous materials - Cu, Al & Sn)



UV Visible Spectrophotometer (Mo & P)

### Physical and Electrical Calibration

MIRDC offers calibration services for the following measuring devices:

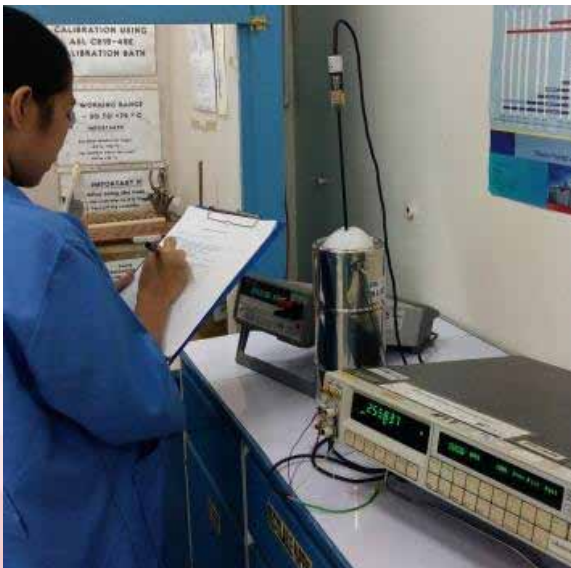
1. Temperature sensors
2. Ancillary temperature instruments
3. Temperature enclosures
4. Pressure gauges
5. Torque
6. Weighing devices
7. Force
8. Electrical

In-house and In-Plant calibration for the following tools/equipment:

1. Digital Multi-meter
2. High Voltage Probe
3. Resistors
4. Ultrasonic Tester
5. Weighing Scales (including Analytical Balance)
6. Temperature enclosure
7. Glass Thermometers
8. Digital Thermometers
9. Thermohygraph,



Calibration of pressure gauge using dead weight tester



Calibration of standard platinum resistance thermometer using ice-point reference

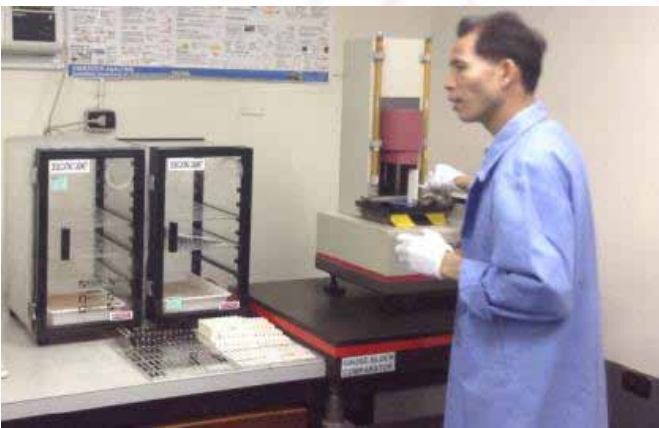


Calibration of electrical calibrator using a standard DMM

## Length Measurement



Verification of laser interferometer system



Calibration of Gauge Block using automatic gauge block comparator and grade 00 gauge block



Calibration of length standards, glass scale, metal rules using HP Laser and universal measuring machine

The Metrology Laboratory offers calibration of the following:

1. Limit gauges
2. Engineering metrology equipment
3. Machine tools
4. Surface topography
5. Length and angle standards
6. Dimensional precision instruments

In-house dimensional calibration for the following tools:

1. Vernier Caliper
2. Outside/Internal Micrometer
3. Gauge Block (Gr 0, Gr & Gr 2)
4. Dial Gauge
5. Height Master
6. Bevel Protractor
7. Spirit Level
8. Glass Scale
9. Steel Rule
10. Feeler Gauge
11. Plug Gauge
12. Pin Gauge
13. Depth Micrometer
14. Precision Square Master
15. Micrometer Head
16. Bore Gauge
17. Microindicator
18. Mu Checker
19. Caliper Checker
20. Calibration Tester
21. Setting Rod
22. Combination Set

In-Plant dimensional calibration of the following equipment:

1. Tool Makers Microscope
2. Profile Projector
3. Rockwell Hardness Tester (Rockwell B & C scale, Superficial Hardness Scale: HR30N & HR30T)
4. Universal Testing Machine (Force Calibration)
5. Layout Machine
6. Surface Plate
7. Universal Measuring Machine (UMM)
8. Measurement of Jigs and Fixtures
9. Calibration of Machines



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**Top Products:**

**HIRAYAMA** Environmental Chambers

**Nikon** X-Ray and NDT system

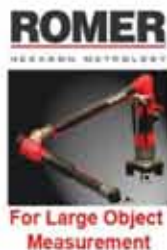
**Shinken**- Vibration Tester

**BRUKER** - Contact and Non-contact Surface Profiler, Universal Testing Machine

**MICRO-VU**- 3D Vision Measuring System

**PVA TEPLA**- Scanning Acoustic Microscope

Others : Salt Spray, Oven



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**“Working Together to Give you Quality Products and Services”**



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EXCLUSIVE DISTRIBUTOR

# OLYMPUS

Your Vision, Our Future

## Non Destructive Testing Equipment

## Other Products

### Ultrasonic Thickness Gauge



45 MG



27 MG



38 DL Plus



Magna Mike 8600

### Ultrasonic Flaw Detector / Eddy Current



OmniScan Mx2



Epoch 650



Nortec 600



OmniScan MX

- X-ray
- RT Accessories
- Positive Material Identification (PMI)
- Boroscope
- MPI Accessories, LPI Accessories
- Hardness Tester / Durometer
- Laboratory Equipment
- Maintenance Chemicals
- Steam Cleanser and Dragflow Dredging Machine
- Aircraft Parts and Accessories
- Calibration & Services

And Others as requested

Eagle Wings Enterprises is a trader company that has been engaging in the trading business since June 2001. The nature of these is duty authorized to engage in: Business of trading goods such as; NDT Equipment, Chemicals and Accessories, Industrial & Laboratory equipment, U.S. Military Approved Chemicals, Aircraft parts and Gen Maintenance chemicals, Ground support equipment & chemicals, Safety equipment, Lube Oil/Lubricants/ Hydraulic Fluid/ Grease/ adhesive/Sealants(MIL specs), Electroplating equipment, chemicals & Services.

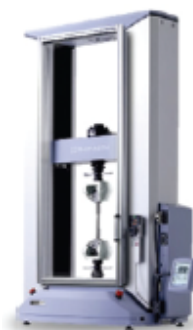


# SHIMADZU

## Excellence in Science



Servo-hydraulic  
Actuator for Dynamic Testing



Electro-mechanical  
Universal Testing Machine



Servo-hydraulic  
Universal Testing Machine

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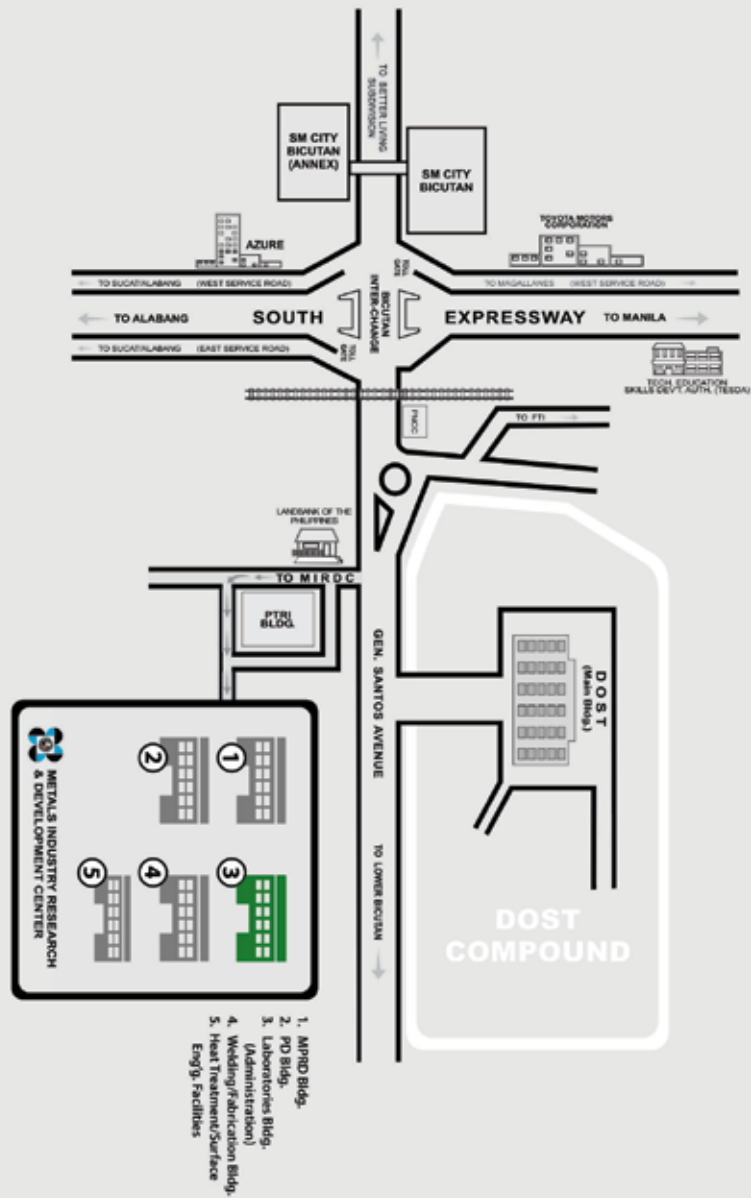
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