

### CORROSION TESTING

- Accelerated corrosion testing through salt spray test; and
- Physical testing of coatings
  - Mass/thickness determination
  - Hardness
  - Adhesion

### MECHANICAL TESTING

Burst Testing, Hydrostatic, and Air Pressure Testing

For Household LPG Cylinders\*

- PNS 03-1:2000
- PNS 03-2:2000

For Automotive LPG Cylinders\*

- PNS 04:1983

For Various Metallic Materials and Products

- Tension and Bend Test;
  - for ASTM and PNS requirements
- Tension and Bend Testing of Welded Material;
  - for ASME, AWS requirements
- Impact Testing (ASTM E23);
- Hardness Testing (Rockwell, Brinell, Vickers, Knoop, Ultrasonic Compact Impedance); and
- Tensile and Bend Testing
  - for ASTM and BPS requirements

### CALIBRATION & METROLOGY

For Torque Calibration

- Torque Meters, Analyzers;
- Wrenches and Drivers Torque; and
- Calibration at industrial level accuracy for 9.8 to 98 N-m range

For Fixed Gauges, Standard Glass Scales, Metal Rules

- Laser Interferometer System coupled with Universal Measuring System

### NONDESTRUCTIVE TESTING

Ultrasonic Testing using Ultrasonic Flaw Detector and Phased Array UT

- for AWS and ASME standards

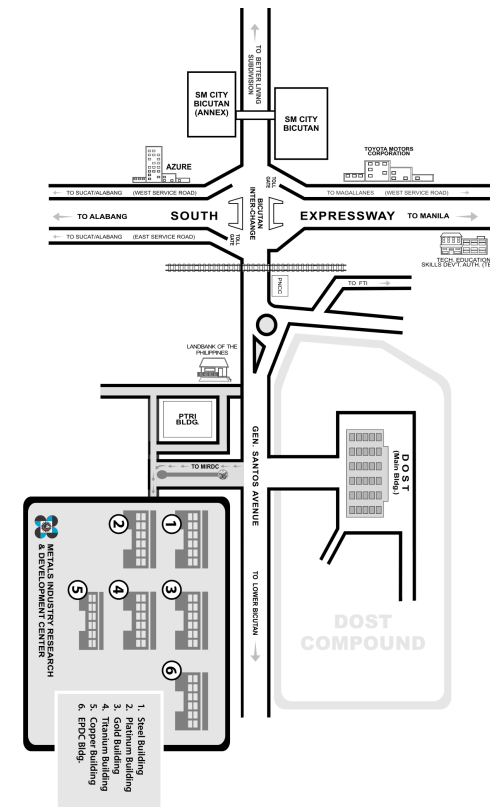
### AUTO-PARTS TESTING

- Material Tests;
- Product Tests;
- Tests on Coating;
- Vibration Testing;
- Fatigue Testing; and
- Tire Endurance Testing

\* Mandatory test requirements of the Bureau of Products Standards (BPS) using the PNS



## LOCATION MAP



# METALS INDUSTRY RESEARCH and DEVELOPMENT CENTER

Molding the Future of Metal Industries

### VISION

Center of 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 & development; technology transfer; and business economics advisory services.

### STRATEGIC OBJECTIVES

- Focus on Customers
- Industry Competitiveness
- Responsive to National Priorities
- Service Improvement
- Technological Self-Reliance

### CORE VALUES

- PROFESSIONALISM
- RESPONSIVENESS
- INTEGRITY
- DYNAMISM
- EXCELLENCE

for more information, please write, fax, call, or email:



DEPARTMENT OF SCIENCE AND TECHNOLOGY  
METALS INDUSTRY RESEARCH AND DEVELOPMENT CENTER

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## ***TECHNOLOGY DEVELOPMENT***

The Center assists metals and engineering enterprises through R&D to come up with new or improved products, processes and materials and equipment prototypes by offering:

- Contract Researches
- Joint Researches
- Engineering Design Services
- Technology Dev't.

## **DESIGN & ENGINEERING**

The Center's design, engineering, and prototyping capabilities are now ready to match the current technical applications for the development of machineries, parts, and engineered products. Higher processing power, graphics, memory capacity, and multitasking capability which are all vital in displaying and manipulating complex data such as 3D mechanical design, engineering simulation results, and mathematical plots as part of engineering analysis and design visualization.

The use of these design softwares allow product visualization and simulation that enable the design engineers and technicians to eliminate common design bottlenecks, detect collision among equipment assemblies, or determine stress/strain levels, etc. which are critical to improve design and performance, avoid premature failure, or correct over design factors.

## **METALWORKING**

The Center utilizes conventional and specialized machining processes in the development of tools, dies, molds, jigs and fixtures, and components.

## **MACHINING**

To provide a comprehensive range of advanced machining services to the industry, computer numerically-controlled (CNC) facilities are available at the Center for developing and producing precise products, specifically for the fabrication of precision cylindrical parts such as lead screws, guide pins, mold and die components. These CNC machines allow the production of parts and components of machines, dies, molds, and others with intricate, complicated or even irregular shapes at high precision, speed and tolerance, greater accuracy, smooth finish, and consistency.

## **WELDING & FABRICATION**

The Center's R&D activities and fabrication capability, particularly on equipment development and prototyping, are

augmented by mechanical or automated steel sheets/plates cutting facilities such as laser plasma and shear cutters and welding machines such as TIG and SMAW.

The welding machines are utilized for welding of metal plates/sheets and ferrous and non-ferrous metals. These machines are also used by the Center for its industrial training services and trade testing in support of the trade accreditation program of TESDA for engineers, technicians and craftsmen from industry.

## **METALCASTING**

Using specialized metalcasting technology such as investment casting and conventional casting capabilities, the MIRDC undertakes prototype production of engineered parts and products. Likewise, cast product localization and alloy formulation are also accommodated through contract research activity. The Center also offers rental of facilities to SMEs through its time-sharing scheme.

## **SURFACE ENGINEERING**

The MIRDC employs a broad range of industrial processes, called surface finishing, to alter the surface of manufactured products in order to achieve a desired property.

The most widely used surface treatments are meant to improve appearance; adhesion or wettability, corrosion, tarnish, wear, and chemical resistance; and hardness. Moreover, these surface finishing processes modify electrical conductivity, remove burrs and other surface flaws, and control surface friction.

## **HEAT TREATMENT**

The Center offers (1) Vacuum Heat Treatment and (2) Conventional Heat Treatment to enable MSMEs to meet prevailing and future requirements of the M&E industries.

## **ELECTROPLATING**

This process usually employs direct current (DC). The MIRDC performs non-cyanide gold plating, copper plating, nickel plating, and chrome plating.

## **ANODIZING**

Hard coat anodizing prevents any thermal or physical distortion of precision-engineered components made from aluminum. Anodized aluminum is used in thousands of applications. More importantly, these materials have a life cycle that is relatively benign to the environment.

## **PULSE PLATING**

Pulse plated deposits tend to build up with straight walls. With this technology, overall plating thickness, weight, and manufacturing time are reduced.

## **METALLURGICAL ANALYSIS**

## ***TECHNOLOGY TRANSFER***

## **TECHNICAL CONSULTANCY & EXTENSION SERVICES**

Our team of experts speeds up technology transfer by conducting consultancy services to improve productivity and upgrade product quality. Its technical assistance program includes:

- Conduct of management/technical consultancy;
- Preparation of feasibility studies;
- Conduct of liaison work between the private sector and government agencies; and
- Extension of S&T service to the regions

To promote the development of the metals and engineering industries in the countryside, extension offices are established in the following regions:

- Region VI (La Paz, Iloilo City)
- Region X (Carmen, Cagayan de Oro City)

## **TECHNOLOGY LICENSING AND COMMERCIALIZATION**

The Center undertakes IP and IPR licensing, transfer and commercialization of all MIRDC-developed technologies on:

- Industrial Machineries and Equipment;
- Food Processing Equipment;
- Agro-Industrial Equipment;
- Mass Transport; and
- Others

## **INDUSTRIAL TRAINING**

The Center designs and implements relevant training modules which continuously upgrade the competency of Filipino entrepreneurs, engineers, and technicians to meet the demands of local and international markets.

Its compendium of training programs covers the following areas:

- Metalworking Technology
- Metalcasting Technology
- Analysis and Testing
- Quality Management System
- Productivity Improvement

- Management and Supervisory
- Engineering/Production Planning
- Trainer's Training Program
- High Machining Technology

## **INDUSTRY AND ACADEME LINKAGE**

The perpetual drain and imbalance in the number of college educated and skilled workforce cause a gap between the supply and demand for skilled labor in the country today. To bridge the gap, MIRDC initiates linkages with the industry and the academe. In this manner, critical areas in the labor market where demand exists are identified and matched with an adequate supply of skilled workforce.

## **TECHNICAL INFORMATION DISSEMINATION**

MIRDC disseminates the latest information on relevant technologies, products, processes, and markets through:

- Industry studies;
- Technical information brochures on newly-developed or adopted technologies;
- Technology demonstrations;
- Exhibits/fairs; and
- Plant tours

## ***TECHNICAL SERVICES***

## **ANALYSIS AND TESTING**

A comprehensive range of new and expanded testing and analytical services is provided by the Center's laboratories to assist the industry in ensuring high quality metal products necessary for continued competitiveness in both local and foreign markets. The new range of test and calibration services involves the mandatory test requirements of the Bureau of Product Standards (BPS) using the PNS. The services include:

- Chemical Analysis
- Corrosion Testing
- Mechanical Testing
- Calibration and Metrology
- Nondestructive Testing

## **CHEMICAL ANALYSIS**

For the determination of the composition and concentration of various metals and alloys using instrumental and wet method.