metals industry
TRENDS & EVENTS
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MIRDC and MakiBayan Program Rev Up the Industry in the 2012 M&E Week Celebration

DOST Secretary Mario G. Montejo delivers the Inspirational Message during the M&E Week Conference.

The theme "MakiBayan: Makinarya at Teknolohiya Para Sa Bayan," or simply MakiBayan, aptly reflects the direction in which the local metals, engineering and allied industries is headed. The Metals Industry Research and Development Center (MIRDC), in cooperation with the Metal Engineering Industry Foundation, Inc. (MEIFI), held this year's M&E Week Conference last 19 June 2012 at the Traders Hotel Manila. MIRDC's Executive Director Arthur Lucas D. Cruz gave the Opening Remarks followed by the Keynote Address delivered by Dr. Ceferino L. Follosco, who is this year's recipient of the MIRDC Legacy Trophy for his outstanding achievement and excellence in his profession that helped to improve and enhance the performance of the M&E industries. The event was also graced by the Hon. Mario G. Montejo, Department of Science and Technology (DOST) Secretary, who gave the Inspirational Message.

The M&E Week Conference was highlighted with the Memorandum of Agreement (MOA) signing between the

Continuation on p3

Competitiveness Roadmap for the Tool and Die and Metalcasting Industries

(an excerpt from the presentation of Dr. Agustin M. Fudolig)

Pending the gathering and analysis of new data, preliminary information was presented to key players of the metalworking industry, academe, government and science community in a presentation entitled "Competitiveness Roadmap for the Tool & Die Metalcasting Industries" by Dr. Agustin M. Fudolig, MIRDC's Deputy Executive Director for Technical Services. The said presentation was delivered during the Industry and Technology Forum at the SMX Convention Center last 12 July 2012.

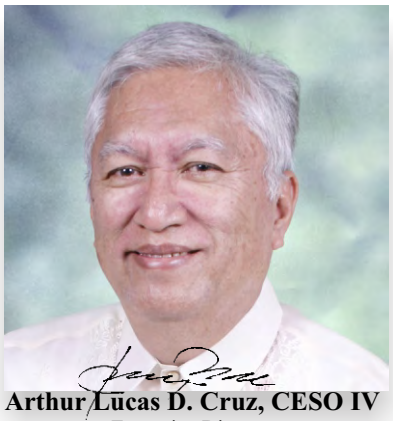
The goal is to gather sector's information that would serve as inputs to the national comprehensive industrial strategy as envisioned in the Philippine Development Plan 2011-2016. The information gathered will then be used to serve as guide in the crafting of the annual Investment Priorities Plan (IPP), to aid in defining government positions/strategy for trade and investment negotiations, and to identify value-chain gaps to guide investments promotion. The contribution of these industries to the

Continuation on p3


Dr. Agustin M. Fudolig presents roadmap to the tool and die and metalcasting industry players.

In this issue

From the Executive Director...



Arthur Lucas D. Cruz, CESO IV
Executive Director

It is the MIRDC's pride that we have been given the Philippine Quality Award (PQA) Level 1 – Commitment to Quality Management. The very same recognition also signifies the Center's strong and lasting resolve to serve the metals and engineering industries.

Our commitment to support the growth and global competitiveness of the M&E industries shines through in all the Center's initiatives. The celebration of the 2012 M&E Week conference was a remarkable success wherein the MIRDC made its partnership with the Philippine National Railways and the MIESCOR Builders, Inc. official through a Memorandum of Agreement and contract signing. The ongoing MakiBayan Program of the DOST, which was also the M&E Week celebration's theme, has the potential to provide valuable contribution to the nation's efforts toward modernization and industrialization. The wheels were set into motion for several projects relevant to the MakiBayan. With MIRDC's collaboration with the Metalworking Industries Association of the Philippines, the Philippine Die and Mold Association, and the Electronics Industries Association of the Philippines, Inc., the science community is definitely going to make things happen for the country.

In conjunction with the M&E Week is the Center's celebration of its 46th Founding Anniversary. The anniversary celebration was an opportune time to recognize employees who have been doing consistently well and even performed way beyond expectations during the past years. Members of the Center's ever-reliable and competent workforce deserve to be acknowledged because it is their hard work that has led the Center to its numerous accomplishments through the years. It is also our award-winning employees who will serve as inspiration to the new members of the MIRDC family.

The MIRDC conducted a Focus Group Discussion in the month of June. The FGD zoomed in on "Revisiting the Industry Roadmaps on Tool and Die, and Machining and Fabrication" and "CNC Training Curriculum Design," the latter was conducted in preparation for the implementation of the project "Development and Implementation of Appropriate Training Curriculum Design for CNC Machine Tool Programming and Operation as Human Resource Intervention for the Sustainable Growth, Productivity and Competitiveness of the Metals and Engineering Sector." A healthy discussion transpired and information gathered from the FGD will be used for a more effective delivery of the project, whose success will ultimately benefit the general public.

This July, the MIRDC joined the MakinaSaka Exhibition of the Philippine Center for Postharvest Development and Mechanization, and the 2012 National Science and Technology Week celebration along with the other agencies under the DOST. The development of the Equipment Manufacturing Cluster in Region 2, the introduction of the CREAMM Program in CAR, and the establishment of the CAIMTEC, the first industry cluster in CAR, are some of the highlights of our most recent accomplishments. Motivated to give the MSMEs in the countryside a boost, the Center is set to launch a series of technical training in order to further build capabilities and enhance the competitive edge of the M&E industries. These activities will be conducted with the MIRDC's close cooperation with both public and private sectors demonstrating Public-Private Partnership at its best.

The MIRDC recently completed two of its newest publications: the 2012 Experts in the M&E Industries and the Equipment Fabricators Directory 2012, with the aim of helping enterprises in the M&E industries establish a wide network among themselves and with prospective clients.

Moving on into the last segment of the year, we all have reason to be optimistic. The MIRDC continuously involves itself in significant endeavors to make things happen for the industry.

2012 continues to be a year of big achievements for the MIRDC. With stronger collaboration, great things are in store for the M&E stakeholders, partners, producers and consumers. The activities that are already accomplished and those that are still in the pipeline bear witness to the Center's commitment to support the M&E industries.

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Layout/Graphics

Ronald L. Agustin

Printing

Ronald L. Agustin
Reynaldo M. Loreto, Jr.

Circulation

Josephine R. Esguerra
Eugenio R. Mercado
Dolly Marie T. Talaron

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Editorial Office:

MIRDC Compound, General Santos Ave.
Bicutan, Taguig City, Philippines
P.O.Box 2449 MCPO, Makati
1299 M.M., Philippines

Tel. Nos.:
(MIRDC Trunklines) (632) 837-0431 to 38
(DOST Trunklines) (632) 837-2071 to 90
locs. 2401 & 2407

Fax No.: (632) 837-0430/837-0764

Website: http://www.mirdc.dost.gov.ph

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MIRDC and MakiBayan Program...from cover

MIRDC and the Philippine National Railways (PNR), and the contract signing between the MIRDC and MIESCOR Builders, Inc. Adhering to its mission of serving the metals and engineering industries, the MIRDC continues to embark on significant initiatives which serve to forge stronger ties with both public and private sectors.

The MIRDC-PNR MOA was inked with the aim of locally developing a pilot lot of commercial trainsets which can be used for PNR services. With the recognition of the railway industry as an important agent of national progress and growth, the country will soon benefit from this initiative since the localization of railcars and railcar parts and components will lead to cost-effective, accessible, and sustainable nationwide railway system.

The contract between the MIRDC and the MIESCOR Builders, Inc., on the other hand, is in connection with the Center's on-going project entitled "Development of Elevated Test Track for the Automated Guideway Transit (AGT) System Prototype of UP Diliman." MIESCOR, through this contract, is named as the Center's partner in the completion of the said AGT infrastructure. The project aims to bring to reality a mass transportation system whose operation is anchored on the concept of green technology.

Another major part of the event is the presentation of the plans and programs of the associations who have partnered with the DOST and the MIRDC for the MakiBayan Program, the MOU signing of which was held last 16 April 2012.

Philippine Die and Mold Association (PDMA) President, Mr. Antonio T. Fuster, revealed his idea of a Common Service Facility to be named "Die and Mold Solution Center." Mr. Virgilio F. Lanzuela, National President of the Metalworking Industries Association of the Philippines (MIAP), committed its support to ongoing projects of DOST and MIRDC, while Electronics Industries Association of the Philippines, Inc. (EIAPI) President, Mr. Alex S.E. Sy, offered its assistance through its electronic controls and automation expertise to produce machineries and equipment.

"We recognize and acknowledge what you can do to address public issues, public problems," said Sec. Montejo during his inspirational talk, referring to the industry associations and their valuable contribution to the success of government initiatives such as the MakiBayan Program. The DOST Secretary further emphasized the role of public-private partnership in making local technologies work. "We collaborate towards the direction of relying on ourselves to come up with local equipment, local processes, local products," he commented.

The 2012 M&E Week celebration and the MakiBayan Program stirred the industry's interests and has elicited among the industry associations their cooperation and commitment to share skills, expertise and resources. The Center's intention of making the M&E industries one of the country's agents of positive change is indeed a success waiting to happen.

Competitiveness Roadmap...from cover

Table 1. 2011 GDP (in PhP Billion)

GDP	PhP 9,734	100%
Agriculture	1,245	12.8%
Services	5,419	55.7%
Industry	3,070	31.5%

Philippine economy is shown in table 1 (see page 3).

A small percentage of GDP is shared by the tool and die industry and still smaller than that shared by the metalcasting industry. The market served by Philippine tool and die shops are: 39% plastics, 32% pressworking/stamping, 18% electronics and 10% appliances. Others consists of 8% rubber, 6% diecasting, 3% forging and 1% glassmaking.

The importation of dies and molds shows that there was an increase from 2003 to 2005 from $40 million to $43 million, then dropped in 2006 until 2009 at $15 million and increased again to $20 million in 2010. The exportation increased from about $2 million in 2003 to more than $3 million in 2005, then dropped also in 2007 and attempted to rise in 2008 until 2009, then a big drop in 2010.

The importation on metal casting products increased substantially from about $7 million in 2006 to $443 million in 2007, slightly decreased in 2008 but rose to $489 million in 2009. Exportation of cast products increased also in 2007 with $260 million, dropped to $143 million in 2008 and increased slightly to $193 million in 2009.

The Philippine metal casting industry has among the lowest casting output in the ASEAN. There are approximately 195 metal casting companies in the Philippines. The industry employs about 12,285 people. Most metalcasters are small businesses, of which 94% employ less than 250. The majority of metalcasters are located in Metro Manila.

The technology roadmaps, the industry structures and the missions, visions and targets for the tool and die and metalcasting sectors are already available.

An evaluation of the Philippine foundries described the strategies of the sector to be not clearly visible. Foundries face challenges due to their lack of knowledge and experience. The focus on a one-product/one client strategy creates a long-term unsustainable market position. Professional foundry management is only on the initial stages. Connections with clients count more than a strategy. Table 2 (turn to page 4) shows the comparison of some Asian tool & die industries.

The SWOT Analysis

Tool and Die Industry

The skills and competence of tool and die engineers, technicians and specialists serve as the strength of the tool and die industry. The weaknesses are: the Philippines is not yet well known around the world as a metal-producing country; the high cost of inputs, i.e. raw materials, power, manpower, cost of production,

Table 2. Comparison of Some Asian Tool & Die Industries*

Countries	No. of Shops	Estimated Total Local Demand** US$ Million
Philippines	170	68 (estimate)
Indonesia	280	333
Malaysia	410	273
Singapore	1,200	840
Thailand	1,110	760
China	30,000	12,760
India	NA	2,500
Japan	6,700	18,400
Korea	4,000	2,800
Taiwan	3,500	1,780

*The Philippine Tool and Die Industry: A 2006 Study and FADMA Country Reports, 2007
**Cost of Local Production + Importation

biochemical and molds and the unavailability of raw materials in the Philippines; the lack of capital, funding/budget issues for acquiring the technology in order to be more competitive; shortage of competent and skilled tool and die engineers, technicians and specialists; limited capability on repair of CNC machines; inability to upgrade capability in terms of software applications; low salary in local tool and die sector causes skilled Filipinos to go abroad; and limited capability to supply the dies and mold requirements of local industries. The opportunities are: the use and the availability of the latest technologies and materials for production, foreign exchange rates, competitiveness of the Philippine tool and die products, demand for metal products, trade fair participation, developments for local and global markets, alignment of MIRDC and DOST programs to industry needs. The Philippines is one of the growing countries in Asia with 24% increase in consumption of steel. Foreign investments are growing and requirements for skilled Filipino manpower are increasing. The threats are the cheap imported products from China, i.e. glass, molds, rubber molds, stamping dies, jigs and fixtures/China-made dies and molds that are flooding the market. The tool and die production in China and Vietnam is on the increasing trend. These two countries rank higher than the Philippines in imports and exports because of cheaper production and labor costs. High tariff costs limit Philippine exports.

The tool and die sector must be given more attention by the government because it supports other industries such as automotive, electronics, bottling, furniture and plastics.

Metalcasting Industry

The strengths of the metalcasting industry are: basic foundation for the production of ferrous and non-ferrous castings is established (in terms of equipment, technology, manpower, and expertise); the location is practically accessible by sea anywhere in the world; trainable workers and production of good quality castings that are acceptable in the foreign market. The weaknesses are: unable to establish stable and growing market demand both local and abroad; limited access to design tools and processes; unable to implement/spearhead innovations; both technical and marketing barriers prevent casters from fully communicating the advantages that can be gained from castings; not self-reliant, inadequate driving force to develop/invent/innovate own product/product lines; lack of resources (financial, manpower) for research; limited knowledge/ignorance in metalcasting technologies; molten metal handling is still manually done; difficulty in sourcing steel/raw materials; most firms do not have the necessary machinery and equipment to carry out its production effectively and efficiently; and low productivity caused by low mechanization levels because of difficulty of obtaining good financial packages. The opportunities are: availability of design tools; the government can play a key role in helping to coordinate existing research and technologies; Filipino workers are one of the best especially when they are working abroad; and opportune to localize machine parts since imported ones are expensive. The threats are: shifts in the types of material or processes used for a given product; downsizing of end-products; continued loss of domestic castings markets to foreign metalcasters; stringent environmental considerations; human resources which share a common misconcept that metalcasting is not an attractive career; reliance to imported supply; only few academic institutions are offering foundry technical course; most raw materials are imported and expensive; influx of imported steel products (low priced, better quality); and rising cost of raw materials, fuel and energy.

Strategies & Targets

The strategies recommended focus on the following areas: Human Resources, Materials Technology, Manufacturing Technology, Environment Technology, and Products and Markets. The long term targets for the metalcasting industry are: communicate the value of metalcastings, design castings for new markets, improve metalcasting processes and attract new workforce and student. Through improved casting design methods, alloy properties, alloy performance data, and casting performance simulation techniques, annual market growth rates for metalcasting shipments (based on value of shipments) will average 3% or more through 2025. By the combination of average melting and mold yield for each metalcasting alloy/process family will increase significantly so that, in aggregate, the metalcasting industry's yields will increase by 20% from current levels.

MIRDC Undertakes Machine Building Program

The Center braced its support to the Department of Science & Technology (DOST) Priority Programs as it recently initiated projects in the field of manufacturing/engineering which is one of the DOST priority areas. To further develop MIRDC's capability on machine tool building, the Center had set off a Machine Building Program aimed to undertake technology development activities that will introduce relevant and appropriate technologies for industry competitiveness and countryside development. The Project Management Engineering and Design Service Office (PMEDSO) of the DOST committed to assist the Center in the review of the projects' design requirements.

The Machine Building Program kicked-off with three (3) projects, namely: (1) Development of Computer Numerical Control (CNC) Router for Furniture Industry; (2) Development of CNC Plasma Cutting Machine for Sheet Metal Fabrication Industry; and (3) Design and Fabrication of 6-Axis Robotic Arm. Engr. Fred P. Liza, Officer-in-Charge of the Prototyping Division is the over-all Program Leader with Engineers Jayson P. Rogelio, Cameron B. Yao, and Remartin S. Maglantay as Project Leaders. The project started in May 2012, and is expected to be completed next year. A one-year duration is set to complete the projects' activities.

The CNC Router Machine is designed for 3-axis machining and for non-ferrous metals application. Its main objective is to design a machine with the same accuracy compared with the existing model at a reasonable price.

Another project that will upgrade the capability of the Center's machining operation is the "Development of CNC Plasma Cutting Machine for Sheet Metal Fabrication." Plasma cutting is a vital process for any metal fabrication shop. CNC technology gives plasma cutting machines greater flexibility to cut diverse shapes "on demand" based on a set of instructions that are programmed into the machine's numerical control.

And lastly, the third project entitled "Design and Fabrication of 6-Axis Robotic Arm" is intended to design and develop a 6-Axis programmable robotic arm for multiple application through attachment of specific assembly of purpose.

The completion and success of these projects will not only upgrade the capability of MIRDC's high machining technology, but will contribute to the industry's technological competitiveness.

MIRDC @ 46th Anniversary

In line with the Metals Industry Research and Development Center's 46th Founding Anniversary held on 18 June 2012, and in conjunction with the Metals and Engineering (M&E) Week (18 – 22 June 2012), the MIRDC organized various programs/activities related to science and technology.

One of the highlights of the said activities is the conduct of a Focus Group Discussion (FGD) facilitated by Dr. Danilo N. Pilar, chief of the Technology Diffusion Division. The FGD, entitled "Revisiting of the Technology Roadmaps on the Tool and Die and Machining and Fabrication Sectors," was held on 18 June 2012. The activity aimed to address issues and concerns of the M&E industries and come up with more highly-focused technology roadmaps on both sectors.

In the afternoon of the same date, the CNC Programming and Operations Training Curriculum Design was presented in preparation for the implementation of the MIRDC project entitled: "Development and Implementation of Appropriate Training Curriculum Design for CNC Machine Tool Programming and Operation as Human Resource Intervention for the Sustainable Growth, Productivity and Competitiveness of the Metals and Engineering Sector." This project aims to address the brain drain of CNC operators and programmers. The conduct of CNC Training Curriculum Design is one way of addressing the need to come up with the right curriculum that will effectively match the requirements of the industry. The whole-day activities were attended and participated in by industry players of the metals and engineering industries.

In addition to the said events, the Center conducted Information Seminars with regard to the technologies being promoted by the Center. Conducted seminars were: Wrought Iron Forming; Electroplating Process; Shielded Metal Arc Welding (SMAW); and Oxy-acetylene Welding (OAW). There were 51 participants coming from barangays and academe who participated and benefited in the said programs.

19 July 2012 marked the celebration of the "Employees Day" which was held at Traders Hotel, Manila. It was a great opportunity for

the officers and employees to wear their best formal attire and walk on the red carpet. The Executive Director went table-hopping for picture taking, these special moments serve as remembrances of the affair. To add up a thrill, the male and female Star of the Day were chosen during the event, and awardees came from the Materials and Process Research Division (MPRD) and Prototyping Division (PD). Monetary awards of appreciation were given to deserving employees and Loyalty awards were given to employees who rendered long years of service.

Not forgetting to include fun and entertainment, every division presented their numbers portraying the realization of the vision and mission of the MIRDC through dancing, singing, and acting. It highlighted the dedication, commitment, and direction of each employee as MIRDC aims to achieve PQA level III in 2015. The MPRD received the first prize while the rest of the divisions received special awards. Moreover, employees from the Technology Diffusion Division (TDD) bagged the Best Male and Female Performer Awards.

Further, MIRDC employees never failed to miss the bingo social hosted by the MIRDC Employees Mutual Assistance Benefits Association, Inc. (MEMABAI). Bingo prizes were at stake with several employees lucky enough to win the best prizes. This social activity is a time for relaxation and bonding moment for employees from the top management down to the rank and file. The invited singer/entertainer added color and excitement to the event with laughter and dances as she belted out her song numbers.

MIRDC Features Its Newest Technologies at 2012 NSTW

This year's annual "NATIONAL SCIENCE TECHNOLOGY WEEK" of the Department of Science and Technology (DOST) was held successfully from 10-14 July 2012 at the SMX Convention Center, Diosdado Macapagal Avenue, Pasay City. Themed as "Science, Technology and Innovation: Working Together for Growth and Development," this year's NSTW showcased the DOST's latest R&D results and developed technologies, innovations and winning inventions from regions.

The MIRDC featured its newest technologies such as pandanus leaves presser-slitter, hydroseeder, and sweet sorghum juicer/sugarcane crusher. The pandanus leaves presser-slitter is a machine designed to press bariw leaves (other name for pandan) to flatten and cut them into several strips in preparation for handicraft-making such as mats, hats, baskets, slippers, handbags, portfolios, decors and other fancy items. The Sweet Sorghum Juicer/Sugar-cane Crusher extracts juice from the sugar-rich stalks of sweet sorghum/sugarcane. As Sweet Sorghum Juicer, the extract produced by the machine is used in the production of table syrup and ethanol while as Sugarcane Crusher, the juice extracted from the sugarcane is then used for the production of "Muscovado" sugar. On the other hand, bare, steep-sloped terrains are made stable through the application of erosion control materials such as mulch and grass seeds by means of a process called hydroseeding. The high pressure within the trailer-mounted Hydroseeder system enables it to take the seeds to hard-to-reach slopes. The growth of vegetation along these usually bare areas helps prevent erosion and high velocity of run-off during rainy seasons.

Featured at the DOST Centerpiece of the NSTW were the Automated Guideway Transit (AGT) System and Harvester for Water Hyacinth Management of Major Waterways System. These were prototyped by the Center in collaboration with DOST. The AGT System aims to answer the country's urban traffic battles and the growing desire for ecologically-aware methods of using energy. Certainly, its use will largely lessen the country's dependence on fossil-fuelled transport. Meanwhile, the water hyacinth harvester is designed to efficiently remove proliferating water hyacinth in still waters that causes constant flooding.

The NSTW was held in conjunction with the National Invention Contest and Exhibits (NICE) aimed at encouraging the value of inventiveness and promoting the use of technology as the main strategy towards development. The program of activities includes, among others, technology & industry forum and invention demonstrations. The event was participated in by the MIRDC, along with other exhibitors that include 20 DOST agencies and DOST Regional offices, academe, private organizations, government, and NICE finalists. The event was attended by entrepreneurs, academicians, students, government agencies, NGOs, and embassy guests.

Software with intuitive workflow interface for applications in metallography

By providing a workflow approach where users can simply acquire and analyze their images, sample quality is easily determined in line with internationally recognized guidelines and standards. The Olympus Stream Solution enable users to easily capture and analyze any image for niche applications quickly and precisely and in compliance with common international standards. Detailed in an educational demo video, the grain sizing solutions are easy to use for beginners and experienced users alike, enabling accurate determination of the steel quality. The solutions are an optional component to the Olympus Stream software, which provides a completely intuitive workflow interface to accurately image and measure the microstructure of any sample.

The GrainSize Intercept Solution allows steel manufacturers to measure and control grain size, following cross-sectioning, polishing or etching. The software automatically calculates the grain size number (G number), while users can easily define the number if test lines for determining grain elongation. All resulting data are stored with the image for data mining. In addition, the Grain Size Planimetric Solution uses a new algorithm to extract grain boundaries, providing a guided measurement of the distribution of grain index.

Source: MPT International 1/2012, p.72

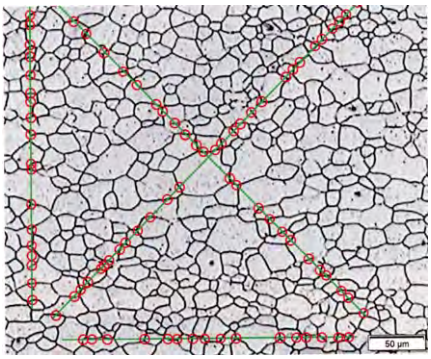


Image of grain boundary analysis

Upgrade for fracture and fatigue testers

In component and structural testing involving fracture and fatigue measurements of, for example, samples under tensile, compression, pulsating and fatigue loads, Zwick Vibrophores@ provide excellent reliability and accuracy in key applications. Now, Zwick Roell offers ZMART.PRO, a modernization and retrofit technology package for Vibrophores. Standard ZMART.PRO kits include everything needed to upgrade any existing Vibrophore system: VibroWin digital measurement and control electronics, testXpert@ testing software and a new load cell or conversion kit for existing load cells. Where required, the basic package also includes a conversion kit for additional components such as an extensometer, and a new static and/or dynamic drive.

The ever increasing loads on internal combustion engines mean that fracture mechanics and fatigue tests on components are essential. With testing frequencies of up to 300 Hz, the Zwick Vibrophore ensures that test times are short and specimen throughput is high, making them ideal for QA testing of engine components such as crankshafts, connecting rods, bolts and screws from production lines.


Fracture toughness testing

Source: MPT International 1/2012, p.73

Ceramic filters for steel and large iron castings

Ceramic foam filters on zirconium oxide and SiC basis or filters on graphite basis used to be the only viable options for foundries making steel and large iron castings. Both of these filter types, however, have major drawbacks as they are expensive and break very easily. Uncontrolled filter breakage and heavy variations in the characteristics of flow occurred often.

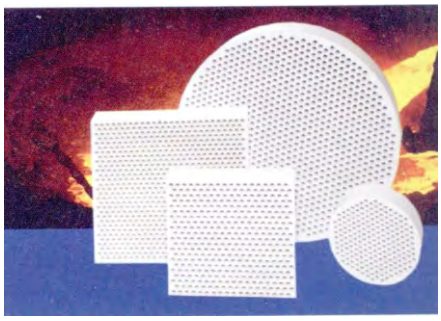
For smaller castings, pressed ceramic filters with round holes have been state of the art for many years. Due to their excellent filtering performance, which is a result of their controlled mechanical and hydraulic properties, these filters have been increasingly replacing filters made of ceramic foam. However, so far theses filters have been available solely for casting temperatures up to 1,450°C and for maximum molten metal weights of 500 kg. Nevertheless, due to their excellent mechanical properties, these filters have been successfully employed in the production of large iron castings of more than 80 t. This, however, involves the use of a great number of filters per casting. Therefore the design of the gating system is highly complicated.

Hofmann Ceramic, Breitscheid/Germany, developed a new high-performance ceramic mass on mullit basis (traded under the name Hipercast), which enables the production of pressed filters reaching performance values so far unattainable for single filter units. In tests, these filters withstood casting temperatures of up to 1,750°C.

The benefit for the foundry:

- The hydraulic properties can be more precisely calculated;
- the mechanical properties provide high breaking strength;
- the filtration results are highly predictable and reproducible; the saving potential for return material and sand is extremely high.

Source: Casting Plant & Technology 2/2012, p.54

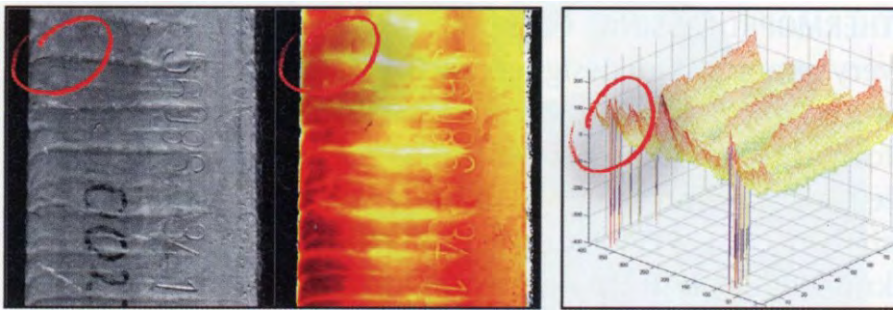


Advanced optical 3D inspection for slabs

Steel producers benefit from a new generation of 3D surface inspection through yield maximization, rapid ROI and the possibility of systematic process optimization. ISRA Parsytec has introduced this new generation of surface monitoring systems with 3D inspection for slabs. It is essential for manufacturers of high-quality steel to detect as many defects as possible in the early process stages. The slab surface contains important information about serious defects, which may become visible later only in downstream production steps, e.g. rolling

The key to defect detection is to find lengthwise, edge, cross and spider cracks, welding filaments and traces of severe oscillation. Detailed inspection of these faults is a special challenge, due to the harsh environment conditions and the strong topographic and colored structures of the slab surfaces. The scaling process covers the slab and creates surface structures, easily mistaken for specific defects. Furthermore, certain cracks are only found after slab cooling. ISRA Parsytec's technology now ensures optimum defect recognition using complementary 3D inspection data. 2D and 3D surface information is recorded synchronously. Additional topographic information is generated at each pixel of a 2D surface image. Linked together through the application of a 3D measurement method, it provides additional data about optical and geometric properties allowing better slab quality grading. The inspection software takes into account the elongation of the material in the rollers, so that close examination is possible, for example, of cracks on the slab and shells on the hot strip. Use of the 3D information for additional properties of surface and fault structures ensures highly precise fault detection by the instant classifier. False alarms are avoided through the use of highly efficient algorithms. The severity of certain fault classes (e.g. cracks, prints) is now clearly determinable. 3D topography information allows for reliable differentiation between defects, texture and scale build-up. In addition, information obtained can be used for thorough troubleshooting. The user interface is intuitive to operate. The operator not only gets an accurate picture of the slab landscape, but also valuable additional image information about the classified faults. Based on customer specific requirements, the software makes a recommendation as to whether the produced goods can be released for further processing or not. The captured 3D data from the inspection system brings even more benefits when used as part of a total quality management system.

Source: MPT International 2/2012, p.109



Sophisticated 2D inspection combined with innovative 3D technology provides reliable defect detection on the slab surface.

Systems for sophisticated metals characterization

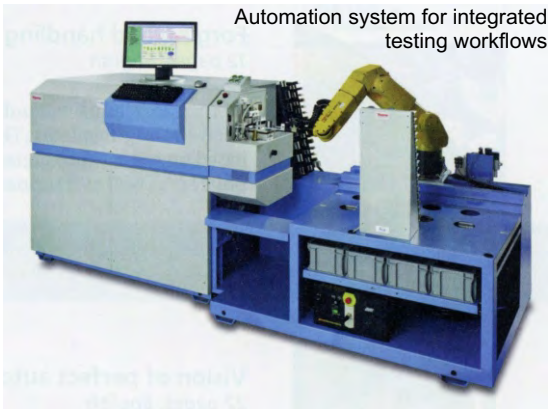
Innovative spectroscopy solutions for advanced metals characterization in the steel and NF metals industries are available from Thermo Fisher Scientific. The Thermo Scientific ARL SMS-2500 automation system provides an integrated, workflow-orientated solution that is specifically designed for high-speed production control laboratories. The system ensures increased sample turn-around by tightly integrating sample preparation with a larger, stronger and faster robot. By enabling direct access to the milling machine for the preparation of samples, processing time is reduced and expensive electro-mechanical sample transfer systems are eliminated.

The newly launched Haas Mini Mill milling machine with ARL PrepControl™ addresses the requirements of modern process control laboratories for rapid and reliable metals sample preparation. The system produces high-quality, reproducible prepared samples introduced manually via the front door. The system operates semi-automatically and easily integrates with automated Thermo Scientific ARL metals analyzers and XRF spectrometers.

Inclusions can affect the properties of metals, including mechanical strength, machinability and surface quality, making their control vital. The Thermo Scientific Spark DAT option significantly enhances the capabilities of the Thermo Scientific ARL 4460 metals analyzers beyond those of quantitative elemental analysis. The Spark-DAT option enables ultra-fast counting of inclusions and identification of their type in a few seconds, making it highly effective of quality control during metal production. The ability to obtain elemental analysis information and inclusion contents simultaneously with a single OES instrument greatly reduces investment costs, requiring only a few seconds of additional time.

The Thermos Scientific ARL Perform'X XRF spectrometer integrates bulk elemental analysis capabilities with mapping and small spot analysis, creating solution that offers unmatched versatility and performance for the analysis of metal samples.

Source: MPT International 2/2012, p.110



Automation system for integrated testing workflows

MIRDC Participates in the MakinaSaka 2012 Exhibition

The Metals Industry Research and Development Center participated in the recently held "MakinaSaka 2012," a roadshow of the Philippine Center for Postharvest Development and Mechanization (PhilMech) of the Department of Agriculture (DA), last July 4-7, 2012 at the World Trade Center in Pasay City. MakinaSaka 2012 puts into focus the latest machineries and facilities for the benefit of farmers and other stakeholders.

To make its presence felt in the agriculture industry, the MIRDC featured the following technologies: Brush Plating; Defibering Machine; Bio-log Extrusion Machine; and Micro Rice Mill Machine.

The four-day exhibition was an excellent opportunity to promote the Center's technologies and services. Viewers consisted of company owners, association presidents, foreign investors and other walk-in individuals got first hand information about MIRDC and its activities. Some expressed interest on how these services can be availed of, while others inquired about partnering with the Center for a more effective use of technology and innovation.

One of the highlights of MakinaSaka 2012 was the presence of His Excellency Pres. Benigno S. Aquino III as guest of honor. Also present were Secretary Mario G. Montejo of the Department of Science and Technology (DOST) and Secretary Proceso Alcala of the Department of Agriculture (DA). Sec. Alcala, through PhilMech, signed a Memorandum of Understanding (MOU) with the DOST. The MOU is designed to strengthen the R&D activities of the DA through "parallel efforts" of the PhilMech and the DOST research and development institutes (RDIs).

"Run for WELLNESS 2012" Brings Out the Winners in MIRDC

The Department of Science & Technology's (DOST) 2nd Family Fun Run entitled "Run for WELLNESS 2012" was held last 20 June 2012. This activity is in line with the National Science & Technology Week which aims to promote a healthy lifestyle among DOST employees. This year's host agencies are the Food and Nutrition Research Institute (FNRI) and the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA). The master of ceremonies was Mr. Jaypy de Juan of FNRI while DOST Assistant Secretary Lourdes P. Orijola welcomed the participants.

The Metals Industry Research & Development Center (MIRDC) employees supported and joined the said event. It was a rainy morning but still, enthusiasm and camaraderie were seen among the participants.

The first race was the 6k category, followed by the 3k, and lastly, the 1.5k, wherein the participants were required to wear their own costume during the run. As every tired and wet participant crossed the finish line, the DOST grounds lit up with smiles from everyone. For the runners, it was an accomplished mission – they were able to finish the race regardless of whether

Continuation on p11

Awarding ceremonies brought to centerstage the following fun run awardees from MIRDC: 1. Mr. Joel A. Eligue; 2. Marie Sharon S. Abilay; 3. Dolly Marie T. Talaron; and 4. AGT Running Costume.

2012 IPP Restores Iron, Steel; Strong Private Sector Interest Noted

MANILA, Philippines - The Board of Investments (BOI) has restored the iron and steel in the 2012 Investment Priorities Plan because of strong private sector interest and to build the country's existing capabilities.

Trade and Industry Undersecretary Adrian S. Cristobal Jr., who is also managing head of the BOI, said this after submitting the 2012 IPP to DTI Secretary Gregory L. Domingo and for approval by Malacañang.

"We see very strong interest in both foreign and domestic investors in the iron and steel sector," Cristobal said.

This sector had been a constant fixture as a preferred priority sector in the annual IPP. It was, however, delisted in the 2009 IPP and was placed under the preferred "manufactured products" heading of the 2010 IPP. The said sector was totally delisted in the 2011 IPP.

"Situation has changed with the expected growth of public spending and the interest of investors in ship-building and we have also some capability worth developing," Cristobal said.

Cristobal, however, refused to say if there have been specific new interests or prospective investors in this sector.

So far, the only huge iron and steel plant in the country is the Indian-owned Global Steel Philippines, Inc. (GSPI), formerly government-owned National Steel Corp., which had the distinction of the first integrated iron and steel project in Asia. The NSC was among the basic industries put up by the Marcos administration to propel the industrialization of the country.

When it was acquired by GSPI, the company was importing steel slabs and converts them into hot-rolled and cold-rolled flat steel. The company has an installed capacity of 1.5 million tons per year.

The Indian operation, however, was beset with financial and labor problems. It stopped operations in 2010 and been unable to get back on its feet since then.

It could be recalled that the Indian firm, which is owned by Pramod Mittal, acquired the firm for P13.25 billion including an upfront payment of P1 billion down payment it owed to secured creditors and the balance to be paid over an eight-year period in compliance with the asset purchase agreement governing the sale of the Iligan-based National Steel Corp. in 2004.

In 2008, however, GSPI took the creditors to a Singaporean arbitration to stop its lenders from declaring it in payment default.

In filing the case, GSPI claimed the creditors and the liquidator were in breach of their obligations when they failed to deliver clean titles of the facilities owing to unpaid real estate taxes of the then NSC between 1999, the time when the plant closed, and September 2004 when GSPI took over the facilities. GSPI claimed it was not able to secure loans to fund its operations for failure to take possession of the titles to the property.

The company also incurred power debt from the National Power Corp. and real estate taxes to the local government of Iligan City.

Since it has stopped operation, the Board of Investments had lifted the 7 percent tariff protection on steel imports allowing imports to come in.

Earlier, the BOI aired concern at the fact that the country has been left behind in its steel and iron development and the GSPI situation was posing a big challenge.

The country, however, has a good chance of developing an integrated iron and steel operation. It has a copper smelter plant in PASAR (Philippine Associated Smelting and Refining Corp., which produces copper cathodes, a raw material for wiring harness.

There are also smaller steel plants in the country but none could compare the opportunities of the Iligan steel plant, which was originally envisioned to become an integrated steel complex.

Source: The Manila Bulletin Newspaper Online (http://www.mb.com.ph) May 7, 2012

Metals, Engineering Sector Strengthening Pushed

CEBU CITY, Cebu – The country's metals and engineering industry continues to be a promising and lucrative sector, thus efforts to strengthen the sector must be pushed to better serve the needs of local and foreign industries particularly in the European markets.

"The country should have a strong, vibrant metalworking and electronic sector for it to industrialize and modernize," said Jimmy Chan, Philippine Exporters Confederation, Inc. (Philexport) metals sector trustee.

In a recent forum, Chan said, in the global context, the allied industries account for about half of goods produced in the manufacturing sector and more than half of all merchandise exported worldwide in terms of value.

He said the sector offers business opportunities particularly in the expanding European Union (EU) market which needs more product and service suppliers from all over the world.

"To this end, the Philippines is undertaking various initiatives in a bid to boost the sector," Chan said, pointing to, for instance, the Department of Science and Technology's recently-launched metalworks and electronics program named Makinarya at Teknolohiya para sa Bayan (MakiBayan).

Said MakiBayan program aims to provide locally services and products traditionally imported by the country from Taiwan, Singapore and other neighbors.

Chan said the Board of Investments (BOI), for its part, is

shepherding industries to develop their roadmaps as part of government's thrust towards industrialization.

To complement these initiatives, the Center for the Promotion of Imports from Developing Countries (CPI) is undertaking a value chain analysis study meant to revisit how the Philippines can start rebuilding its industrial and manufacturing capabilities, particularly the engineering and metalworking sector.

Chan attributed the slower economic growth to the country's failure to build a strong industrial base.

Source: mb.com.ph, May 9, 2012

Gov't to Craft Master Plan on Metals Downstream Processing Industry

MANILA, Philippines – The Department of Environment and Natural Resources (DENR) will convene a technical working group (TWG) that will create a master plan on the development of the country's downstream mining and metals industry as mandated under the new mining executive order (EO).

While this TWG has been existing for some time, the group that also includes Department of Science and Technology (DOST), Department of Trade and Industry (DTI), and the National Economic Development Authority (NEDA) now has a deadline on the master plan.

"We have to submit it within six months according to EO 79. We will have to review our previous output," said a DENR official in an interview.

EO 79 mandates the creation of a Philippine Development Plan and National Industrialization Plan (PDP-NIP) for the development of value-adding activities and downstream industries for strategic metal ores.

The PDP-NIP is envisioned to aid in maximizing the Philippines' gross domestic product (GDP) attributable to the mining-metals industry amid contention that the industry contributes an insignificant less than two percent share on the GDP despite mining firms' huge revenues.

The new mandate, though, does not stand in isolation from other industries in the Philippines that cannot take off because of other major factors, particularly the high electricity cost in the country which is among the region's highest.

"The high cost of electricity is seen as a severe obstacle in the industry. Operations in steel production (whether semi-finished or finished steel products) are highly energy intensive due to the heavy energy requirements in electric furnaces," according to researchers Marissa C. Garcia and Sandy Vicente in "Competitiveness in the Philippine Steel Industry."

An earlier mineral processing plan of the DENR-Mines and Geosciences Bureau (MGB) indicated that a metals industrialization program should fill the gaps in an integrated industry from mineral ore extraction to production of economically valuable finished metal products. These include production of special copper alloys, electronic parts from copper and gold material, stainless steel products, and aluminum products.

From chromium ore extraction, the DENR-MGB plan indicated that the high-end industries that may obtain raw materials from mining are the aerospace industry, automobile industry, and paint, ceramic, textiles, and tanning industries.

From iron, chromite, and nickel ore, beneficiary industries are those that produce rebars, steel sheets, I-beams, steel pipes and plates, and those engaged in shipbuilding.

From copper mining, downstream ore industry beneficiaries come from manufacturers of electrical-electronic industry wires, cables, and accessories, household and construction materials like pipes, tubings, roofing, nails, rivers, aviation, automobile, and marine industries.

From gold extraction, an integrated program will produce raw materials for industries in electronics, laser and optics, automobile, jewelry, ornaments, and metal currency.

Source: mb.com.ph, July 11, 2012

Run for Wellness...from p.9

they win or not. An aerobics session came right after the race. Fun Run officials then determined the winners of each category.

At the end of the event, several MIRDC employees bagged medals in their own category. Mr. Joel A. Eligue got the second place of the 6k category. Marie Sharon S. Abilay and Dolly Marie T. Talaron landed the second and third place of the 3k category, respectively. Our very own Automated Guideway Transit won the third place in the Running Costume category.

Dr. Mario Capanzana, Director of the FNRI, gave the closing remarks after the awarding of the winners. The heavy rains failed to dampen the participants' spirits. It was one fun event that strengthened ties and friendships among DOST employees.

Hydroseeder

An Overview

Hydroseeding is a widely-used soil erosion control process in other countries. This type of fast, efficient, and economical grass-planting method is a common choice among farmers in the United States. In the Philippines, the Subic-Clark Tarlac Expressway Project saw the introduction and the first effective application of the hydroseeding process.

Soil erosion is prevented with the use of several methods, one of which is the stabilization of bare soil surface by means of ground re-vegetation. Hydroseeding is an innovative method that has the ability to 'hit two birds with one stone': it promotes the growth of vegetation and protects the slopes. Grass seeds, fertilizer, and water, together with the cellulose binder mulch, are mixed to form homogeneous slurry inside the hydroseeder machine tank. This mixture is then hydraulically sprayed to the ground. Once introduced to the ground, the mixture will act as an absorbent mat that forms a firm blanket that covers the soil surface and holds enough moisture to allow proper germination of the grass seeds. The hydroseeding process may be employed for temporary and permanent erosion control, seeding, and mulching.

Technical Specifications:

Dimensions (W x L x H)	1.7 m x 4 m x 3 m
Power	23 hp, 2-cylinder diesel engine
Tank Capacity	1,500 liters (approx. 400 gallons)
Fuel Tank Capacity	4 gallons (15 liters)
Pump	centrifugal (slurry)
Pump Total Head	25 m (82 ft)
Agitation	mechanical paddle agitation and liquid recirculation (jet agitation)
Discharge Distance	up to 23 m (75 ft) – liquid (water) up to 15 m (50 ft) – fiber mulch
Trailer	single axle, two (2) tires
Safety Features	signal lights: warning lights (front and back)

The Equipment

The Metals Industry Research and Development Center (MIRDC) designed and fabricated the local Hydroseeder. The Hydroseeder is simple and easy-to-operate. The slurry is mixed in a large mixing tank by agitating paddles. A diesel engine drives the high-pressure slurry pump so that cellulose/fiber mulch materials are moved through a hose with a discharge nozzle. The high pressure within the system enables the Hydroseeder, which is mounted on a trailer, to take the seeds to hard-to-reach slopes. The growth of vegetation along these usually bare areas helps prevent erosion and high velocity of run-off during rainy seasons.


Hydroseeder

MIRDC Welcomes New Governing Council Member

Mr. Jimmy T. Chan is named the newest member of the MIRDC's Governing Council (GC). Mr. Chan will take the place of Mr. Eduardo Chua Co Kiong who has been with the GC for eight fruitful years. As Mr. Chua's successor, Mr. Chan is going to represent the private sector from the M&E industries.

It was through Mr. Chan's determined efforts that JICA-assisted projects on Precision Tool and Die Center were established at the MIRDC. He was among those who went directly to Japan to make representations with the JICA offices and the then Ministry of International Trade and Industry (MITI) so that the implementation of such projects will ultimately become beneficial to the local tool and die industry.

The Society of Manufacturing Engineers (SME) Manila Chapter elected Mr. Chan as Chairman in 1994. He served as the Metalworking Industries Association of the Philippines (MIAP), Metro Manila Chapter President in 1995, and as National President in 1997. He is the founder of the Philippine Die and Mold Association (PDMA) and served as its Founding President from 1995 to 1999.

He is a member of the Board of Directors of Primus Industrial Corp., and also a member of the Board of Directors of the Stainless Steel Industries, Inc. Mr. Chan is currently a Director of the Philippine Iron and Steel Institute (PISI), the Chief Executive Officer of Accutech Steel and Service Center and the President and General Manager of Maximetal Industries, Inc. His affiliations and activities clearly define Mr. Chan as a man who is deeply concerned with and very passionate about the metals, engineering and allied industries.

Mr. Chan's GC membership commenced last 03 May 2012. He was formally introduced to the MIRDC family last 19 June 2012 at Traders Hotel Manila during the celebration of the Center's 46th Founding Anniversary.

Cagayan State University Makes a Difference

Slopes, especially those along the highway, are covered with geotextiles for soil erosion and flood control.

Geotextiles are used to come up with various products.

Cagayan State University (CSU), created upon the signing of Presidential Decree 1436 in June 11, 1978, is Cagayan Valley's largest state institution of tertiary education. Courses in Liberal Arts, Social Sciences, Law, Medicine, Business, Economics, Natural Sciences, Engineering, Technology, Agriculture, Fisheries, and Teaching are offered in the university. The variety of graduate and undergraduate courses offered by the CSU makes it the university with the highest number of enrollees in the province of Cagayan.

Three congressional districts in the growth areas of Cagayan are seats for the eight campuses of CSU. The 1st District houses the Aparri, Lal-lo, and Gonzaga campuses; the Piat, Lasam and Sanchez Mira campuses are located in the 2nd District; and the 3rd District serves as home for the Andrews and Carig campuses in Tuguegarao City.

The CSU-Sanchez Mira campus was born in 1947 as a result of the people's need for a strong secondary education. It was later on converted into an agricultural high school in 1960 since it was located in a vast settlement two and a half kilometers away from the Sitio Nagbaranganan highway. The presence of this school in the middle of what once used to be just an ordinary mountain invited income-generating activities. Seven years later, the school community appeared to be like a small city.

The Sanchez Mira campus of CSU addressed the community's need for strong and quality secondary education that helped shape the young learners to become responsible adults. A decade and a half later, by virtue of the authority of the Ministry of Education, Culture and Sports, the university offered BS in Agriculture and BS in Agricultural Education as its first courses upon the opening of tertiary education.

It has not been a smooth ride for the CSU-Sanchez Mira campus. For quite some time, classes were temporarily held in the Municipal gymnasium because the University had yet to overcome internal struggle from the hands of the NPAs. After seven years, the University purchased a 6.9 hectare lot along Maharlika Highway – the site where the campus later on flourished and offered other courses including Secondary Education Curriculum sponsored by the DOST-SEI. The Sanchez Mira campus eventually opened a wider range of courses such as Elementary Education, BS in Mathematics, BS in Information Technology and Graduate Studies program.

Keeping abreast with the dynamism of today's fast-paced world, the CSU-Sanchez Mira meets challenges of Computer Technology Age head-on banking on its linkages with various entities, from both public and private sectors.

The Sanchez Mira campus developed an R&D facility with the objective to push the advancement of technology. Since this campus is nestled in a location that is blessed with vast plantations of coconuts, it has grown amid an abundance of coco products. The coconut industry in this region is kept busy with so many raw materials available, and numerous coco products to deal with. A local government unit of Cagayan contacted the CSU and asked help from the University regarding exploring other options on the utilization of coco products and management of coco product wastes. This paved the way for the beginning of a constant communication between CSU and DOST 2.

The Metals Industry Research and Development Center was then tapped by the DOST 2 because of the Center's locally-developed coco coir machines. As a result of the assessment of CSU's needs and as part of the MIRDC's thrusts, the DOST 2 and the MIRDC reached an agreement that the Center will conduct a series of trainings regarding the use of coco coir machines.

Under the leadership of Dr. Aurelio Caldez, Campus Executive Officer during the year 2008, the CSU engaged in making geotextiles and other coco products. Dr. Lina M. Garan led the new administration in 2009 and continued the said activity as one of the R&D projects of the University. True to the agreement with the DOST 2, the MIRDC fabricated and lent five (5) units of equipment to CSU, namely: one (1) unit each of decorticator, motorized twining machine, and coco peat press machine; and two (2) units of metal loom.

Frequent visitations to the Sanchez Mira campus allowed MIRDC, through its engineers and technical team members, to establish a beneficial relationship with CSU: the Center is able to carry out its mission

of supporting the growth of the M&E industries by means of farming out its developed technologies, while the CSU R&D facility not only gained solid knowledge on coco product processing, but also created business opportunities that provided the University a source of income that all go into the school funds. With increased funds, the University expanded its R&D projects. Needless to say, the CSU and its other projects prospered.

Torrential rains and extreme weather have greatly affected the soil conditions of the country which in turn reduces vegetation and leads to erosion. Chain reaction of events such as this has made a significant impact to the environment, and Cagayan is not spared from this occurrence. It is in this light that the Department of Public Works and Highways (DPWH) issued a memorandum on the use of geotextiles for nationwide soil erosion control.

The needed technology for effective control of soil erosion makes use of both geotextiles and biologs. Having developed its own biolog extruder, the MIRDC was once again contacted by the DOST 2 to provide assistance to CSU. One unit of biolog extruder was lent by the MIRDC to CSU as part of its agreement with the DOST 2. Training of personnel who will operate the machine was conducted by MIRDC engineers.

The relationship of the DOST 2, the MIRDC, and the CSU remain beneficial up to today. The CSU-Sanchez Mira campus continuously turns to the MIRDC for updates on technologies that will be of help in their coco-based products ventures. Through their R&D initiatives, and, of course, through the valuable MIRDC intervention, the CSU is catering to the needs of the DPWH in terms of their requirements for geotextiles and coco biologs.

This development made the addition of decorticating and twining machines necessary for CSU's efficient operations because steep slope and road rehabilitation projects make use of a large number of these products. Through the coco coir equipment available in the CSU's R&D facility, the University is able to meet the needs of the DPWH. CSU is also involved in the marketing and supply of geotextiles to other regions through its linkages with highway contractors and the DPWH.

The technologies learned from MIRDC allowed the CSU to produce other products such as: ropes, coco peat (used as fertilizer, and research shows that it can also be used as an agent to delay the ripening of banana). The CSU produces handicraft like lamp shades, candle holders, fruit baskets, soap holders, study lamps, chandeliers, and curtain highlighter. Food products from coconut include pickled nata, honey-glazed coco oats, coco vinegar, buko pie, and macaroons.

All of these products led the CSU-Sanchez Mira to create a name and develop itself as a self-sustaining community. Aside from the DPWH, the University serves customers such as farmers, students, faculty, and other academic institutions. As a matter of fact, the CSU's production plant for geotextiles and other coconut products underwent expansion.

With the coconut tree as the University's most prized raw material, planting of coconut seedlings was institutionalized in the old Nagbaranganan campus and also in other coastal towns in Northwestern Cagayan. The CSU is committed to continue to produce handicrafts and food products for as long as there are coconut trees that grow from the region's fertile soils.

The MIRDC is with the CSU in all its endeavors and will be very supportive of its R&D initiatives. Pushing for local technology to alleviate poverty, the CSU has become one trusted arm of the MIRDC that works for the development of the countryside. Activities of the CSU-Sanchez Mira campus have awakened the entrepreneurial spirit of the region and led to a more vibrant business atmosphere. The University, through its coco-based products, is generating employment. It has been giving the Filipino farmers a niche in national economy. The CSU is helping conserve our topsoil and is saving the environment by means of controlling erosion. The CSU is truly making a difference in the lives of the people of Cagayan.

Editorial Office:

MIRDC Compound
Gen. Santos Avenue
Bicutan, Taguig City
Philippines
P.O. Box 2449 MCPO
Makati 1299, M.M.,
Philippines

metals industry MIRDC
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