

## Hybrid Electric Train, the New Linchpin of the PNR

Over the years, Filipino commuters struggle with the diversity of traffic problems especially in Metro Manila. Providing commuters with a convenient option for travelling has long been a part of the government's solution for transport woes.

On June 25, 2016, the Metals Industry Research and Development Center (MIRDC) showcased the Hybrid Electric Train (HET) at the Tutuban Station of the Philippine National Railways (PNR). The HET launching's demonstration ride was attended by Secretary Mario G. Montejo of the Department of Science and Technology (DOST), the then incoming DOST Secretary, Prof. Fortunato T. Dela Peña, the MIRDC's Executive Director, Engr. Robert O. Dizon, and PNR General Manager Joseph Allan C. Dilay.

The HET was developed on a platform of providing an environment friendly mass transport technology that is both cost effective and energy efficient. Its salient features include wide automatic sliding doors, fully air conditioned cabins, dead man's switch as its safety mechanism, speed control buttons, hardwired emergency switch, and front and back anti-climbers. Just like the conventional trains of the PNR, the HET can also run on the same railroad tracks and is expected to reduce emissions of nitrogen oxide as it is powered by diesel and battery. More importantly, the cost of production



Sec. Mario G. Montejo speaks highly of the Filipino engineers behind the successful development of the locally designed and fabricated Hybrid Electric Train.

of the HET is quite low because it is locally developed and assembled.

As the new HET is now seen as a more attractive mode of rail travel, commuters who took a glance at it during the launching event expressed their eagerness to see it speed along the PNR. In an interview, Secretary Montejo announced that the HET still needs to undergo a series of safety testing before it makes regular trips.

Moreover, Secretary Montejo lauded the Filipino engineers who worked feverishly to get the HET prototype ready. In his message, he highlighted that the DOST is

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## DTI, DOST-MIRDC and AIAP Ink Php 8.4 M for AS9100 Project

In pursuit of the Philippine government's goal of achieving inclusive growth of the local manufacturing industries, the Metals Industry Research and Development Center of the Department of Science and Technology (DOST-MIRDC) has entered into an agreement with the Department of Trade and Industry (DTI) and the Aerospace Industries Association of the Philippines (AIAP) to support the aerospace industry. DTI Secretary Ceferino S. Rodolfo,

MIRDC Executive Director Robert O. Dizon, and AIAP President John T. Lee signed the Memorandum of Agreement (MOA) on July 27, 2016 at the Innovation Hub of the DTI International Building, Sen. Gil J. Puyat Avenue, Makati City.

The project is under the Manufacturing Resurgence Program (MRP) spearheaded by the DTI which aims to rebuild the existing capacity of industries, strengthen new ones, and maintain the competitiveness of

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Included in this issue of the Trends and Events is the Metals Industry Research and Development Center's most important milestone to date – our 50th Founding Anniversary celebration.

Preparations for the 2016 Metals and Engineering Week were almost 100% complete by the month of May. A substantial amount of planning including the deployment of personnel to various M&E and Anniversary Committees resulted to on-target activities. In June, our anniversary month, all that remained to be done was the execution part of the plans. The resource persons we invited for the M&E International Conference gave us very interesting talks about latest technologies and industry practices. It was indeed a rare opportunity to listen to first-hand information from industry experts from Germany, Korea, and Taiwan. A series of discussions were held with our foreign guests after the Conference proper, and we are very optimistic that these will take form and be translated to future activities with deeper areas of cooperation between the MIRDC and their respective organizations, which will ultimately redound to economic and technological gains for the local M&E industries.

Also held in June was the launching of the Hybrid Electric Train at the Tutuban Station of the Philippine National Railways (PNR), where we were able to officially present to the public another mass transportation development initiative of the Department of Science and Technology (DOST). The demo ride allowed us to prove that indeed we can really make our own functional, comfortable, and safe train.

July's major activities were the Center's participation in the National Science and Technology Week (NSTW), the launching of the Gear Making and Assembly Facility, and the signing of the

Memorandum of Agreement with the Board of Investments (BOI) and the Aerospace Industries Association of the Philippines (AIAP). Through these activities, we were able to successfully raise our stakeholders' awareness on our R&D capabilities, technology upgrades, and intensified S&T services.

In mid-August, MIRDC representatives spearheaded the turnover of the Forage Chopper to the Small Ruminant Center of the Central Luzon State University (CLSU). This project attests the Center's support to the National Dairy Goat S&T Program of the DOST. The machine is specially designed to prepare grass to be fed to goats in the dairying farm, aimed to increase milk production, raise productivity and boost profit among goat farms.

We are not just counting the years, but more importantly, we are striving to add more meaning and significance in our years. We mean to make a difference for the local metals, engineering, and allied industries. With our 50th Golden Anniversary as an inspiration, the Center is undoubtedly all fired up to go after more milestones.



**Robert O. Dizon**  
Executive Director, MIRDC

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**Metals Industry Trends and Events** is a triply newsletter of the Metals Industry Research and Development Center (MIRDC), an agency of the Department of Science and Technology (DOST).

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Printed in-house

## MIRDC All Geared Up with a New Facility

As part of the 2016 National Science and Technology Week, the Metals Industry Research and Development Center introduced its Gear Making and Assembly Facility to industry partners and guests on July 27, 2016 at the Platinum Auditorium of the MIRDC.

The Gear Making and Assembly Facility, which is housed at the Platinum Building, is one of the projects under the Makinarya at Teknolohiya para sa Bayan (MakiBayan) Initiative. Its establishment is one of the major undertakings of the Center to support the Sustainable Mass Transport System Program of the DOST.

The facility is proving to be a big win for the manufacturing industry as it brings together innovative measures to boost local capabilities of gear design and prototype production for the development of gear assembly

manufacturing industry. It focuses not only on transport but also on metalworking and agro-industrial applications.

Industry partners from Metalworking Industries Association of the Philippines (MIAP), DMG-Mori Japan and Okuma Japan shared their insights to prove that there is real appetite for facility advancement as demanded by the manufacturing industry.

Engr. Robert O. Dizon, MIRDC's Executive Director, expressed confidence in the ability of the Center's Gear Making and Assembly Facility to get off the ground after elaborating how the activities under the MIRDC's Roadmap were precisely executed as planned. He added that the Center is well-positioned to move in the right



Engr. Robert O. Dizon (center) poses with key personalities from MIRDC and partner industries after the facility tour.

direction as it is backed by the commitment of the industries engaged in the Center's development plan.

The launching program was followed by a facility tour hosted by Engr. Fred P. Liza, Chief of the Prototyping Division.

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### MIRDC Luanches...from cover

mandated to extend technology self reliance in critical areas including mass transport, hence the development of the Sustainable Mass Transport

System through the MIRDC. Secretary Montejo also explained that the HET was developed contingent on the needs of Filipino commuters and

further encouraged the public to support the skills of the Filipino to solve our own problems.

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### DTI, DOST-MIRDC...from cover

industries with comparative advantage. Since there are only a limited number of local aerospace supplier firms that have attained aerospace quality management system certification, the AIAP aims to address the need to develop compliance with aerospace industry standards in order to become integrated in the supply chain. Led by its President John T. Lee, the AIAP endorsed an Aerospace roadmap-based proposal in line with their project entitled "Supporting Philippine Companies in the Preparation and Implementation of an Aerospace Quality Management System (AQMS) aligned with AS9100 Requirements." The AS9100 is an aerospace standard based on the ISO 9001 quality

management system requirements.

Under the MRP, the DTI will be allotting P8.4 M to the DOST-MIRDC which shall be in charge of implementing and monitoring the AIAP project. The Project aims to enhance the competitiveness of the

Philippine aerospace manufacturing industry by providing support to the local companies in the establishment and implementation of an aerospace quality management system leading to AS9100 certification. Specifically, the Project aims to provide capability-building activities (e.g. trainings, consultancies, provision of short-term experts) to assist qualified Philippine companies in their AQMS documentation and procedures implementation and develop technical competencies of their personnel to conduct AQMS implementation and audits. Likewise, it will help to expand network and linkages with other stakeholders in the aerospace industry.



## MIRDC Presents its Shining Technologies and State-of-the-Art Facilities during the 2016 NSTW Celebration



The Department of Science and Technology (DOST) under the stewardship of its new Secretary, Prof. Fortunato T. de la Peña, observed a bigger, nationwide celebration of the 2016 NATIONAL SCIENCE TECHNOLOGY WEEK (NSTW). This year's annual science and technology fair was held from July 25 – 29, 2016 in all DOST agencies simultaneously in different science communities: Manila, Bicutan, Quezon City, Los Baños, and in the regional offices.

Bannered as “Juan Science, One Nation,” the NSTW showcased the S&T interventions that highlight the DOST's priorities which were introduced through its eight outcomes, namely: agriculture; enterprises; industries; information technology-business process management; connectivity; health; education; and disaster preparedness.

The MIRDC under Outcome 3 (Industries) cluster played up its most shining technologies and state-of-the-art facilities by holding an Open



House. The activity was an opportunity for the Center to present to the exhibit viewers its technological capabilities in the following facilities/laboratories: Die and Mold Solution Center; Gear Making Facility; Metalcasting Facilities; Surface Engineering Facilities (Vacuum Gas Quench Heat Treatment Furnace and Anodizing Facility); Auto-parts Testing Facility; Finite Element Facility; Calibration and Metrology Laboratories; Chemical Laboratories; and Mechanical Laboratories.

The Center also offered photo op at the Hybrid Electric Road Train and a free ride on the Automated Guideway Transit.

Moreover, the Center conducted several fora as part of the weeklong program of activities. Topics presented were: Finite Element Analysis; Investment Casting; Shielded Metal Arc Welding; 5S Seminar; ISO 9001:2015 Orientation; Auto-Parts Testing Facility; Welding Information; Non-cyanide



Electroplating; Anodizing Technology; Vacuum Gas Quench Heat Treatment; and Metals Identification.

A total of 6,363 exhibit viewers from private companies, non-government organizations, international organization, academe, DOST, and other government agencies as well as the general public came to join the MIRDC in celebrating the 2016 NSTW.

The MIRDC successfully conducted its Open House, Exhibits and other activities as part of the NSTW celebration at the Bicutan Science Community. It is indeed a remarkable opportunity for the Center to be recognized and appreciated as a relevant Research and Development Institute. Through the NSTW, the MIRDC took advantage of the chance to promote its technical services. The Center is taking proactive moves to bring its services closer to the metals, engineering and allied industries in the pursuit of its mission to enhance the industries' productivity and global competitiveness.

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## MIRDC Concludes Survey for Electroplating and Welding Sectors

The Metals Industry Research and Development Center (MIRDC), through its Technology Information and Promotion Section (TIPS), regularly conducts a survey of metalworking firms. The TIPS' most recent accomplishment is the completion of the survey of the electroplating and welding sectors. Began in February 2015, the electroplating sector survey lasted until October 2015, while the welding sector survey was extended until May 2016.

The survey aims to gather data and determine the status of the electroplating and welding sectors, particularly their respective industries, markets, and technical aspects of operations. Carried out by a four-member survey team, the activity initially targeted to cover 116 company-respondents in the electroplating sector and 1,400 company-respondents in the welding sector. For reasons beyond the survey team's control, the survey only covered 68 and 1,050 respondent



One of the most common activities in a welding shop is sidecar fabrication.

companies for electroplating and welding sectors, respectively.

Conduct of the survey is part of the MIRDC's pursuance of its mandate of serving the local metals, engineering, and allied industries. The conduct of the sectoral study is the Center's strategy to determine the level of the metalworking sector's technological capabilities so that it can better develop projects that will help the industries sustain and maintain relevant existence for the service of its consumers and clients.

Information revealed by the company-respondents serve as foundation for an accurate study. Included also in the survey are information regarding the companies' production capacity and technical profile, among others. Both primary

and secondary information gathered from the survey and from other government institutions will be used to formulate the sectoral studies and eventually to design electroplating and welding sector-specific interventions. These are very crucial information that will be provided to policy makers, policy implementers, and members of the industry for a holistic policy study that will lead to fine-tuned strategies such as facilities upgrading, personnel development, and investment incentives, to name a few. Ultimately, it is going to be the participating companies who will largely benefit from the projects that will be implemented by the government.

Results of the electroplating survey reveal that electroplating companies involved in export are

mostly found in Cebu and in CALABARZON. Survey also revealed that majority of the micro-enterprise in the electroplating industry are involved in the jewelry business. The business owners still find the electroplating industry competitive, inspite of the persistent challenges they face. All these, and more, will be included in the report.

The final draft of the electroplating industry study is currently being edited, while filled-out survey forms of the welding sector study are being consolidated. The welding industry study is targeted to be out for printing by the end of December 2016. In the pipeline is the metalcasting sector, which will be the focus of the next TIPS' survey.

## PartnerShape 2.0, MIRDC Gets Together with Industry Partners



The Metals Industry Research and Development Center (MIRDC) of the Department of Science and Technology (DOST) cultivates constant collaboration with industry through its partnership with industry associations such as the Metalworking Industries Association of the Philippines (MIAP), Philippine Die and Mold Association, Inc. (PDMA), Society of Manufacturing Engineers (SME), Philippine Welding Society (PWS), Mechatronics and Robotics Society of the Philippines (MRSP), Aerospace Industries Association of the Philippines (AIAP), Philippine Metalcasting Association, Inc. (PMAI), Motorcycle Development Program Participants Association, Inc., (MDPPA), Philippine Parts Maker Association (PPMA), Philippine Iron and Steel Institute (PISI), and Philippine Society for Nondestructive Testing, Inc. (PSNT). To celebrate this collaboration, the

Center conducted PartnerShape 2.0, an event aimed to gather industry association representatives and some key personnel from the MIRDC. It is also an opportunity for the Center to impart to all its industry partners its commitment to seriously and aggressively deepen the collaborative relationships it has formed and nurtured over the years.

PartnerShape 2.0 was also the MIRDC and its industry partners' avenue to express gratitude to Engr. Mario G. Montejo, former DOST Secretary, for six fruitful years under his leadership.

Present during the event were: PPMA President, Mr. Ferdinand I. Raquelsantos; MDPPA President, Mr. Rodel I. Pablo with other members of the MDPPA; SME Director, Mr. Lionel ChuaCoKiong; MRSP Chairman, Mr. Gamaliel F. Itao, MRSP President, Mr. Joel B. Bajador, with Mr. Franklin D. Quiatchon, and Mr. Rod T. Pecolera, the MRSP's Secretary and Treasurer, respectively; PWS Executive Director, Mr. Fernando Opeda with six other PWS member officers; AIAP President, Mr. John T. Lee with another AIAP member-guest; and PDMA President, Mr. Philip C. Ang, with eight other PDMA officers/trustees.

Engr. Robert O. Dizon, MIRDC Executive Director, welcomed the guests. Engr. Montejo graced the event with his inspirational message, while the president/representative of each association spoke about the good things that happened under Engr. Montejo's term and gave their message of thanks for the former DOST secretary. Finally, Dir. Dizon and Engr. Montejo led the guests to a toast to partnership. PartnerShape 2.0 was well enjoyed by the guests, and through this event, collaborative relationships will be made even stronger and more fruitful.



### Cross-plant analysis of mechanical vibrations

The measurement of vibrations is a reliable, tried and tested solution for small plants and individual components. In complex plants, the vibration behaviour may be influenced by factors associated with the process. Therefore, damage to machine parts can only be detected in a reliable way by simultaneously monitoring all machine, process, material and quality data. To meet these requirements, Iba AGA has refined its well-established ibaInSpectra product range. With ibaInSpectra, mechanical vibrations can be monitored in a time-synchronous and continuous way. Frequency analysis can be displayed in real time. This way, critical machine

conditions or exceeded limit values can be signalled. At the ibaInSpectra technology module is integrated into the ibaPDA process data acquisition system, other relevant data from the plant can be acquired. Thus, the user can identify relations between the vibration effects and the process behaviour. As refined solutions, Iba now offers ibaCMC and ibaCMU-S for long-term analysis of the machine status. Built in a modular structure, it consists of up to four digital and four analogue input and output modules and vibration inputs according to the IEPE standard. It can process up to 32 vibration signal. The signals are acquired under conditions of chronological synchronism at up to 40 kHz. For special applications, up to 100 kHz is available. This solution is especially

suitable for centrally monitoring production systems within complex plants. The system is highly scalable. Recently, a project with more than 800 vibration sensors has been implemented.

Contact: [www.iba-ag.com](http://www.iba-ag.com)

Source: *MPT International 3/2016, p. 61*



Hardware and software for condition monitoring

### Measurement systems for automotive-grade aluminium sheet

NDC Technologies provide aluminium producers with accurate, reliable measurement system to produce automotive-grade sheet. NDC's non-contact thickness and profile measurement systems measure a range of dimensional properties critical to the production of automotive-grade aluminium sheet. For thickness measurement, NDC's AccuRay®TDI-700 X-ray measurement system provides highly accurate and reliable thickness gauging of aluminium sheet and other flat rolled products in all typical rolling mills and processing applications. The AccuRay TDi-700 can be configured with one of several sensors to cover the complete thickness range required in rolling mills and process lines regardless of mill size, metal type and existing conditions. The X-ray sensor and C-

frames require minimal space for installation. All TDi-700 systems feature a distributed intelligence architecture that creates a more powerful, yet simpler system which not only provides excellent measurement performance, but better uptime, maintainability and lower cost of ownership. NDC Technologies also deliver profile characterization method that eliminates reproducibility errors common among sensor arrays by normalizing the profile measurement to critical centreline thickness in real time. NDC's Beta LaserMike Laser Speed® non-contact gauge directly measures the length and speed of aluminium sheet with better than  $\pm 0.05\%$  accuracy, and  $\pm 0.02\%$  repeatability. It is an ideal solution for replacing mechanical contact tachometers/encoders that are prone to a variety of measurement errors and high maintenance costs. The LaserSpeed gauge uses advanced, laser-based technology to perform

these measurements. It projects a unique pattern on the product's surface. As the product moves, light is scattered back to the gauge. This information is translated into product speed and pulses are produced to determine the product length. The LaserSpeed gauge has no moving parts and is factory calibrated.

Contact: [www.ndc.com](http://www.ndc.com)

Source: *MPT International 3/2016, p.60*



Thickness gauge

### Hot-dip galvanizing line revamped with new air-knife system

In 2008, Danieli supplied a complete hot and cold mill complex for the MMK Metallurji project in Dortyol, Turkey. The hot-dip galvanizing line was equipped with Danieli Kohler S-Jet air knives. Since then, the produc-

tion mix of the hot-dip galvanizing line has been progressively expanded to include a higher percentage of thin strips with very thin coatings (including Z70). The initial air knives had become an impediment to an increase in processing speed, creating a bottleneck for higher throughput. The decision to install X-Jets, which had not yet been available in 2008, when the line was originally supplied,

followed technical discussions and a thorough analysis of the expected production benefits. Thanks to the modular design of Danieli Kohler's air knives, the revamping included the reuse of many parts of the existing equipment, minimizing the capital investment. Danieli supplied new X-Jet air knives with lip cleaners, new

## AUROCHS AEROSPACE PRECISION MANUFACTURING CORPORATION: A Journey Towards Continual Improvement

Our country aspires to be an aerospace and defense market hub in Asia, and there are companies that help the government realize this dream. Aurochs Aerospace Precision Manufacturing Corporation (AAPMC) is one of these companies. Located at the Baguio City Economic Zone, AAPMC is into the manufacture of aircraft parts and has carved for itself a niche in the aerospace supply chain as it serves the needs of a multinational aerospace company.

Established in 2013, the AAPMC offers leading edge products and services that cater to the needs of the automotive, aerospace and defense markets. As such, the company must not only ensure excellent quality, but must be competitive in terms of on-time delivery and price. It later on became one of the beneficiary firms of the project entitled, 'Cordillera Aerospace and Industrial Manufacturing Technologies Corporation (CAIMTEC)' spearheaded by the Department of Science and Technology – Metals Industry Research and Development Center (DOST-MIRDC), whose objective is to raise the competency level of MSMEs from the Cordillera Autonomous Region (CAR) to produce agro-industrial and high-precision technology parts conforming to international standards. Through the CAIMTEC project, the DOST-MIRDC was able to provide seminar-workshops and consultancy services to the AAPMC.

In early 2016, the AAPMC was temporarily delisted from the

multinational's list of deburr suppliers of production parts as a result of the audit conducted by the said company. Prompt action on the needed corrections and corrective actions was demanded by the high level customer. It is at this point that the company decided that the best way to regain the trust of its customer, and build relationships with other potential customers is by pursuing ISO certification.

With the track record of the DOST-MIRDC in maintaining its ISO 9001 certification for the past 10 years, and in providing assistance on ISO 9001 certification to various firms under the metals and engineering industries, and to other government agencies, the AAPMC requested for the DOST-MIRDC's assistance for the certification of its Quality Management System (QMS) to ISO 9001:2008 Standard.

The journey began on 22 April 2016 when a team from the DOST-MIRDC, led by Prototyping Division Chief, Engr. Fred P. Liza, conducted an assessment of the existing management system of the AAPMC. The company was able to develop two (2) online systems to implement a paperless QMS and Production Management System

(PMS). AAPMC's Mr. Kenneth Go and Mr. Jerrison Tiong discussed the features of both software. The documentation of the quality manual, quality policy, and mandatory procedures were incorporated into the QMS. The key feature of the PMS, on the other hand, is the electronic monitoring of the status of orders, starting from the receipt of the order up to final inspection. These systems are continually improved so that information gathered are used in the decision-making and action planning of the management.

Several relevant activities followed in May and June 2016. The MIRDC Team was once again focused on giving assistance to the AAPMC through the conduct of an ISO



MIRDC representatives, Ms. Linda G. Rivera (third from right) and Engr. Mervin B. Gorospe (second from right) join the AAPMC and NQA staff during the internal audit.

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blowers with special piping, modifications to the existing roll rigs as well as electrical and automation equipment. The new air knives were installed during a scheduled, one week maintenance shutdown. The performance increase provided by the X-jets in terms of coating weight and line speed was immediately obvious. After the revamp, the hot-dip galvanizing line is able to produce Z100 at 180 m/min, and tests have shown that the X-Jets

can produce Z80 with 40 g/m<sup>2</sup>/side at 180 m/min. Productivity has increased by approximately 10%, with a payback time of less than six months for MMK. In January 2016, Danieli received the FAC for the new air knives.

Contact: [www.danieli.com](http://www.danieli.com)

Source: *MPT International* 3/2016, p. 62



First X-Jet installation in 2009

## 'Agrinnovations' to Boost Manufacturing

Eight types of machines for various crops and two technological systems for soybeans developed over the past four years by the Philippine Center for Postharvest Development and Mechanization (PhilMech) are now ready for commercialization.

PhilMech executive director Rex L. Bingabing says the agency was able to do this through the "agrinnovation" approach, which introduces innovations to existing farm mechanization technologies to adapt them to local conditions.

"Through agrinnovation, PhilMech was able to develop farming technologies that are ready for adoption in 18 months instead of the usual three to six years," Bingabing says.

He says the eight machines and two sets of technologies have strong potential to stimulate the manufacturing sector, particularly the metal fabrication industry.

But this can happen only if farmers and agribusiness operators provide a viable market by adopting the innovations in large numbers to give manufacturers the incentive to produce them.

"We've seen the desire among farmers and entrepreneurs for technologies that would help make their (work) more efficient," Bingabing says.

"(But) there are segments of this potential market that cling to the old ways of working in farms even if you provide them incentives to try new technologies, simply because they have been using them for so long," he adds. We need the push of cultural change to create a viable market."

These machines are the cassava digger and cassava belt drier, pectin extraction system for mango peels, village-level coco water pasteurizer,

compact corn mill, impeller-type brown rice huller, root crop washer and mechanical onion seeder.

PhilMech developed the cassava digger and the cassava belt drier to allow farmers to dry granulated cassava in only four hours. The traditional sun drying method takes one to two days to dry granulated cassava. The cassava belt drier has a capacity of 1,000 kilograms and has a biomass furnace.

The pectin extraction machine can cut importation of this chemical, which is used in cosmetics, pharmaceutical and food processing.

PhilMech studies showed that pectin produced with this machine had the same qualities as the imports, mostly made from apple pomace and citrus peels.

The village-level (or small-scale) coco water pasteurizer has a touchscreen programmable logic control system for easy monitoring of pasteurization and chilling temperatures and flow rate. It has an output capacity of 500 liters of coconut water daily.

The system allows coconut farmers to immediately process and package newly collected coconut water, extending the shelf life of the beverage.

The compact corn mill is small enough to be transported by a small utility vehicle to farming areas. It can process 250 kilograms per hour, with a recovery rate of 64 percent and de-germing efficiency of 91 percent. It eliminates aflatoxin from newly harvested corn.

Weighing 98 kilograms, the brown rice huller can process the same weight of brown rice in an hour. The huller addresses the need of rice retailers to mill brown rice only when there are orders to be filled. Brown rice

has a limited shelf life of only two months.

The mechanical onion seeder enables a farmer to prepare seed bed and sow the seeds on-pass. It also allows optimum spacing of the onion seeds for higher yield.

The root crop washer, now being used at the Benguet AgriPinoy Trading Center, cleans root crops like carrots faster and uses less water than manual washing.

"The machines for these technologies can all be manufactured locally. That means the metal fabrication industry will benefit once demand increases," Bingabing says.

The two sets of technologies were developed for post-harvest drying of soybeans and the processing of soybeans into value-added products like curd, milk and taho.

"These technologies are a big boost to the Philippine soybean sector. Firstly, the drying technology will help reduce post-harvest losses while improving the quality of the produce," Bingabing says. "Secondly, entrepreneurs will find the Soybean Processing System viable because of its (low cost) and the quality of products."

Bingabing says PhilMech is continuing field testing of several other technologies that it aims to recommend for mass adoption.

These are the fluidized bed dryer for palay, GPS-guided and self-driving tractor, biocontrol agents for fruits, hand tractor-driven riding-type rice transplanter and mini combine rice harvester, sugarcane harvester and coffee bean color sorter.

*Source: [Philippine Daily Inquirer](#), August 3, 2016*

## Heavy Metal Key to PHL Growth, Says Economic Adviser RJ

Newly appointed presidential adviser on economic affairs Ramon Jacinto on Friday used Facebook to show that he didn't get the position just because he was close to President Rodrigo Duterte.

In a lengthy post, Jacinto showed how he thought the country's economy could move further forward — by having a robust steel industry and devoting entire islands solely to business.

"Most people are familiar with the story of me putting up my own radio station and being lucky enough to release hit records as a teenager, what some may not know is as a 19 year old

## The EX-MIRDC Employees Network (EX-MEN) Homecoming 2016

Homecoming is the tradition of welcoming back old employees, former friends, students of the schools, and the like. The program usually includes games, raffles and other surprises that await all the participants. June 16, 2016 is a memorable event for the Ex-Metals Industry Research and Development Center Employees Network (MIRDC EX-MEN) from all over the world, to join and take part in the first MIRDC EX-MEN homecoming in connection with the celebration of the MIRDCs 50th anniversary. It was held at the Platinum Auditorium, 2nd floor of the Platinum Building at the MIRDC Compound. Registration started at 8:00 am. The committee distributed gold T-shirt and other freebies at the registration area. More than 100 guests attended the homecoming.



The EX-MEN together with Engr. Benjamin T. Damian (first row, second from the left), Deputy Executive Director for Technical Operations 1978-1982.

The highlight of the morning activities was the plant tour which was conducted at the different areas covering Prototyping Division, Material and Process Research Division, and Analysis and Testing Division. A division representative

was assigned to facilitate the tour. Everybody enjoyed a sumptuous lunch. In addition to the catered lunch, food like lechon, kakanin, tacos, and fruits were brought by some of the EX-MEN.

In the afternoon, the program was opened by an invocation followed by the singing of the National Anthem. Engr. Robert O. Dizon, the Executive Director of the MIRDC, gave a heartfelt and warm welcome to our dear EX-MEN. In his message Engr. Dizon mentioned that he is very blessed because he came to the MIRDC at a time things were already in place.

According to him, all that he has to do is make sure that the plans are well-implemented. Everyone was happy and excited to go table hopping to meet old friends and reminisce great old times. "Hindi talaga mapigilan and sigawan, halakhakan pag nagkita ang

Ateneo Economics graduate I worked for our family's Steel Mill as Senior Vice-President...." Jacinto said.

His family's steel business was one of the firms seized by the Marcos regime after the declaration of martial law in 1972.

Jacinto said the country would have been better off than South Korea if the steel industry was fully developed even after their steel mill was confiscated.

"There are three phases to fully integrate a steel mill. We were able to complete the first two. The final phase that needed to be finished is the blast furnace. If we had done this, we would have not needed to import anything to make our steel and we would have even been ahead of South Korea," Jacinto said.

Jacinto said his family's steel mill was two years ahead of POSCO of South Korea.

"Doesn't that blow your mind? Look at Korea now and how progressive they've become? What has Korea become known for? Samsung, Hyundai, Ship-building, all these

things have one thing in common—steel," Jacinto said.

"Steel is such a critical thing to building a country. It is in everything - roads, bridges, buildings, your house and roof," he added.

Jacinto also raised the concept of a "Philippine business island" to lure foreign investors.

"Economic zones are not the answer, we've had [Philippine Economic Zone Authority] for over 30 years and still we just get the crumbs. People are still forced to go out of the country," Jacinto said.

"Factories need other factories that produce their raw materials, preferably within their vicinity. They need the right tariff-protection and power-costs.... The concept of the Philippine Business Island is this - if we can lease land for military bases, why not lease a whole island for business that will create jobs and create a massive influx of investment in the country?" he added.

Jacinto said that under the setup, investors "can be separate from our ports/customs, corrupt officials,

judicial interruptions and poor infrastructure and traffic."

"They can police themselves and configure the island and infrastructure just how they want subject to our sovereignty and with the conditions that they hire Philippine labor, they have a mix of businesses that benefit the Philippines and that they take care of our environment," Jacinto said.

In his post also addressed his involvement in a behest loan case that he said had already been settled.

"In summary, we bought the property at a huge premium, paid PNB \$40million for a property we never used (there is no building until now), PNB booked a P3.7 Billion profit, went public/IPO then took back the property," Jacinto said.

"If this is a favor - I'd be happy if my friends didn't do me any favor for the rest of my days," he added.

*Source: NB, GMA News Online, July 15, 2016.*

bawat isa.” Seeing all EX-MEN guests happy to be back at the MIRDC and spend time with old friends is worth all the Homecoming Committee's efforts in organizing the event. It was a rewarding experience for the committee to see that the EX-MEN felt they were very important and welcomed by the MIRDC.

Plaques of Appreciation and copies of the MIRDC Coffee Table Book were awarded to some of the MIRDC ex-officials. Likewise, prizes were granted to EX-MEN who won the parlor games.

Indeed, the EX-MEN homecoming celebration is a huge success. It was an event that truly

promoted a never-ending camaraderie. It was a rare bonding moment that waited many years, but one that will be cherished forever.

## MIRDC Celebrates 50 Years of Government Service

The Metals Industry Development Center (MIDC) was established on June 18, 1966 under Republic Act No. 4724 with the primary task of working for close rapport between the government and the industry in order to foster the advancement of metals, engineering, and allied industries in the country. The MIDC was later renamed Metals Industry Research and Development Center (MIRDC) under Republic Act No. 6428.

This year, the MIRDC celebrates its Golden Anniversary. Part of this milestone is the Employees Day Celebration, themed “MIRDC @ 50, Gold at its Finest,” held on June 17, 2016 at the Auditorium of the Taguig City University.

The program started with the opening remarks given by Dr. Agustin M. Fudolig. The welcome message was delivered by Dir. Robert O. Dizon.

The giving of awards and recognitions to exceptional employees of the Center is part of the Employees' Day tradition. Below is the list of

awardees.

The awarding of the MIRDC Legacy Trophy is another tradition observed during the celebration of the M&E Week and the Center's Anniversary. This year's Legacy Trophy was awarded to the outgoing DOST Secretary, Engr. Mario G. Montejo, for his invaluable support and contribution to the country's metals, engineering, and allied industries. He generously gave the MIRDC personnel an Inspirational Message.

Each division delivered their vow of commitment and presented a musical number. The MIRDC Band and MIRDC Acoustic Band also performed during the celebration, and rocked the stage with their energetic performances. The bubbly and fun team of Engr. Karl Andrew Chavez and Engr. Arvin Yan Pacia facilitated the games which were enjoyed by both management and employees.

Ms. Aurea T. Motas, Chief of the Finance and Administrative Division, introduced the new employees. Engr. Rodnel O.

Tamayo announced the winners of the Golden Games held in the month of May. Sporting events include basketball, volleyball, and fun run. The winners of darts with ages 50 years old and above category, Engr. Wilfredo Lim and Engr. Edilbert Dela Peña, and the best muse for 50 years old and above, Ms. Malou Fajarda, were also awarded. The Research and Development directorate emerged as the overall champion of the Golden Games.

Raffle draw prizes were given throughout the entire program. Mr. Francis Albert Ferrer won the 3rd prize, Engr. Allan John Limson won the 2nd prize, and Mr. Jim Patrick Erispe was the luckiest employee who brought home the 1st prize.

To conclude the program, the Top Management led the community singing of the MIRDC Hymn and the signing of the commitment board.

Overall, the celebration was a success. Kudos to the men and women behind the event, led by Dr. Agustin M. Fudolig, for pulling off a 50th Anniversary celebration that is definitely an event to remember.

Title of Award	Name of Awardees	Division
<b>"LOYALTY AWARD"</b>		
20 Years in Service	Angelito N. Pilar	ATD
35 Years in Service	Ely C. Delos Reyes	PD
	Luisito N. Alcantara	ATD
<b>"PERFORMANCE EXCELLENCE"</b>		
For Year 2015	Eunice A. Bautista	TDD
	Zalda R. Gayahan	TDD
3 Consecutive Years (2013-2015)	Ronaldo L. Agustin	TDD
4 Consecutive Years (2012-2015)	Reynaldo M. Loreto, Jr.	TDD
<b>"DIVISION MODEL EMPLOYEE"</b>		
Level I	Karl Andrew S. Chavez	ATD
	Edmundo C. Sevilla	FAD
	Serafin G. Aguilar	MPRD
	Augusto S. Atanacio, Jr.	PD
	Alfredo Z. Panganiban	PMD
	Reynaldo M. Loreto, Jr.	TDD
Level II	Edward A. Malit	ATD
	Rosario D. Sancon	FAD
	Lemuel N. Apusaga	MPRD
	Jayson P. Rogelio	PD
	Eric B. Casila	PMD
	Zalda R. Gayahan	TDD
<b>"MIRDC MODEL EMPLOYEE"</b>		
Level I	Edmundo C. Sevilla	FAD
Level II	Jayson P. Rogelio	PD
<b>Best Organizational Unit</b>	Metrology Laboratory Unit	ATD



Top Management led the lighting of the candles.

## MIRDC Holds a Successful Equipment Turnover Ceremonies to the CLSU

The MIRDC spearheaded the turnover ceremonies of the Forage Chopper to the Small Ruminant Center of the Central Luzon State University (CLSU). The program for the turnover ceremonies was held on 11 August 2016 at the Office of the President of the CLSU at 3:00 pm. Present during the event were CLSU key personnel led by Dr. Tereso A. Abella, CLSU President; Dr. Edgar A. Orden, Small Ruminant Center Director and Vice President of the University Business Affairs Program; Dr. Fe L. Porcincula, Vice President for Research; Dr. Maria Excelsis M. Orden, Director of Research Extension; and Mr. Neal A. Del Rosario, Project Staff. The MIRDC, on the other hand, was represented by its Deputy Executive Director for R&D, Engr. Jonathan Q. Puerto; Chief of the Prototyping Division, Engr. Fred P. Liza; Chief of the Product Development Section, Engr. Jose B. Ferrer; and Chief of the Design Section and Project Leader, Engr. Francisco C. Dime.

In its implementation of projects for the DOST's National Dairy Goat S&T Program, the CLSU tapped the expertise of the MIRDC for Component 2 of Project 3 entitled, 'Development and Testing of Durable Blades for Forage Chopper.'



MIRDC Deputy Executive Director Engr. Jonathan Q. Puerto (center) hands the Operations Manual over to CLSU President Dr. Tereso A. Abella (fourth from right), during the Forage Chopper Turnover Ceremonies at the CLSU on 11 August 2016.

Contributing to the successful completion of the project is the MIRDC's privilege, for this is an opportunity to provide technology-based interventions for the enhancement of local agriculture, particularly dairy goat farming.

The Philippine goat industry is categorized into three, namely: breeding; slaughter goat farming; and dairy goat farming. The project on the development of forage chopper involved the MIRDC engineers and support personnel's skills so that the CLSU will have its own equipment to effectively chop grass, most particularly *Indigofera zollingeriana*, whose feeding value and effects on

milk production on dairy goats are currently being studied.

According to the CLSU, good breed, sufficient nutrition, and excellent facilities are the basic requirements in the dairying business. In order to provide the goats with sufficient nutrition, they must be fed with more amount of grass and legumes. The development of the forage chopper will aid in providing the goats with food materials ready for consumption at all times. Chopped in manageable pieces, the *Indigofera* and other grasses is believed to stimulate higher goat milk yield.

Based from the 2015 data revealed by the Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD), a minimal capital investment of P67,250.00 is needed for a 25-doe goat farm. Studies show that goat's milk is best next to mother's milk because it is easily digestible. Moreover, it is safe for lactose-intolerant children and is cheaper than cow's milk. Opportunities await those who will go into the goat dairying business because of a wide variety of product lines including flavored milk, yogurt, and cheeses, among others (Agribusiness, 2014). Now that the forage chopper is available as a result of the collaboration between the MIRDC and the CLSU, more business enthusiasts may want to consider going into goat dairying.



The forage chopper, developed and tested by the MIRDC.



The goats at the Small Ruminant Center of the CLSU are given fresh grass to increase yield.

9001:2008 re-orientation seminar, which aimed to refresh the company's staff on the requirements of the Standard; the conduct of Internal Quality Audit (IQA) seminar, which was a way of familiarizing the AAPMC's staff on the preparation, implementation, and report writing as part of the internal audit process; and a series of technical consultancy

activities, which aim to prepare and assess the readiness of the company's QMS for certification.

The internal audit of the AAPMC's QMS was conducted on June 22-23, 2016, and was outsourced to the MIRDC. This was done in order for the AAPMC to meet its target date of certification.

Finally, the AAPMC received its ISO 9001:2008 Certification on July 4, 2016. It proved to be a successful journey with minimal observations and zero nonconformity. The AAPMC stands proud of its accomplishments and looks forward to gaining a niche particularly in the aerospace market.



From left: Mr. Robert Llamido, AAPMC Operations Manager; Mr. Jerrison Tiong, AAPMC President; Mr. Ranilo L. Bernardino, CEO/Gen. Manager of the NQA Phils., Inc; and Mr. Kenneth Go, AAPMC's Information Officer cap a successful journey as AAPMC finally receives its ISO 9001:2008 certification.

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