metals industry
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MIRDC Explores Partnership with KOAMI

The Metals Industry Research and Development Center (MIRDC) joins hands with the Korea Association of Machinery Industry (KOAMI), the biggest machinery industry in Korea, in creating a common strategy to upgrade the mold industry of the Philippines through the establishment of a Mold Technology Support Center (MTSC). KOAMI is the executing organization of the Korea Institute for Advancement of Technology (KIAT) responsible for the implementation of the pre-feasibility study of the said MTSC project.

The initiative to have the MTSC project spawned from the KIAT's proposal to the Department of Science and Technology (DOST) to do a collaborative feasibility study for the development of the Philippine mold industry. The DOST then endorsed the proposal to the MIRDC which led to the first meeting with KOAMI on July 1, 2015. In this meeting, the KOAMI introduced a scheme that will not only develop the technology in the mold industry but will also contribute to the development of its manpower through training on modern techniques and updated equipment.

On August 28, 2015, a Memorandum of Understanding (MOU) between MIRDC and KOAMI was signed in the presence of Engr. Jonathan Q. Puerto, Deputy Executive Director for Research and Development of MIRDC and Mr. Nam-Soo Baek, Trade Team Manager of KOAMI. The MOU

Fourth from left: Engr. Robert O. Dizon, Assistant Secretary of DOST and OIC of MIRDC, Mr. Jimmy Chan, PDMA Board Member and member of the MIRDC Governing Council and Engr. Jonathan Q. Puerto, Deputy Executive Director for Research and Development pose with members of the Korean consortium after the MOU signing.

was inked by Engr. Robert O. Dizon, Assistant Secretary of DOST and OIC of MIRDC and Mr. Young-Tahk Park, Executive Vice Chairman of KOAMI. The said MOU corresponds to the pursuance of a joint study program leading to an Official Development Assistance (ODA) scheme tailored to further pursue the advancement of the country's mold industry. Through this agreement, the requirements of different mold-making and mold demand companies were surveyed. The survey was carried out by the MIRDC and all-inclusive data were submitted to the KOAMI to be addressed accordingly.

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MIRDC Holds YERP

The Top Management is responsible in making sure that all activities and decisions of the Center are focused toward the achievement of its goals and vision. The Planning and Management Division (PMD) oversees planning sessions and meetings where issues and concerns are raised to determine appropriate actions for improvement and consequently, the attainment of targets and performance objectives.

The Year-end Review and Planning (YERP) was conducted on 12-13 November 2015 at the New Conference Room, 3rd Floor, Laboratories Building of the Metals Industry Research and Development Center. The YERP is an avenue for each Division Chief to report on their major final output (MFO) accomplishments, projections for the remaining weeks of the year, and review of the alignment of accomplishments and targets to current corporate and functional objectives. It was participated in by the Center's Officer-in-Charge, ASec. Robert O. Dizon; Deputy Executive Director for Technical Services, Dr. Agustin M. Fudolig; Deputy Executive Director

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In this issue

From the Officer-In-Charge .....

We again bid farewell to another year. The fast pacing of the last four months of 2015 was no different from how it was the whole year at the Metals Industry Research and Development Center – busy people, always on the edge of their seats, and ever-ready to take on challenges. Because of this very active and dynamic environment, 2015 came and went too soon for us at the MIRDC.

The Center recognizes the significance of having all its activities aligned to the pursuit of its vision to be a center of excellence in science, technology, and innovation for a globally competitive metals, engineering and allied industries by 2025. Armed with a strong commitment and dedication to service, we are very eager to achieve this vision at the soonest possible time.

We went full-blast in the transfer and promotion of completed R&D projects. Beginning in September, the MIRDC conducted ceremonies for the turning over of the Emergency Tent to the following LGUs: Paoay and Bangui, Ilocos Norte; Cauayan, Isabela; and Tuguegarao and Gonzaga, Cagayan. The tent is designed not only to provide shelter to people in times of calamity or disaster, but may also serve for multipurpose functions like command centers and temporary warehouse. Aside from this, the launching of the Local Microwave Vacuum Dryer and the Superheated Steam Treatment System for Stabilized Brown Rice was held recently at the Platinum Auditorium of the MIRDC. Our efforts to promote the outputs of our R&D initiatives even took us to a trip to several places in the United States where our team received recognition after they presented the technical papers on the (1) 'Development of a Low-Cost Controller for the 3-Axis Computer Numerically Controlled Plasma Cutting Machine' and (2) 'An Optimized Design of a PLC-Based Controlled Microwave Vacuum Dryer for Preliminary Drying Studies on Rice Bran.'

The MIRDC consistently nurtures and strengthens its linkages with the industry. We conducted the validation of the Metalcasting Industry Roadmap, and offered a seminar on the Auto Parts Testing Facility particularly for companies in the field of auto parts and components manufacturing. Very recently, we held a Focus Group Discussion (FGD) on the Die and Mold Designing and Making (D2M2) training program. Inputs from the industry were gathered to design a training curriculum tailor-made for a special batch of trainees coming from the academe. Also, the MIRDC conducted an FGD on the Competitiveness Roadmap of the Philippine Tool and Die Industry, which was coupled with a celebration of a fruitful MIRDC-industry partnership, aptly themed, 'PartnerShape Conference.'

The Center signed a Memorandum of Agreement (MOA) with the ERDA Tech to ensure a dependable supply of quality-trained and responsible workers. Further, the MIRDC also formalized its partnership with the Korea Institute for the Advancement of Technology (KIAT) through a Memorandum of Understanding (MOU) signed with the Korea Association of Machinery Industry (KOAMI), KIAT's executing organization. This MOU is a prelude to the establishment of a facility that will serve the needs of the local die and mold industry.

The MIRDC took active part in the recently concluded 2015 Science Nation Celebration. It was a three-day Open House where the Center welcomed guests from the media, neighboring universities, and the industry to see our current R&D-related activities and newly-opened facilities.

As always, the best asset of the Center is its people, and so, the MIRDC sees to it that its employees are given opportunities for training to gain personal and professional growth. Complementary to this HRD initiative and in support of the DOST's efforts of empowering its human resource, the MIRDC hosted the DOST's training on management of R&D talents in October.

Towards the latter part of the year, the MIRDC was awarded as one of the 2014 BEST DOST agencies. We are truly proud of this accomplishment. But more than being proud, we are driven to embrace the challenge of striving to always be the best in all that we do. And so as we end 2015, we bring with us the optimism and inspiration to continuously reach for performance excellence in the years to come.

Robert O. Dizon
Officer-In-Charge, MIRDC

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Both driven by the aspiration to realize the project, the MIRDC and the KOAMI had another meeting on November 5, 2015. Here, a more comprehensive detail of the project was discussed prior to the result of the aforementioned survey. Among the topics discussed were the target site for the MTSC, long term goals and budget allocation for the project. It was also clarified from this meeting how the MTSC will harmonize with the existing Die and Mold Solution Center (DMSC) which aims to focus on the acquisition of facilities that are needed to make the industry more competitive. The goal of the MTSC, if harnessed to the goal of DMSC, is expected to reach the point in finding where the real opportunities are.

While the project is largely anchored on the KOAMI's collaboration with the MIRDC, other agencies were also tapped for this project. The KOAMI had several meetings with personnel from the Technical Education and Skills Development Authority (TESDA) to look into their training centers that could provide a suitable environment to push the project further. On the other hand, to ensure that the project can be well executed, the proposal crafted for the said project was submitted to the National Economic and Development Authority (NEDA) for recognition of the project's relevance to the current Philippine Development Plan.

Given the expected timeframe as agreed from the last meeting on December 10, 2015, both the MIRDC and KOAMI are ironing out the features of the project to be presented to the NEDA for review. This is to ensure that the proposal is in accordance with their current requirements before it is submitted to the Department of Foreign Affairs which will endorse the project to the government of Korea for its implementation funding.

In one of the meetings with NEDA, Dr. Agustin M. Fudolig, Deputy Executive Director for Technical Services, who also acts as the head of MIRDC negotiating team for the MTSC project, signaled his strong stand to develop the mold industry of the Philippines.

"MIRDC will not be judged by how many assets we have. We will be judged with the state of the industry," he said *"If it grows, then we are doing our job,"* he added. This statement attests to the Center's mandate to strengthen its linkage with public and private sector by providing them professional management.

Members of the MIRDC negotiating team and KOAMI representatives carefully review details of the MTSC project.

for Research and Development, Engr. Jonathan Q. Puerto; the Division Chiefs, Project Leaders, the Legal Officer, and the SALEM Representative.

The YERP last November brought into focus the Center's accomplishments. Each division has functional objectives to meet, and all objectives form part of the MFOs that serve as indicators of how effective the Center is in delivering all mandated services to its stakeholders.

The Center's key actors in the fulfillment of MFO 1, Scientific Research and Development, are the Prototyping Division (PD), the Materials and Process Research Division (MPRD), and the Analysis and Testing Division (ATD). Accomplishments for MFO 1 measure performance in terms of quality, quantity and timeliness, indicators that apply to all Research and Development Institutes (RDIs) of the DOST. Also giving valuable inputs to the achievement of MFO 1 is the Technology Advisory and Business Development Section (TABDS) of the Technology Diffusion Division (TDD). The concerned divisions effectively implemented and completed R&D projects and, in fact, achieved more than 90% of their targets.

MFO 2, Technical Advisory Services, involves the PD, the MPRD, the TABDS and the Industrial Training Section (ITS) of the TDD, and the Analysis and Testing Division (ATD). Through the dedication of the said divisions, the Center was able to render facilities sharing services, consultancy services, and in-house and on-site calibration/testing jobs. Moreover, the MIRDC was able to conduct/assist trainings and seminars, produce trainee-graduates, pursue technology transfers and implement business development agreements. The Center is proud to have accomplished more than 90% of the targets for MFO 2.

Support functions are carried out by the PMD, the Finance and Administrative Division (FAD), and the Technology Information and Promotion Section (TIPS) of the TDD. All have performed exceptionally well in contributing to the achievement of Center-wide goals. Activities that amplify the Center's determination to serve the metals and engineering industries include capability/facility upgrading, resource management, organizational planning and deployment, plans and programs performance monitoring and evaluation, linkages and networking, quality management system, promotion and information exchange, industry study, library services, and records and communications

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MIRDC Reviews D2M2 Curriculum

The emergence of challenges on the tool and die industry has kept the Metals Industry Research and Development Center (MIRDC) abreast of the harmonized measure to steer clear with the obstacles that hamper the industry's goal towards competitiveness. One of the interventions under the Tool and Die Industry Roadmap is "Enhancing Tool and Die Industry Competitiveness by Expanding the Pool of Trained and Highly Skilled Die and Mold Designers and Makers (D2M2 Project)," which constitutes a curriculum design modified after a series of collaboration between the MIRDC and the Philippine Die and Mold Association (PDMA).

On October 27, 2015, the MIRDC conducted a Focus Group Discussion particularly on the curriculum developed for the D2M2 Project. The FGD was held at the Silver Auditorium of the Laboratories Building in MIRDC and was attended by members of the PDMA and representatives from the academe.

Ms. Aurea T. Motas, Chief of Finance and Administrative Division, MIRDC, in her opening remarks, emphasized the shortage of skilled tool and die manpower and raised her expectation to develop the best curriculum design through the FGD. Ms. Motas also highlighted how the tool and die sector will benefit from the D2M2 Project as it will advance its manpower by expanding the pool of competent tool and die makers.

To put the discussion into wider perspective, Dr. Danilo N. Pilar, Chief of Technology Diffusion Division, MIRDC and moderator of the FGD, presented an overview of the project and explained what the FGD is comprised of. He emphasized that the fourth D2M2 training is geared towards training instructors and trainers from the academe that can effectively transfer the knowledge to students from different universities and colleges. The core component of the FGD included the curriculum design, duration of the training and learning content, in which the participants shared insights to develop consistency with the design of the curriculum. Most discussed comments focused on identifying competencies

Left: Dr. Danilo N. Pilar exchanges views with the FGD participants; Right: Participants of the FGD visit the Die and Mold Solution Center.

management. In addition, MIRDC's Quality and Environmental Management Systems help strengthen the Center's capability to meet customer satisfaction with efforts to continually provide quality and reliable products and services to its stakeholders, while exerting strong determination to safeguard environment as well.

Serving also as a window to see the coming years and how the MIRDC intends to make a difference for the metals, engineering and allied industries, the YERP was an opportunity for the Center's officials and project leaders to review the programs for 2016 and identify specific projects that make up each program.

In a nutshell, the YERP was an activity that placed everyone on track. Each section and division was able to deliver what were expected of them, some were even way above target. But taken collectively, these accomplishments are indicative of an organization that knows its vision, focuses on its direction, and is capable of carrying out its role to the industry.

The MIRDC officials, division and section chiefs, and project leaders present accomplishments and discuss plans during the YERP.

that need enhancement and compressing some training modules by excluding topics that are already common in the academe specifically with the prospective trainees that will compose Batch 4 of the D2M2 training program.

Engr. Jose B. Ferrer, Chief of Product Development Section, Prototyping Division, MIRDC capped off the FGD with his message where he expressed his appreciation of the participants' contribution for the successful FGD. According to him, it is very fulfilling to know that through the cooperation of the participants, they are able to identify and fill the needs of the sector. He added that the FGD has motivated everyone involved in the D2M2 project to work even harder in achieving their objective to design an effective training curriculum. Adopting this premise helps to ensure that increased aspirations for the success of the D2M2 will continuously develop.

At the end of the forum, participants from the academe were invited to visit the Die and Mold Solution Center (DMSC) to have a glimpse of the equipment for tool, die and mold making.

FGD on Competitiveness Roadmap of the Philippine Tool and Die Industry cum "PARTNERSHAPE Conference"

Dr. Danilo N. Pilar serves as a facilitator to the focus group discussion.

The Metals Industry Research and Development Center (MIRDC) lined up special events on December 15, 2015 that will highlight the public-private partnership of the metals, engineering and allied industries and the Department of Science and Technology especially the MIRDC. The events are the "Focus Group Discussion (FGD) on the Competitiveness Roadmap of the Tool and Die Industry of the Philippines" and the "PARTNERSHAPE Conference 2015."

The FGD was conducted at 9:00 a.m. (at the MIRDC Platinum Auditorium) while the "PARTNERSHAPE" was held at 2:00 p.m. (also at the same venue). The former event is intended to review the roadmap taking into consideration developments and recent events that impact on the supply chain and over-all business environment in order to integrate strategies to support the attainment of the identified goals and objectives.

The latter event aims to gather together the Officers of the Department of Science and Technology (DOST) partner-associations under the Makinarya at Teknolohiya para sa Bayan (MakiBayan) initiative. It was also an opportunity for the MIRDC to present to the key decision-makers of various industry associations the major MIRDC projects in 2016, as well as an overview of the planned activities for the Golden Founding Anniversary of the MIRDC including an exploratory discussion on the formation of a new M&E industries foundation. The status of the CNC Training Program was also reported to the industry group. Fellowship followed after the Conference proper, which also served as Christmas party time for the industry partners from 5 p.m. onwards. Surprise musical numbers entertained the M&E guests and MIRDC/other government participants.

The participants of the FGD on the Competitiveness Roadmap of the Tool and Die Industry of the Philippines are as follows: officers of the Philippine Die and Mold Association (PDMA), Mechatronics and Robotics Society of the Philippines (MRSP), Aerospace Industries Association of the Philippines (AIAP), Philippine Metalcasting Association, Inc. (PMAI) and the MIRDC.

On the other hand, the industry partners involved in the PartnerShape Conference are: Metalworking Industries Association of the Philippines (MIAP), Philippine Welding Society (PWS), Original Equipment and Manufacturers Association of the Philippines (OEMAP), Engineering Research and Development for Technology (ERDT), Motorcycle Development Program Participants Association, Inc. (MDPPA), AIAP, PMAI, MRSP, PDMA, and the DOST.

The industry players, TESDA representatives, other participants and presenter pose for a souvenir photo.

Metalcasting Industry Roadmap Validated at MIRDC

The MIRDC and the Philippine Metalcasting Association, Inc. (PMAI) held the validation of the metalcasting industry roadmap on Oct. 6, 2015 at the MIRDC Platinum Auditorium. Key officials of PMAI, including selected industry players, joined the MIRDC to discuss the roadmap requirements of the Board of Investments (BOI). Dr. Adolfo Jesus R. Gopez, the president of the Society of Metallurgical Engineers of the Philippines and of Feati University actively facilitated the "brain storming session." During the validation, the participants emphasized the following points: a) The Metalcasting industry roadmap should be linked to the Comprehensive Automotive Resurgence Strategy (CARS) program; b) The proposed foundry institute's funding must include collaboration visits and fees for consultant; and c) The industry can seriously consider to develop a market for machine tools maker especially if the plan is to go into car manufacturing, shipbuilding and aerospace. The strategies to execute the roadmap were presented by Engr. Lemuel N. Apusaga, Senior Science Research Specialist of the MIRDC. The next activity was the recap of the discussion. Inputs from the PMAI and all concerned will be consolidated by Engr. Apusaga. The closing remark was delivered by Engr. Rodnel O. Tamayo, Chief of Materials and Process Research Division, MIRDC.

The participants in the validation activity were the officers of the PMAI led by of Mr. Jerry Hui of Supercast, Tiger Machinery, Metercor, Sanford and other companies; from the government – Board of Investments, Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD), MIRDC officials and employees.

Recently, the MIRDC submitted the requirements of the BOI through Engr. Apusaga. The Center is waiting for the feedback from the BOI.

Dr. Agustin M. Fudolig, MIRDC Deputy Executive Director for Technical Services, welcomes all the guests, while at the top right: Mr. Amelito E. Umali, Chief of the Heavy Industries Division of the DTI-Board of Investments presents the BOI Manufacturing Industry Roadmaps. Below: the delegates post for the souvenir photo.The closing remarks was delivered by Engr. Rodnel O. Tamayo, Chief of MIRDC's Materials and Process Research Division.

MIRDC Holds ATF Awareness Seminar

The Metals Industry Research and Development Center (MIRDC) conducted on 21 October, 2015 an awareness seminar for the identified stakeholders to promote the services and capabilities of the Auto Parts Testing Facility (ATF). Participants were from private companies that cater to the automotive industry, mostly members of the Motor Vehicle Parts Manufacturer Association (MVPMAP), which evolved with its new name, Philippine Parts Maker Association (PPMA), and the Motorcycle Development Program Participants Association, Inc. (MDPPA).

Dr. Agustin M. Fudolig, project leader of the "Revitalization of MIRDC's Testing Facility in Support to the Automotive Component Parts Manufacturing Sector," welcomed the participants. He emphasized that the ATF can be a tool to enhance the global competitiveness of the local auto-parts industry.

Engr. Florante A. Catalan presented the capabilities of the new equipment, their principles, applications and limitations. He stressed that the ATF laboratories

(Top) Dr. Fudolig delivers his welcome remarks. (Bottom) Engr. Catalan presents some of the equipment of the ATF laboratory.

can be used for raw material characterization, product quality control, development of automotive products/process and likewise, research and development. After the presentation, the participants were given a tour of the Chemical and Physical Laboratories and the ATF laboratories, where they witnessed demonstrations showcasing the ATF's high-end equipment.

An open forum followed with Dr. Fudolig, Dr. Rio S. Pagtalunan and Engr. Catalan, as panelists. Positive interaction ensued as participants raised comments and suggestions.

Dr. Pagtalunan concluded the event and expressed gratitude to the participants. He said that the success of the ATF largely depends upon the PPMA/MDPPA support. He also emphasized that continued cooperation will help make the facility grow.

Tent System for Emergency Preparedness and Risk Reduction

The safety and welfare of Filipinos are prime considerations of the Philippine government. In times of typhoons, earthquakes, floods or other calamities, some affected Filipinos critically need shelters. Wanting to be of help, the DOST-MIRDC has developed tent systems for emergency applications. The tent systems provide immediate shelter to people displaced by the calamity or disaster. Further, a multipurpose tent serves various functions such as temporary warehouse, field hospitals and command centers.

The tent system is designed to enable fast manufacturing, not just by specialized tent manufacturers, but also by those involved in metalworking and garments manufacturing. The tents are basically composed of steel framings and fabric roofing and walls. Its pillars (posts) are made of G.I. pipes. Bamboo can be used as alternative material since some regions are abundant with bamboo trees, thereby supporting sustainable and eco-friendly development. They are cost-effective and durable enough to serve as temporary shelter until such time people can rebuild and return to their homes. Hence, the availability of cost effective and easily manufacturable tents will strengthen the country's capability to respond to emergencies especially when it comes to critical needs for shelters. Stockpiles of these tents can also be set-up, ready to be deployed as the need arises.

In the last quarter of 2015, the MIRDC turned-over the safekeeping of tent prototypes for the purpose of emergency preparedness in some municipalities in Region 2. The turn-over ceremony was held in LGU Cauayan City, Isabela attended by members of the Sanggunian Bayan; Sanggunian Barangay; DOST Region 2; representatives of Gonzaga, Cagayan; and the Office of Civil Defense Tuguegarao together with the local media. In behalf of City Mayor Bernard Faustino M. Dy, Mr. Jose L. Abad, City Administrator, welcomed all participants in the ceremonial turn-over of four (4) tents to the following: LGU Cauayan City, Isabela – 2 tents; LGU Gonzaga, Cagayan – 1 tent; and Office of Civil Defense, Tuguegarao – 1 tent. Previously, three tents were donated to LGU Paoay and two tents in Bangui, Ilocos Norte. There are 10 tents still available for deployment by the MIRDC. One is reserved for the LGU of Ilagan, Isabela while one tent is with the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD). The other eight tents are yet to be distributed to Region 8 in coordination with the DOST Regional Office VIII. The deployment of these tents is a way of the national government to enhance disaster preparedness capabilities of LGUs especially in areas considered as typhoon prone. The DOST-MIRDC will support the LGUs in the fabrication of the tents, acknowledging DOST as to the use of the drawings and designs.

(Clockwise from top left): Engr. Rodnel Tamayo, Project Leader and Division Chief of MIRDC-MPRD, presents project overview; turn-over of tent to LGU Gonzaga, Cagayan; inside view of the tent; and media and local government view the tent systems.

Advanced quench and temper facility

The new heat treatment line to be installed at Timken Steel's Gambrinus complex in Canton, Ohio, USA, will combine induction preheaters and heating furnaces for both the austenitizing and tempering process. Timken Steel has developed the AQTF (advanced quench and temper facility) together with SMS group. The line will be capable of processing up to 10 t/h of tubes and bars, ranging from 100 to 300 mm in diameter and in a variety of different steel grades. The heart of the AQTF line will be the Quenching Shell® developed by SMS group, is an advanced water spray system which can be used flexibly for different products and is characterized by its adaptability to changing process condition. The new line is in operation second quarter of 2016.

Contact: www.sms-group.com

Source: MPT International 5/2015, p. 68

Line layout combining induction preheaters and heating furnaces.

Hybrid metal analyzer with enhanced performance features

Two new arc/spark optical emission spectrometers for high-performance metal analysis have been introduced by Spectro. The new Spectrolab, metal analyzers deliver ultrahigh speed of measurement, extremely low limits of detection, ultimate elemental flexibility and excellent stability. The new hybrid analyzer combines analog photomultiplier tune (PMT) detectors with digital charge couples device (CCD) technology for simultaneous measurements in R & D, trace metal measurement and precious metal analysis. The analyzers feature a sealed, no-purge optical system for maximized light transmission stability, even in the far UV. Its software utilizes sophisticated online drift correction measures. Depending on the application, trace values in single parts per million (ppm) can be easily ascertained. The coupling of a high-energy plasma generator with Spectro's dynamic pre-burn process provides extremely fast setup, accelerated sample through put and exceptionally low time measurement in many applications. An optional software-extendable configuration allows changes to the elemental setup without requiring calibration. UV-plus purification eliminates expensive argon purging or vacuum pumps.

Contact: www.spectro.com

Source: MPT International 5/2015, p.68

Increased life for bloom, billet and tube molds

A new compact gun has been developed to apply coatings to the inside of bloom, billet and round mold tubes. This development by Castolin Eutectic, through their Monitor Coatings business, will extend the durability and longevity of small molds. Successful trials have already taken place in Monitor Coating's workshop. The liquid fuel system and its applications are similar to, but have a more cost effective performance than other mold coatings. Another advantage is that the system called compact HVOF gun, is compliant with European legislation such as the REACH directive, providing continuity and cost-effective alternative to coatings that will soon become obsolete under the new regulations. Live trials of the coating are currently being prepared to be carried out on selected plants.

Contact: www.monitorcoatings.com

Source: MPT International 5/2015, p.66

Billet welding technology

Endless welding rolling is a process involving flash-welding the tail end of one billet to the head end of the next billet as it emerges from the reheating furnace. It eliminates the billet gap, reduces cobbles and minimizes scrap. CMC South Carolina, USA, and Tosyali, Algeria, have ordered new EWR® units from Danieli. These is designed to operate up to 180 t/h. Operation of the billet welding brings substantial benefit and efficiency, mainly to the extra rolling time coming from the elimination of roll gaps, and significant savings in plant manpower. The consequent positive effects on production cost will result in very short return of investment.

Contact: www.danieli.it

Source: MPT International 5/2015, p.69

Flame-cutting nozzles

German flat steel producer Salzgitter Flachstahl GmbH uses Framag flame-cutting nozzles on two of their four slab casting lines. The FCN 300 nozzles of the Evolution series provides high process safety, especially in respect of possible cutting stops or cut interruptions, and a very good quality of the cut surface, raising the output of the downstream rolling lines. They reduce consumption of cutting gases and achieve very high cutting speeds, especially on the cast thickness of up to 350 mm produced at Salzgitter.

In addition to these benefits, the optimized design of the nozzle enables the cutting clearance to be minimized, thus reducing material losses during flame cutting and increasing productivity in the continuous casting lines.

Contact: www.framag.com

Source: MPT International 5/2015, p.68

Nozzles for flame-cutting applications in continuous casting lines.

Bar rolling technology

Friedrich Kocks GmbH & Co KG in Bremen, Germany showed their latest development in reducing and sizing technology for SBQ products. Equipment presented and assembled in the workshop included a block of the newly developed SCS® RSB technology complete with the new dynamic modular drive concept. Also 3-roll stand for SBQ production were presented, one with a nominal roll diameter of 370 mm and 500 mm so far the biggest RSB that Kocks has ever made. A special feature of the 500 mm heavy-duty block is the drive concept which involves an own motor for each roll. Visitors were also demonstrated the calibration and operation of the computer-aided pass and guide adjustment system CAPAS.

An online simulation of thermo-mechanical rolling with water boxes was presented to demonstrate the automation of the cooling line. Also live demonstration was provided of the KMS-Kocks microstructure simulation software, predicting and visualizing the temperature distribution along the mill line with resulting microstructure and mechanical properties.

Contact: www.kocks.de

Source: MPT International 5/2015, p.66

Open-die forging press

A top floor open die forging press (TFP) with a press force of 200MN generated by a hydraulic drive system with an installed power of 12,000 kW will be supplied by Wepuko Pahnke to China.

The main field of operation of the new plant will be the production of ring segments and discs for manufacturing pressure vessels for the nuclear power plant industry. The safety requirements in this industry are very stringent. This implies unique challenges for the press system. With this press, homogeneous parts for high pressure vessels with diameters of up to 9.5m will be forged to highest quality and precision standards. Besides ring segments, the press will be designed to forge the large arc vessel bottoms in one piece. Forging such large parts, requires exceptional eccentric loading capacity and an additional manufacturing step, involving punching the flange connection ports into the vessel's main body or the vessel bottoms.

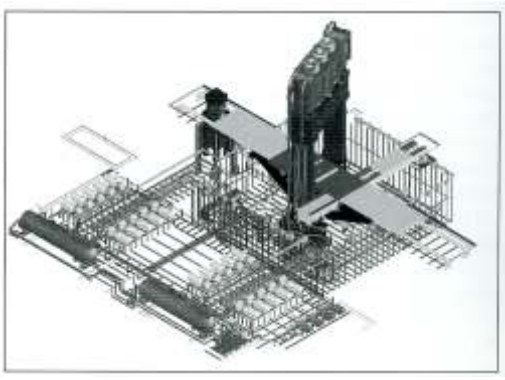
Wepuko Pahnke utilizes FEM to evaluate the flexibility and fatigue strength of the press structure during the design phase. Digital design tools such as CAD/CAE allow the press system to be modeled prior to manufacturing and to finalize the design in collaboration with the customer.

The two-column open die press will be arranged at an angle, a design feature typical of Wepuko Pahnke presses. This arrangement provides maximum workspace for large forgings and an unobstructed view of the press tooling area. It also facilitates feeding of the work pieces into the press.

The energy-efficient oil-hydraulic Pahnke Modified Sinusoidal Direct (PMSD) drive system will involve 20 advanced and durable radial piston pumps. The system guarantees a uniform and smooth forging process with high-precision fast press strokes. Loading and unloading of bulky forgings and the forge tooling equipment will be supported by the long stroke of the moving table, which requires special design solution resulting from the fact that due to the large dimensions of the ring forgings, no manipulator will be integrated into the system. Instead, the rings will be moved by a rotating forging beam driven by a chain drive. The press is scheduled to go into operation in the fourth quarter of 2017.

Contact: www.wepuko.com

Source: MPT International 5/2015, p.66



Digital model of the 200 MN forging press.

Electronics Lighting Up Outlook for Philippines

The Philippine electronics sector remains on track and one of the brightest spots for the Southeast Asian country despite a slowing Chinese economy and its impact on the rest of the region, analysts said.

As economists raced to change their projections for the sector to reflect a slight downward trend, the overall outlook remained positive for the country.

This is largely because the demand for electronic products is seen to be sustained over time, with the youth market expected to keep purchasing the latest electronic devices, from smartphones to digital cameras.

At a forum held recently in Manila by Maybank ATR Kim Eng investment house, investors seemed less worried by the slowdown in the Chinese market than the ability of firms to cash in on the electronically savvy youth sector, which they argued could sustain the industry's growth.

Adora Navarro, a senior research fellow at the government think tank Philippine Institute for Development Studies, told China Daily Asia Weekly that the overall investment climate in the Philippines remained positive because the macroeconomic fundamentals were good.

She said that investors looked at the country differently from other emerging markets which were adversely affected by the contagion effect of the China slowdown.

Navarro added that while the slowdown could force investors to recalibrate their investment plans, the move would only be temporary.

US electronics firm Texas Instruments, which operates two facilities north of Manila, and other investors view the country as a "worthy investment destination, but they will probably recalculate the timing and magnitude of their investments given the weak global demand," she said.

China is the third-biggest buyer of Philippine products, and electronics exports make up a substantial portion of its total shipments. About two-fifths of the country's exports are electronics, so it is understandable that some feel jittery, analysts said.

A truck drives past rows of cargo containers at the port in Manila. Philippine exports have been hit by the slowdown in demand in the region but electronics have bucked the trend, buoyed by shipments of semiconductors.

"It is reflective of the global economy rather than the overall domestic economy. The slowdown is due to weak global demand," Navarro said.

"The slowdown in the electronics sector will have an impact on the domestic economy, but if other sectors (such as) gross capital formation or investments perform better, then the impact can be offset. It may be temporary if global demand picks up next year."

Reasons for optimism

`Navarro said she remained optimistic because the "potential of the Philippines is still there, which attracted the electronics firms here."

An English-speaking work force, low labor costs and incentives offered by the government to investors have helped the country lure investors.

What have changed slightly, she said, are the external factors that determine the country's long-term plans. Carrying out these plans will have to be reassessed in terms of timing and magnitude, she added.

As it is, it is still too early to say whether the Philippine targets for the sector will be missed, because the Chinese component of the global electronics supply chain is not static.

"For instance, manufacturing in China can transfer to other countries. What's important at this point is to monitor developments and be prepared to adjust the timing and magnitude of targets, if needed," she said.

While overall Philippine exports dropped for the third straight month in June to $5.3 billion due to the overall slowdown in demand in the region, electronics bucked the trend, according to the National Economic and Development Authority (NEDA), the country's top socioeconomic planning body.

"Weak external demand" affected the country's overall trade performance for the quarter, reflecting a still fragile global economy being felt across the region, NEDA said.

Yet, the electronics sector rose 9.5 percent year-on-year in June, buoyed by shipments of semiconductors. This was a strong turnaround from a 7.5 percent year-on-year drop in May.

This resurgence was a reflection of a strong global semiconductor market, with worldwide sales expanding in the last two years, the government said.

The high exports figure for electronics helped to cushion a tepid growth of the Philippine economy, which grew by a mere 5.6 percent for the three months to June, from 5 percent in the previous quarter, it added.

►

2015 Science Nation Tour

Themed as "Agham na Ramdam: Science for Every Juan," the Department of Science and Technology-National Capital Region (DOST-NCR) hosted the 2015 Science Nation Tour on December 7-11, 2015. The event aims to make all the stakeholders in Metro Manila feel the benefits of science and technology. Through the Science Nation Tour, DOST-developed technologies were presented to neighborhood communities. The program is composed of technical fora and trainings, a science camp for students, activities for LGUs, project launchings, exhibits, bazaar, an S&T roadshow featuring successful

Open House to MIRDC Facilities.

Free Demo Ride at Automated Guideway Transit (AGT).

At the Manila investment forum, Maybank Group president and CEO Abdul Farid Alias said that while the recent slowdown in China was cause for worry to some extent, it was not enough to scare investors away from plunking money into the Philippines, considered to be one of the fastest-growing economies in the region.

The Philippines' average economic growth rate in the last five years is 6 percent, Farid said, and this could only go up with the government intent on pump-priming infrastructure projects.

The implementation of these big-ticket projects will involve public-private partnerships that could boost growth "over many years," he added. The expected growth will come largely from young, tech-savvy consumers, who are likely to drive demand for consumer and electronic goods.

"The country's potential GDP currently is 6 to 7 percent, but the demographic dividends are expected to drive it to 7 to 8 percent," he said.

To enable firms and investors "reap the demographic dividends," Farid said the right policies need to be in place.

"Education and labor policies as well as measures such as building better infrastructure are key to improving employment and productivity for the working-age adults, who will generate growth for the Philippines," he added.

Resilient economy

In a note to investors, Maybank said that while the Philippines has been affected by external factors, "their impact to the domestic economy is arguably more muted than for the region." Private consumption, too, which included purchases of high-tech electronics, has been "high and steady," the bank said.

"This is unlikely to change as per capita income continues to rise, unemployment falls and growth becomes more widely dispersed throughout the country," said Maybank in its report.

The Semiconductor and Electronics Industries in the Philippines, Inc. (SEIPI), however, has said it expects overall exports for the year to remain in the doldrums due to external factors.

But while it slashed its export growth forecast for this year, it remains upbeat about the overall economic performance of the country, pointing out that the Philippines has a lot going for it in terms of investment opportunities.

SEIPI has more than 200 semiconductor and electronics manufacturers as members, including Texas Instruments.

"We have reduced our 2015 projections from 5 to 7 percent to zero to 4 percent due to weak global economy, including the US, EU, Japan and recently China," SEIPI president Dan Lachica told China Daily Asia Weekly.

Continuous improvements to communications facilities, transportation and business infrastructure, as well as highly accessible transportation make it easy to invest in the country.

Cargo traffic is handled well while fiber-optic cables ensure round-the-clock connectivity, Lachica said.

Projections may be down slightly, but investors are not about to pull out. Texas Instruments, for instance, has poured in an additional $200 million to its initial commitment of $1 billion seven years ago for its expansion in the Philippines, where it currently employs about 4,000 people.

"We are working on our product and technology road map, which will identify focus sectors five years from now," Lachica added, indicating that more investments are in the pipeline.

Source: China Daily Asia, September 25, 2015

beneficiaries of DOST-NCR's programs, and awarding of plaques of recognition to cooperating entrepreneurs and agencies.

Moreover, one of the highlights of the celebration is the conduct of the Open House wherein the public visited different DOST laboratories/facilities. Relatedly, the MIRDC gladly welcomed 431 guests who visited the following facilities, namely: Die and Mold Solution Center (DMSC); Surface Engineering; and Auto-Parts Testing Facility. Also, the MIRDC was able to accommodate 1,439 people to demo rides on the Automated Guideway Transit (AGT).

Activities also include the "Amazing Race Contest" of high school students by teams racing around the DOST offices. On 11th December 2015, the last day of the Science Nation Tour, the employees of the DOST and its agencies joyfully participated in the DOST Science Jam and Ignited Minds celebration which was held in conjunction with the event.

World Congress on Engineering and Computer Science 2015

The Metals Industry Research and Development Center of the Department of Science and Technology (DOST-MIRDC) was invited by the US government to participate in the World Congress on Engineering and Computer Science (WCECS 2015) held on October 19 to November 3, 2015 in San Francisco, Kentucky, and Connecticut, USA.

WCECS 2015 is organized by the International Association of Engineers (IAENG), a non-profit international association for engineers and computer scientists. Focused on frontier topics in theoretical and applied engineering and computer science applications, the WCECS conferences served as good platforms for the meeting and exchanging of ideas of the entire engineering community represented by over 260 committee members who are mainly research center heads, faculty deans, department heads, professors and research scientists from over 20 countries.

Major highlights of activities that transpired during the WCECS are as follows:

1. MIRDC presentations of S&T Papers.

Engr. Fred P. Liza presented the study entitled, "Development of a Low-Cost Controller for the 3-Axis Computer Numerically-Controlled (CNC) Plasma Cutting Machine" in the International Conference on Intelligent Automation and Robotics (ICIAR) 2015. The said equipment is capable of cutting steel and other metals with plasma torch. Engr. Jayson P. Rogelio, chair of ICIAR 2015, presented his study entitled,

Engr. Fred P. Liza and Engr. Jayson P. Rogelio present their study.

"An Optimized Design of a PLC-Based Controlled Microwave Vacuum Dryer for Preliminary Drying Studies on Rice Bran" which was used to conduct preliminary investigation of the effects of drying parameters on the drying kinetics of rice bran.

The S&T papers presented by Engrs. Liza and Rogelio garnered a Certificate of Merit from the International Conference on Intelligent Automation and Robotics 2015. This recognition was indeed very meaningful and fulfilling to our DOST-MIRDC team and at the same time, serves to inspire all engineers and researchers at the MIRDC.

2. Meeting and Facility/Study Tour at University of California Engineering Facilities on Robotics and Automation.

A facility tour was conducted at the University of California (UC) which is one of the preeminent academic institutions worldwide with its high-caliber engineering facilities in Robotics and Automation. The facility tour and meeting with the respective personnel and experts in robotics and automation at the University of California is very much essential considering that MIRDC has identified robotics and automation as among its priority technologies and R & D areas as reflected in the MIRDC Strategic Plan 2015-2025, most particularly the implementation of the project entitled "Establishment of Advanced Mechatronics and Robotics (AMEROB)."

3. Attendance to "Discover 2015 (Technology + Education Event)" and Facility/Study Tour at Mazak Corporation.

The DOST-MIRDC team attended the annual manufacturing event of Mazak Corporation labeled as "Discover 2015 (Technology Event)" that exhibited more than 30 advance machine tools performing real-world cutting demonstrations, and conducted various seminars on wide ranging topics which was held at the Mazak Technology Center in Florence, Kentucky. Highlighted during the exhibit were the unique solutions for improving machining efficiencies such as the 5-axis machining, multitasking, and automation by both robotics and "palletech" systems.

4. Mazak Factory Tour.

A familiarization tour of the current production systems and facilities of Mazak was also conducted. Mazak has recently completed their factory expansion with a considerable change to improve flow of their operations such as New Integrex technology, 5-axis iSeries Variaxis machines in a Palletech.

5. Meeting with Mazak Vice-President Dr. Nagae.

The MIRDC team had a chance meeting with Dr. Nagae, Vice-President of Yamazaki Mazak Corporation of Japan, who was one of the guest speakers during the Mazak sponsored "Customer Dinner." Mr. Nagae visited MIRDC last August during the PDMEX 2015 at the World Trade Center.

6. Meeting with Prospective MIRDC Technology Partners.

There are several members of the elite Mazak VIP (Value Inspired Partners) who are also interested to become MIRDC's Technology Solutions Partners.

The MIRDC team initially talked with Mr. Randy McDonald, Sales Director of MEMEX, Inc. based in Canada. MEMEX, Inc. is the supplier of the Merlin Software used in real-time monitoring and measurement of factory operations on all processes and machine parameters for the Smart Box partnership.

Another potential technology partner is ESPRIT represented by Mr. Mike Lauer. ESPRIT provides high end CAM solutions for Wire EDM; B axis machines – such as Mazak Integrex, Mori Seiki NT, DMG CTX Gamma/Beta, Okuma Multis, etc.; Mill Turn for Swiss style – Citizen, Star, Miyano, Tornos, etc.; High-end 5 axis simultaneous milling; and automation of production using SQL-powered Knowledge Base.

7. Meeting and Facility/Study Tour at CNC Software Inc. (Including Signing of MOU Re: Use of Mastercam Software).

With respect to the signing of the partnership agreement with CNC Software, Inc. regarding the use of Mastercam Software, the DOST-MIRDC team visited their headquarters located in Tolland, Connecticut to concretize the commitments of both parties. Mr. Gene Welti, Director for Asia-Pacific Sales, represented the CNC Software, Inc. during the signing of the Memorandum of Agreement (MOA) with Engr. Fred P. Liza of DOST-MIRDC as witness.

The conference was an enriching experience for the DOST-MIRDC. The event increased the level of international linkages and provided opportunity on the promotion of the developed machines and technologies.

The DOST-MIRDC participation to the World Congress, tour of advanced manufacturing facilities, and attendance to international conferences and exhibitions are essential components of the Center's strategies and activities to keep its researchers and engineers abreast of recent technological development for a more effective implementation, sustenance, and management of the major programs and projects of the DOST-MIRDC.

MIRDC Hosts Training on Management of R&D Talents

The Department of Science and Technology (DOST) conducted a training on management of R&D talents entitled "How to Attract, Align, Motivate and Keep Your Best Talents" on Oct. 13-15, 2015 held at the Silver Auditorium of the Metals Industry Research and Development Center (MIRDC). In its effort to develop and strengthen the DOST's human resources, the DOST-Human Resource Development Program (DOST-HRDP) Committee invited management-level employees from attached agencies to participate in the said training program.

The MIRDC hosted the event which featured Mr. Kenneth Jose Bajar and Ms. Karen Cindy A. Meghrajani-Sajwani as resource speakers, both from the Business Maker Academy, Inc. The objectives of the program are to learn the best way to attract, align, develop and retain high performing and high potential employees; identify and define competitive advantage; develop an effective system for Talent Management; and to apply Talent Management concepts and skills in the workplace.

A harmonious relationship between managers and employees will result in positive outputs. Hence, the concepts taught in this program will not only benefit managers and human resource practitioners but will definitely benefit the rank and file employees.

MIRDC Launches Food Processing Technologies

Microwave Vacuum Chamber

Superheated Steam Treatment System

The Metals Industry Research and Development Center launched two (2) research and development outputs specifically for brown rice last December 9, 2015 at the MIRDC Platinum Auditorium. The technoenthusiasts, press people together with the metals and engineering industry players and key personnel of government institutions joined MIRDC in these launching of new technologies. The food processing equipment for brown rice are the microwave vacuum dryer and the superheated steam treatment system (SSTS). The microwave vacuum dryer which will produce a rice-bran of finer-grade is an effective device to make the brown rice more edible and pleasing to eat. Samples of rice bran are free tasted on this occasion through the bread and hotdogs that were served. Brown rice is one of the hottest, healthy staple food in the Philippines today.

The superheated steam treatment system exposes the brown rice to about 90 seconds treatment to superheated steam to reduce the enzymic activity thus, increasing its shelf life. At present, the brown rice can be stored for only 1 month or less to remain effective, useful, or suitable for consumption. The target shelf life is 5-9 months but the testing is still ongoing.

Engr. Jason P. Rogelio, the project leader for microwave vacuum dryer, has received recognitions and nominations for awards. Another study on brown rice was also presented by Dr. Blanca J. Villarino of UP-College of Home Economics. Dr. Dominic S. Guevarra, leading the team for superheated steam treatment system, has also several projects lined-up. The latter equipment provides the brown rice more quality than those which do not undergo treatment. Engr. Rosemarie G. Garcia, from the Food and Nutrition Research Institute explained the background of the project. Both projects are from the MIRDC.

The microwaves stimulate molecules in the food, turns the energy into heat, causing the food to heat up. These waves are the electromagnetic waves that were converted from electrical energy. The microwaves primarily work on water molecules and heat up fats/oils and sugar in lesser extent. The microwave vacuum dryer is composed of: chiller, control box, chamber, motor drive assembly, applicator set, vacuum pump and refrigeration system.

The superheated steam has temperature higher than the vaporization (boiling) temperature. SSTS uses superheated steam as the combined process of steaming and drying of brown rice. The process extends the shelf-life and retains the sensory acceptability and quality of brown rice without chemical additives.

SSTS constitutes a treatment chamber, superheated steam generator, a conveyor and a control system. The treatment chamber is mainly made of stainless steel and mild steel. Its processing time is 5-7 minutes with an expected output of 85 kilograms per hour or 680 kilograms per day for an 8-hour operation. Power requirement is 834 watts. The steam generator is a 5 horsepower boiler with an equivalent evaporation of at least 75 kilograms per hour, operating at a pressure of at least 3 bars. The steam super heater can generate an output steam with a temperature of 300°C.

The project teams post for a souvenir photo with Engr. Robert O. Dizon, Officer-in-Charge of MIRDC and Engr. Fred P. Liza, Division Chief of MIRDC-Prototyping Division.

DECO Machine Shop, Inc. Keeps Getting Bigger and Better

'We will be known nationwide as a premier maker of high quality gearboxes and other cost-effective and import-substituting machine parts and provider of other machining and welding services.' (Company Vision)

Deco Machine Shop, Inc. was originally established as Nardo's Machine Shop by a businessman named Santiago Maglana, Sr. in 1969. A conversation with Nardo, his nephew, convinced Santiago Sr., a farmer with no machining background, that there is profitable business in the machine shop industry. He owns a farm and operates a store in the town of Nabunturan, now part of Compostela Valley. Being the businessman that he is, he ventured into the machining business that led to the birth of the Nardo's Machine Shop. Nardo was the one who had the machining skills. Nardo resigned from his job in a machining shop and transferred base at the newly opened business. He was taken in as one of the pioneer employees of Santiago Sr.

There were only less than ten employees at that time. At the time of its establishment, Nardo's Machine Shop was located at Jacinto cor. Quezon Blvd. in Davao City. It offered lathe works, drilling, welding, and engine rebuilding. The machine shop served as an additional business that helped Santiago, Sr. earn extra income for his family, his wife Rosario and nine children, namely: Nolita, Nicholas, Winifredo, Angelito, Rosalinda, Nelson, Wenceslina, Marilou, and Santiago, Jr. More and more people started to know about the shop and its services. In 1974, the business was worth about PhP 100,000.00.

Atty. Nelson P. Maglana, the sixth child of Santiago Sr., joined the company in 1974. Prior to this, he was an AB General student at the Ateneo de Davao University. He transferred to the University of San Carlos in Cebu a year after and shifted to Mechanical Engineering. When he got on board, he quickly learned the ropes and was motivated to understand how to manage the business.

Santiago Sr. passed away in 1981. The machine shop was incorporated in 1984 and during this time, Deco Machine Shop, Inc. was already under the able leadership of Atty. Nelson. Deco's target market grew to include mostly industrial companies, but they also cater to commercial companies as well. Deco has come to be known by the industry as one of the most trusted names where precision machining, special welding and engine rebuilding are concerned.

In 1995, Engr. Benjamin V. Estrellado, Jr. of the Metals Industry Research and Development Center, under DOST Region XI Director Constancio Cañete, facilitated the conduct of seminars for Deco on welding and other machine shop practices both in Davao City and in Manila. Shortly thereafter, the MIRDC established metal testing facilities in Davao but limited to spectrophotometers, hardness testers and calibrators. This marked the beginning of a 'big brother' kind of partnership as the MIRDC, an attached agency of the Department of Science and Technology that supports firms in the metals, engineering, and allied industries, provided dependable assistance on the analysis of the composition of the steel materials used by Deco in fabrication. Aside from this, the MIRDC assisted the company in terms of calibration of the machine shop's measuring instruments.

Deco Machine Shop, Inc. lives up to its core values that truly define the business and what it stands for. In the face of demanding and activity-filled operations, the company remains firmly grounded. The business is not just about making profit, but is more importantly about enhancing commitment to workmanship quality, customer service, and concern for employees; maintaining excellent supplier, creditor and investor relations; and promoting concern for the environment and the Philippines.

Deco recognizes the vital role that these core values play in their everyday business. Rush jobs are most commonly the greatest challenge the company faces all the time. These are the times when the company's capability to strategize is put to the test. Deco takes these urgent jobs positively. They are viewed as signs of customer approval, very much like the

Employees of the Deco Machine Shop, Inc., pose with MIRDC personnel during the awarding of the ISO 9001:2008 certification.

thumbs up that one gets when people express appreciation for a job well done. The company learned to develop and enhance collaborative relationships. The customers' trust in the company is repaid by quality products and services that can only be possible in a company who is able to come up with the most appropriate solutions to customers' needs in the most critical times.

In 2012, when MIRDC offered assistance on ISO 9001 certification, the company decided to establish a QMS based on 9001:2008 standard. The MIRDC was with the company through every step of this experience – sharing of ideas, conduct of seminars, and sessions for consultation. Deco went through all of these with the MIRDC's competent assistance.

Deco received its ISO 9001 certification in 2013. Aligned to its vision, the company showed deeper commitment to its mission of enhancing customer satisfaction through its products and services. Also benefitting from this commitment are Deco's investors, employees, and all its stakeholders. Pursuing this mission has long been Deco's purpose in doing business. The ISO certification brought them new opportunities and served to further inspire them to create significant impact to the industry.

Deco Machine Shop, Inc. understands what it means to improve continually because it has been exerting relevant efforts for improvement for these past many years. Its workforce has grown from less than ten employees when it started operations to almost 100 employees at present. They acquire and upgrade equipment and machineries in order to meet customers' requirements. Quality control procedures are put in place to help the company maintain very satisfied customers. Moreover, Deco makes certain that it promotes creativity and innovativeness among its employees, an important factor that sets the company apart from its competitors.

Honesty is a culture at the Deco Machine Shop, Inc. All these years of being in the business have molded the company to become one that gives fair transactions in all jobs and with all customers. Cheating is not tolerated. This is perhaps one of the very foundations of the company which led Deco to all its successes.

Deco takes care of its most valuable resource, its people. The company recognizes that its dependable people are behind every success of the company. For newcomers in the business, the Deco management shares this advice: 'Take care of your employees, customers, and business partners through transparent processes. Always be honest.'

As a way of sharing the company's successes to the staff, Deco Machine Shop, Inc. offers production incentives, rice benefits, and hospitalization benefits, among others. The company also reaches out to a larger community by sponsoring shop-related vocational courses at Don Bosco Training Center in Mati, Davao Oriental.

Deco is now worth approximately PhP 53 million. It has its eyes fixed on growing and giving world-class products and services. Part of their strategy for continual improvement is to modernize tools and machineries. The company is currently dealing with the enhancement of its management control system. It expresses its gratitude to the MIRDC for all the assistance it has been extending to them.

The MIRDC is proud to be part of this success story. Deco's story brings inspiration. It will encourage other local micro, small and medium enterprises to hone their competitive advantages through continual product and service improvement. Deco's growth and expansion inspires the MIRDC to remain the M&E industries' ally as it similarly seeks to enhance its productivity and global competitiveness.

Deco Machine Shop, Inc. employees take time off to hold a year-end celebration.

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