

## MIRDC Goes to Calapan City



Calapan in their technical and technology needs/requirements. The Team MIRDC set off in this “four-in-one activity” which includes training, consultancy, exhibition, and skills competition from 14 to 16 March 2017. The event coincided with the celebration of the city of Calapan's 19th Founding Anniversary.

The Opening Ceremonies was held at the Governor Alfonso L. Umali Sr. Memorial Gymnasium of the Oriental Mindoro National High School (OMNHS). On the 2nd and 3rd day, the exhibition was held at the Calapan Public Market while the skills competition on welding and planned technical and non-technical seminars were held at the old City Hall. Trainings and consultancies covered the following topics: Occupational Safety; Wrought Iron Forming; Welding Processes; Productivity Improvement through 5S Practice; Electroplating/Metal Polishing; and Heat Treatment of Steels. Also, the team aggressively promoted the different R&D projects, among which are: Superheated Steam Treatment System for Stabilized Brown Rice; 12-Horsepower Single Cylinder Diesel Engine; Forage-Blade and Chopper for Goat Production; Rice Transplanter Attachment (RTA) for Hand Tractor; Rice Harvester Attachment (RHA) for Hand Tractor; Food Processing Equipment (Vacuum Dryer); Retrofitting of a Compact Rice Mill for Brown Rice Production; Gear Making and Assembly Facility; Auto-parts Testing Facility; Super Lilok; Plasma Cutter; and Heavy-duty DC Inverter

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The Metals Industry Research and Development Center (MIRDC) went to Calapan City, Oriental Mindoro, to pioneer the Center's initiative named “MIRDC Goes to Municipality.” The initiative aims to assist and support the micro, small and medium enterprises (MSMEs) particularly the Small Enterprise Technology Upgrading Program (SET-UP) proponents and academic institutions in the city of

## MIRDC, AIAP Advancing Aerospace Quality Management System through AS 9100

As the aerospace industries in the Philippines bustles with requirements for management systems, the Metals Industry Research and Development Center (MIRDC) and the Aerospace Industries Association of the Philippines (AIAP) conduct exploratory activities through a project entitled, “Supporting Philippine Companies in the Preparation and Implementation of an Aerospace Quality Management System (AQMS) Aligned with AS9100 Requirements.” The project is funded by the Board of Investments (BOI) of the Department of Trade and Industry (DTI).

The project primarily highlights capability building activities (e.g.

trainings and consultancies) to assist qualified Philippine companies in their AQMS document preparation and procedures implementation and develop technical

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The start of a new year for most of us also signals the beginning of better things, bigger dreams, and higher hopes. One with the entire nation, the Department of Science and Technology – Metals Industry Research and Development Center (DOST-MIRDC) ushers in 2017 with excitement and eagerness to help open doors of opportunities that will create lasting impact for the metals, engineering, and allied industries.

Very early this year, the DOST-MIRDC set out on a number of benchmarking activities in line with the implementation of the project entitled, 'Establishment of the Advanced Mechatronics, Robotics, and Industrial Automation Laboratory (AMERIAL),' to various companies that took us to Taiwan, Thailand, Japan, and Spain. Learnings we brought home equipped us with a perspective that has greatly defined how we intend to support the industry through the AMERIAL project.

We widen our horizons not only by embarking on these benchmarking activities, but also by pursuing continued collaboration with R&D partners, various industry players, relevant government institutions, and consultants from both public and private sectors. Our promotions of the Advanced Transportation Projects resulted to significant milestones. For the Automated Guideway Transit (AGT), we had a site visit to Gen. Santos City, an MOU signing with a private company, review of the draft of the Terms of Reference for a feasibility study in the Baguio, La Trinidad, Itogon, Sablan, Tuba, Tublay (BLISTT) region, and a Round Table Discussion to present the market potentials of the AGT to relevant organizations. The Hybrid Road Train, on the other hand, is currently being tested in Cebu. Plans to transfer it to Gen. Santos City for possible adoption are being discussed. The Hybrid Electric Train (HET) is likewise making a remarkable impression. The Department of Transportation recognized the HET's aesthetic and comfortable features. The HET was recently transferred from the Tutuban Station to the Calamba Station of the Philippine National Railways where further tests will be conducted using a longer track.

In addition, we exert sustained efforts to bring the Center closer to the reach of the M&E industries in the regions so that our linkages remain reliable and robust. For instance, we are now seriously dealing with more active promotion of the Superheated Steam Treatment System (SSTS) after its launching in Pulilan, Bulacan in April. Its adoption will not only help prolong the shelf life of brown rice, but will significantly improve the income of farmers and ultimately uplift the technological and business profile of the industry.

We also see to it that we are able to cultivate harmonious relationships with our fellow DOST employees and among us within the MIRDC family. We are part of the Committee for the 2017 National Science and Technology Week (NSTW). Currently, we are actively working on the details of the Center's participation to the NSTW, as well as to the MIRDC's overall NSTW committee membership to ensure a successful conduct of this huge DOST event. In the month of February, we had the oath taking of new officers of the SALEM and the MEMABAI, as well as the general assembly for the Deployment of Plans and Programs. In March, we successfully upgraded to ISO 9001:2015 certification. These initiatives are meant to intensify our efforts to nurture a 'team MIRDC' spirit among all of us.

I wish to encourage the MIRDC and our industry partners to take proactive strategies to really go for the results that we want. Together, let us welcome 2017 and all the positive things that we can achieve for the greater benefit of the M&E industries.



**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 Goes to Calapan City...from cover*

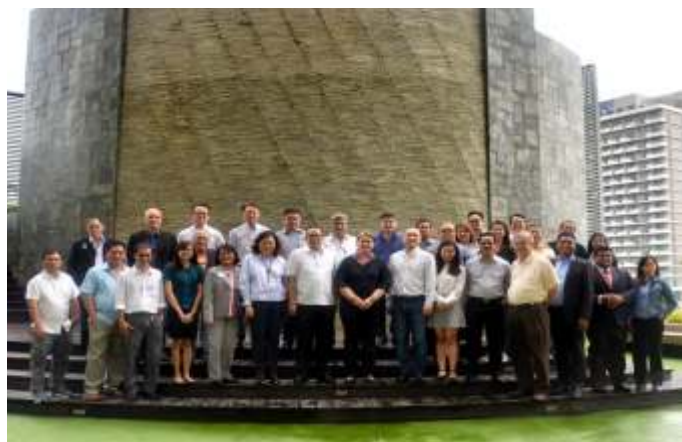
S M A W / G M A W Welding Machineries. Techno- demonstrations and plant visits were held in some companies where the team conducted technical consultancy services. Further, a skills competition was held on the field of welding.

The event was successfully held in full cooperation with the DOST-MIMAROPA headed by Mr. Jesse M. Pine, DOST-MIMAROPA Provincial S&T Director; the Philippine Welding Society (PWS); and the City Government of Calapan in Oriental Mindoro. The MIRDC conveys its special thanks to Ms. Susana M. Bautista, Acting School Division Superintendent of the OMNHS and, of course, to Calapan Mayor Arnan C. Panaligan. The event brought together the MSMEs, proponents of SET-UP, the academe, as well as local government units (LGUs) in Calapan for a unique opportunity to support the city's technology advancement that will ultimately lead to its increased contribution to the province of Oriental Mindoro's economic upturn.

**Photos taken during the very first ever “MIRDC Goes to Municipality.”**



*MIRDC, AIAP Advancing...from cover*



A Staunch Support to the Philippine Aerospace Industry: Project front runners and member companies gain foothold in Advanced Quality System through AS9100.

competencies of their personnel to conduct AQMS implementation and audits. The signing of Memorandum of Agreement between the MIRDC, the BOI and the AIAP was held at the BOI on July 27, 2016.

The Project Launch and Ceremonial Commitment Signing of beneficiary companies was held last January 23, 2017 at the Acacia Hotel, in Alabang, Muntinlupa City. A total of 21 companies committed full participation to training activities and cooperation. Following the ceremonial

signing, NQA Philippines provided a half-day overview course for company owners, CEOs and top management focused on the background of AS9100 Rev D; Aerospace QMS requirements and standards; and importance and advantages of certification to AS9100 standard.

Dr. Agustin M. Fudolig, MIRDC's Deputy Executive Director for Technical Services and Project Leader of the said activity highly encouraged beneficiary companies to focus on the project as it will create more room for cooperation. He added that this initiative will generate a positive impact on the country's aerospace industry, to which Ms. Ma. Corazon Dichosa, BOI Executive Director for Industry Development Services, expressed agreement and additionally

highlighted BOI's support to the industry.

The training program commenced with two trainings entitled, "Awareness Seminar on AS9100 Rev D" and "Documentation Training on AS9100 Rev D." The former is a 2-day training held in January that aims to provide participants with awareness of the most recent revision of AS9100 as well as working knowledge on the requirements and methodology for implementing an Aerospace Quality Management System that meets the requirements of AS9100 Rev D standard. The latter is a 3-day training held in April that aims to help participants in understanding the intent of the AS9100 standard in a practical way and to provide examples of the different ways in which the documentation requirements can be met. Both trainings had two batches of trainees from different organizations.

The enhanced functionality of the project is supported by upcoming trainings on Risk Management in the Aerospace QMS scheduled from May to June, 2017 and Internal Audit Training Course tentatively scheduled in September 2017.

## Strategic Planning Seminar Workshop



Robert O. Dizon, MIRDC Executive Director, observes the scorecard activities headed by Aurea T. Motas, Chief of Financial and Administrative Division.

The Department of Science and Technology - Metals Industry Research and Development Center (DOST- MIRDC) conducted the Strategic Planning Seminar Workshop last April 10 – 12, 2017 at Rockpoint Hot Springs Resort-Hotel Spa, Alamat Road, Maria Makiling Hotpsrings Village, Pansol, Calamba City. Ms. Jocelyn Linsao-Ng, an affiliate of the Civil Service Commission, was the resource person and consultant for this activity.

The objectives of the three-day training/seminar course were the following: (1) to review and determine the relevance of the previous MIRDC Strategic Plan vis-à-vis current directives and future plans until 2025; (2) to analyze the Strategic Planning Factors with the use of the Strategic

Planning tools and techniques; and (3) to draft the MIRDC-DOST Strategy Map, using the Balanced Scorecard as a tool.

DOST- MIRDC Executive Director Engr. Robert O. Dizon headed the seminar participants. Joining him are Deputy Executive Directors Dr. Agustin M. Fudolig and Engr. Jonathan Q. Puerto; and Legal Officer, Atty. Trixie

Hazel C. Veluz. Present also were all the Division Chiefs: Mercedita G. Abutal, Aurea T. Motas, Fred P. Liza, Rodnel O. Tamayo, Dr. Rio S. Pagtalunan, and Dr. Danilo N. Pilar, and selected Section Chiefs: Felipe Restituto Gabuya, Dr. Jelly N. Ortiz, Jose Ferrer, Nelson Tumibay, Ricky A. Catalan, Reynaldo L. Dela Cruz, Jr, Girlie M. Millo, Dr. Anthony Greg F. Alonzo, and Eric B. Casila. The planning-related status reports of the respective divisions/sections served as reference for the said planning activity. Strategic planning is one of the activities of the Management of an organization that aims to define the strategy or direction, the company's visions, missions, and make decisions regarding the allocation of its resources to pursue the company's

strategy. It is also a control mechanism for guiding the implementation and determining of inputs, activities, outputs and outcomes of a company.

The Center used the Balanced Scorecard and PESTEL Analysis in the formulation of the Center's competitive strategy. This considers the political, economic, social, technological, and legal and environmental issues of the Center.



The Management and Staff participated in the three- day Strategic Planning Seminar/Training Course.



The MIRDC Executive Director awards the certificate of appreciation to the speaker, Ms. Jocelyn Linsao-Ng.

## MIRDC Conducts Deployment of 2017 Plans and Programs

The annual deployment of plans and programs of the Department of Science and Technology-Metals Industry Research and Development Center (DOST-MIRDC) was held on February 28, 2017 at the DOST-MIRDC's Titanium Auditorium. The Opening Message, given by Executive Director Robert O. Dizon, largely focused on the Center's Mission and Vision and how these will guide both

Management and staff on the journey towards making the DOST-MIRDC a Center of Excellence.

The Division Chiefs presented their functional objectives, accomplishments in 2016, and plans and programs for 2017. Under the group of Dr. Agustin M. Fudolig, Deputy Executive Director for Technical Services, are the Analysis and Testing Division (ATD), the

Finance and Administrative Division (FAD), and the Technology Diffusion Division (TDD). On the other hand, Engr. Jonathan Q. Puerto, Deputy Executive Director for Research and Development, supervises the Prototyping Division (PD), the Materials and Process Research Division (MPRD), and the Planning and Management Division (PMD).

The ATD's projects for 2017 are

the “Modification of Road Train Energy Storage System Using Lithium-Ion Batteries” and the “Enhancing One-Lab for Global Competitiveness.” The ATD will also focus on the continual improvement of their services.

Part of the FAD's plans and programs this 2017 is expanding the DOST-MIRDC's working space through the rehabilitation of existing facilities and buildings. This includes the retrofitting of the Center's Laboratory and Administrative Building, repair of perimeter fence, completion of main gate and installation of signage for the North and South DOST gates, construction of covered walkway from DOST South Gate to MIRDC, construction of retaining wall for the entire perimeter fence, installation of CCTVs within the center's premises, rehabilitation of selected drainage pipes, implementation of new parking plan, and construction of new cistern tank and upgrading of the center's water supply and sanitary lines.

The TDD's goals for 2017 are: to help in the establishment of the Mold Technology Support Center (MTSC), a project between the DOST-MIRDC and the Korean Government through the Korea Association of Machinery Industry (KOAMI); to establish MIRDC regional offices and metalworking centers; to organize skills competition; to design new training programs; and to introduce the

MIRDC's technology at the municipal level.

The MPRD will focus on their projects entitled, “Design and Optimization of Austenitic Manganese Steel Liner for the Philippine Aggregate and Mineral Processive,” “Technical and Economic Feasibility Study to Determine the Most Suitable Ironmaking Technology for the Value Adding of Philippine Magnetite Resources,” and “Performance Testing and Evaluation of Prototype Trainset.”

The PD's line-up of activities for 2017 are: the renovation of the Titanium Building; technology development; technology roll-out/licensing; facilities improvement/upgrading; and the development of new training programs by identified Subject Matter Expert (SME).

PMD's plans and programs for 2017 include the following: to improve support to operations; to upgrade the ICT infrastructure which aims to provide Business Online Solution System (BOSS) for clients; and to conduct a system and database integration that

will provide the platform for the MIRDC One-Stop Information System (MOSIS) and WIFI upon the establishment of the business center.

In addition to the presentation of division plans and programs, Dr. Danilo N. Pilar, Chief of the TDD, gave an update on the ISO 9001:2015. Mr. Eric B. Casila, President of the MIRDC Employees Labor Association (SALEM), discussed the accomplishments and plans of SALEM.

An open forum was conducted in both the morning and afternoon sessions to give employees the opportunity to ask questions and give comments regarding the programs and activities of the Center.



## MIRDC Invites Metalworking Industry to a PSA-Approved Survey

The Philippine Statistics Authority (PSA) approved the conduct by the Department of Science and Technology - Metals Industry Research and Development Center (DOST-MIRDC) of a survey of metalworking companies particularly those engaged in metalcasting and heat treatment processes to determine the present situation of the industries. The survey will cover the general, market and technical profile including the problems, issues and concerns, and business outlook for the next five years. Through this survey, the DOST-MIRDC will come out with industry studies that will be used by decision makers specifically policy makers,

policy implementers and members of the industry in formulating recommendations for facilities upgrading, personnel development and investment incentives. The previous survey on the welding sector accounts to 1,041 actual respondents and is now on the preparation stage of the aggregate industry study.

Presently, the survey team has identified 85 metalcasting companies and 63 heat treatment firms as potential respondents. The team is now farming out survey invitations and forms to the target respondents from the metalcasting and heat treatment sectors.

The government will be able to generate better programs including training, consultancy and financial assistance in order to boost the industry's competitiveness. Participation in the survey will spawn significant advantages for the respondent-companies as they will be the ones to greatly benefit from the future programs of the government. The survey is an initiative undertaken by the DOST-MIRDC to attain the realization of its vision of a globally competitive metals, engineering and allied industries.

## MIRDC, MRSP: Advanced Mechatronics and Robotics Facility is the Key to Automation

The Metals Industry Research and Development Center (MIRDC) and the Mechatronics and Robotics Society of the Philippines (MRSP) successfully conducted a forum on The Advancement of Mechatronics and Robotics in the Philippines on March 23, 2017 at the Platinum Auditorium of the MIRDC. The said forum was conducted as initial part of MRSP's advocacy to support the Department of Science and Technology (DOST) through the MIRDC by putting up an Advanced Mechatronics and Robotics Facility. The project aims to help the manufacturing companies in process engineering and product designs with the ease of efficiency.

With wide range of competencies, synergies emerged from different personalities in the field of Metals and Engineering, Mechatronics and Robotics, and Artificial Intelligence. Engr. Augusto C. Soliman, MRSP President, highlighted the importance of advanced technology through robotics application and elaborated how automation becomes a keyword in the advancement of the manufacturing industry. Engr. Gamaliel F. Itao, President of Mechatronics Technologies Corp. and former MRSP Chairman, shared information on how engineers could embrace a wider perspective of engineering activities in



"The Big Picture." Engr. Robert O. Dizon highlights priority areas of MIRDC's Strategic Plan during the forum on The Advancement of Mechatronics and Robotics in the Philippines.

his presentation about manpower preparation for mechatronics engineering and robotics application development.

Alongside the considerable mechatronics and robotics learning application during the forum, the topic on Artificial Intelligence was discussed by Professor Mohammad Khaled Sohel of Daffodil International University focusing on how mechatronics and robotics nowadays extend beyond the concept of mechanical and computer engineering.

Considering the significant advances in relation to the MIRDC's Roadmap for 2015-2025, Engr. Robert O. Dizon, MIRDC's Executive Director was happy to announce how the Center recognizes the vital role of mechatronics and robotics in the attainment of competitive

manufacturing technologies. The establishment of the Advanced Mechatronics and Robotics Facility, as highlighted in the roadmap, is all set for 2017.

Participants of the forum visited the MIRDC facilities and learned how to tap the DOST-MIRDC for assistance on research and development projects for the manufacturing sector. The "Linkage Between Institutions and Industries thru Life Skills Training Program and Matching Program" was discussed by Ms. Emily Magharing Genita, Project Manager of Empowering Youth Through

Skills to Succeed. She explained the opportunities for employers that may be achieved through collaboration and participation with its associated activities.

In order to align the significance of the project with the existing demand of automation from the manufacturing industry, Engr. Edwin A. Sta. Maria, MRSP Secretary, introduced one of the principal activities of the forum, which is the study survey on Advance Mechatronics and Robotics Engineering. Engr. Sta. Maria also concluded the activity with his message to continue bringing closer links to everyone interested in significant advances of the mechatronics and robotics application in the country.

## DOST-MIRDC Upgrades to ISO 9001:2015

One of the newest additions to the string of accomplishments of the Center this 2017 is the successful surveillance audit of its Quality Management System (QMS), with upgrade to the 9001:2015 version. The audit, conducted by the TUV Rheinland, was held the whole day of 03 March 2017. The external audit started with an Opening Meeting, where the audit process was discussed, and both the Audit Team and the

Management Team were introduced. It was an eventful day as the audit covered the Top Management, all the divisions, the internal audit team, and the Risk Management Committee. All the personnel involved capped the day with a Closing Meeting for the discussion of audit results.

The DOST-MIRDC has always been an advocate of a Quality Management System, proven by its successful track record of obtaining

certifications and accreditations which began in 1996. First, it was the Analysis, Testing, and Inspection Division which earned the Bureau of Product Standards Laboratory Accreditation Scheme (BPSLAS), then the Instrumentation Laboratory's accreditation from the National Association of Testing Authorities (NATA). The Center's Precision

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## MIRDC 4-Man Team Conducted Study Mission



Photos during the team's visit at 1st Smart Factory and 1stRoboDex Exhibit in Tokyo, Japan.

An MIRDC team composed of Exec. Dir. Robert O. Dizon, Dep. Exec. Dir. Jonathan Q. Puerto, PD Chief Fred P. Liza, and PD Senior Engineer Jayson P. Rogelio conducted a series of Study Mission in Japan, Taiwan, Thailand and Spain from January 18- February 1, 2017. The Study Mission is a benchmarking activity relative to the Center's proposed project, entitled, **“Establishment of Advanced Mechatronics, Robotics, and Industrial Automation Laboratory (AMERIAL) in Support of the Metals and Engineering Industry.”** The project aims to establish a Mechatronics, Robotics and Industrial Laboratory facility for the conduct of R & D activities, common service facility and industrial training to support the technology, and manpower improvement and competitiveness of the Metals and Engineering (M&E) industries.

The MIRDC team visited Tokyo Bigsight in Japan from January 18-20, 2017. They attended the 1st Smart Factory and 1st RoboDex Exhibit. The 1st Smart Factory Expo showcased the Industrie 4.0/Industrial Internet Technologies that promotes FA Technologies, Industrial Robots, IoT/M2M Solutions, Green Energy Solutions and factory equipment, while the 1st RoboDex exhibit is a more comprehensive trade show for robots covering from development technology to application of robots. During the exhibit, Festo and Omron together with other major suppliers launched their latest industrial equipment that would help to upgrade the industry and the protection of the environment or the so-called environmental engineering in the near future. Then, the team went to AMADA manufacturing plant and was welcomed by Mr. Yamada and Mr.

Akanabe from the Overseas Sales Promotion Department of AMADA Japan in connection with the proposed project “Establishment of Advanced Welding and Fabrication Facility (AWF) in Support to Metals and Engineering Industry” that will serve also as a common service facility for advanced welding and fabrication technology, research and development activities and industrial training services to metals and engineering industries.

The team went next to Metal Industries Research and Development Centre (MIRDC-Taiwan) from January 21-25 and visited its automation laboratory. MIRDC-Taiwan is a non-government, non-profit organization that supports and harmonizes the different industries to come up with a certain product/equipment to promote the development and improve the economy of Taiwan. The draft Memorandum of Understanding (MOU) was also discussed for possible collaboration. Afterwards, MIRDC and MIRDC-Taiwan visited the Goodweld Rende Training Center, in Kaohsiung, Taiwan, one of the set-up project assisted by MIRDC-Taiwan. During their visit in Goodweld, they discussed innovation and value added center for traditional industries project and Goodweld Corporation Paradigm of the welding shop. The team also



MIRDC Philippines and MIRDC-TAIWAN OFFICIALS (From the Left Jayson Rogelio-Senior SRS, Fred P. Liza- Division Chief, Jonathan Q. Puerto- Deputy Director for R & D, Robert O. Dizon, Executive Director, Chiu-Feng Lin- President, Chia-Min Wei- Vice President, Jack C.C. Wang-Director MPRD and Max Hun-Yu Lin, Deputy Director).

visited the National Pingtung University of Science and Technology (NPUST), College of Engineering Laboratory for possible R&D collaboration research. In NPUST, the team learned the traditional to modern design of Taiwan's agricultural equipment.

In Thailand, the team was welcomed by Mr. Manop Thongsaeng, Senior Vice President of Thai-German Institute (TGI) together with engineers from automation division. The TGI is a joint initiative of the Government of the Kingdom of Thailand and the Government of the Federal Republic of Germany aimed to be an effective training center for transferring advanced manufacturing technology to Thai industries. With this trip, the team is very optimistic that the proposed AMERIAL project will be more successful if they work closely with TGI because of similarity in mission and organizational objective. They also visited the Techni Water Jet in relation also with the proposal on the AWF.



MIRDC and TGI Team.

Similarly, as part of the proposed AMERIAL project, the team visited the SMC at Vitoria, Spain on January 29 to February 1. SMC Corporation is a world leader in producing and supplying automation and pneumatic components, with 50 years experience, working in over 75 countries. They offer product and training services customized to industry needs.

The team was accompanied by Mr. Marriano Carreras, an International Training Manager. Mr. Carreras presented their Competence

Center capabilities for different industrial sectors that are moving forward to automated process; manufacturing companies that demand skilled workers (operators, technicians and engineers) in these new technologies and technical colleges and universities require the expertise and support from industry leaders to satisfy the demands from their community.

With the input gathered by the team, they are very optimistic that the objective of the AMERIAL project will be attained and implemented successfully with the help of different sectors

such as private, public and academe similar to the strategy done by the Thai-German Institute.

To meet the vision of MIRDC as center of excellence in science, technology and innovation for globally competitive metals, engineering & allied industries by 2025, the MIRDC needs to further develop international linkages and actively pursue the conduct of collaborative research.



Mr. Marriano and MIRDC Team at SMC-Spain.



## Iron ore fines recovery, recycling and processing in direct reduction plants

Tenova HYL and Diproinduca Canada Ltd. have entered into a commercial alliance agreement for the development and commercialization of the DRB (direct reduced briquettes) technology for recovery and recycling of iron ore fines in direct reduction plants. Iron ore low value by-products in direct reduction plants include the fines from scrubbing systems of material

handling, iron ore screening and the sludge mainly produced in the scrubbing systems of the reduction and cooling gas circuits. These fines are currently disposed of at cost or sold as low priced by-products.

The DRB technology is based on the production briquettes made from the recovered iron ore fines from various sources and suitable for the production of DRI with the same quality of the DRI actually being produced in the direct reduction plant. This technology has been developed and tested in the past two years with successful results at industrial scale, for example at Ternium Monterrey, Mexico. Test

results have shown an average metallization of 94-95% with a carbon content of about 3% and low fines generation. The values are all at the same level as the DRI actually produced from iron ore pellets, reflecting the excellent behavior of the briquettes in terms of porosity and mechanical strength during the reduction process inside the industrial reactor. In Monterrey, a demonstration plant has been installed with the purpose of recycling fines from screening and sludge.

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

Source: *MPT International 2/2017, p.78*

## Metals gauging solutions

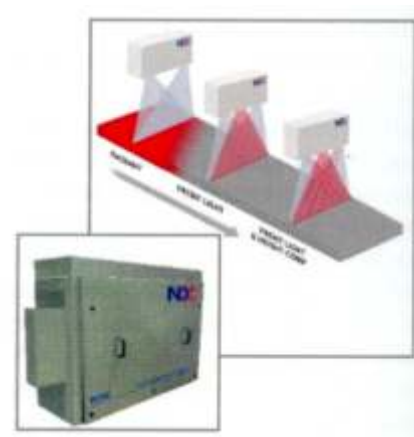
Metals gauging systems from NDC Technologies enable manufacturers to significantly improve product quality, increase productivity and realize manufacturing savings. NDC's new W200 optical width system uses the most advanced technology to measure the width of strip and plate products with the highest accuracy. Its modular, scalable architecture provides the flexibility to install this system in roughing and finishing mills, the coiler on hot strip and Steckel mills, as well as the exist of cold or hot plate mills and levelers.

The AccuRay® TDi-700 X-ray

reliable thickness gauging of sheet and other flat rolled products in all typical rolling mill and processing applications. NDC's Rometer™ optical flatness systems provide configurations flexibility for the most demanding applications such as hot strip mills, Steckel mills and plate mills regardless of mill size, configuration or age. The Beta LaserMikeLaserSpeed® gauge directly measures the length and speed of hot or cold products with better than +/-0.03% accuracy and +/-0.02% repeatability. It is an ideal solution for replacing mechanical contact tachometers or encoders.

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

Source: *MPT International 2/2017, p.80*



Optical width measuring system

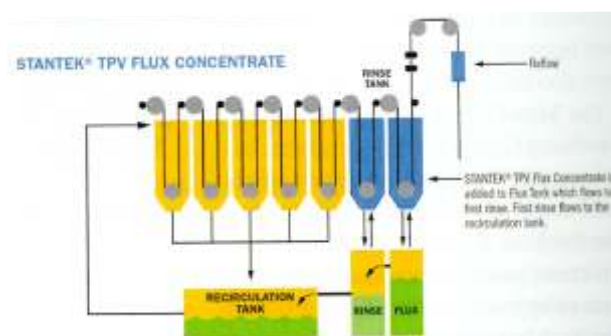
## Tin plating process based on methane sulfonic acid

Tin plating, a critical process for applying tin to steel substrates faces challenges with the demands for lower consumption, reduced costs, improved product quality, and reduced environmental impact. Quaker Chemical now offers an optimized solution with the Quaker Stantek®MSA (methane sulfonic acid) tinplate process. This technology provides benefits including

enhanced product quality, highest possible tin utilization and increased tin efficiency leading to reduced costs versus competitive electrolytes. The process, which features patented flux system, is REACH and ROHS compliant.

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

Source: *MPT International 2/2017, p.76*



Process layout

## Tata steel produces ultra-clean specialty steels with new vacuum induction melting furnace

At its Stocksbridge site, Tata Steel's Specialty Steels, has successfully commissioned the VIM X-eed® vacuum induction melting furnace supplied by SMS Mevac. This new tertiary metallurgy facility produces high-purity steels and specialty alloys for the aerospace industry.

The VIM unit comprises an eight-ton vacuum induction melting crucible and the associated vacuum

pumping, material charging and process control equipment. All core components supplied by SMS Mevac have been designed to allow Tata Steel to increase the melt size to 18 tons at a later date. Also ancillary equipment for crucible preheating and lining maintenance was included in the supply scope. The plant incorporates vacuum pouring equipment for both top poured and bottom poured ingots, in single or multiple ingot configurations.

Contact: [www.sms-group.com](http://www.sms-group.com)

Source: *MPT International 1/2017, p.51*



Production of specialty steels and super alloys at Tata Steel in Stocksbridge, using the new VIM X-eed® unit supplied by SMS group

## Inspection of shiny and matt surfaces

Particularly in automotive production, perfect surfaces - whether matt or shiny - are imperative. Even the smallest of defects must be reliably recognized. With the reflectCONTROL automation surface inspection system, Micro-Epsilon offers a robot-guided system that projects a striped pattern onto the measurement object. Defects on the shiny surface cause deviations from the striped pattern which are recorded by the cameras and evaluated by software. The compact deflectometry sensor, which consists of a monitor for the striped pattern projection of two cameras, is guided

over the measurement objects by a robot. The defects found are evaluated and displayed in a 3D model.

For inspection tasks on matt surfaces, INB Vison, a company belonging to the Micro-Epsilon group, has developed the surfaceCONTROL system. It comprises a modern 3D sensor and the software for the data analysis. This new 3D sensor achieves significantly higher inspection speed, together with increased measurement accuracy by using a fast projection unit and new cameras. The sensor is optimized in integration with assembly lines and for robot connection. The system alternatively includes the DefMap3D analysis software for

laboratories and the measuring room or inspection tools for automatic examination of surfaces being optimized for robot-supported inspection tasks.

Contact: [www.micro-epsilon.com](http://www.micro-epsilon.com)

Source: *MPT International 1/2017, p.52*



Devices for robotized surface inspection

## Laser-optical thickness measurement

For thickness measurement of strip and plate material, Micro-Epsilon has developed an new sensing system- thickness SENSOR. The pre-assembled system is designed for easy integration without requiring any complex sensor alignment. Due to its compact design, the system is also suitable for implementation in a confined installation space. The material thickness is detected according to the difference principle. Two laser

triangulation sensors are fixed opposite each other on a stable frame.

They measure the material surface in a non-contact method. The evaluation unit integrated into the frame calculates the thickness values and outputs of these via different interfaces. The intuitive web interface provides the new thickness SENSOR with unique ease of use and enables the user to load individual presets for the respective measurement task. Up to eight user-specific sensor settings can be stored and exported in the setup management feature. The measurement task can be optimized using the video

signal display, signal peak selection and freely adjustable signal averaging.

Contact: [www.micro-epsilon.com](http://www.micro-epsilon.com)

Source: *MPT International 2/2017, p.80*



Non-contact thickness gauge

## **Futuristic alloys three times stronger than steel**

UNSW materials scientists have created an “instruction manual” for developing metallic glass- an ultra-tough yet flexible alloy describes as the most significant materials science innovation since plastic.

Just like something from science fiction - think of the Liquid-Metal robot assassin in the Terminator films - these materials behave like glass or plastic than metal.

While still being metals, they become as malleable as chewing gum when heated and can be easily molded or blown like glass. They are also three times stronger and harder than ordinary metals, on average, and are among the toughest materials known.

Most materials are crystalline when solid, with their atoms arranged in a highly organized and regular manner. Metallic glass alloys, however, have a highly disordered structure, with the atoms arranged in non-regular way.

There are many types of metallic glass, with the most popular ones based on zirconium, palladium,

magnesium, titanium or copper. But until now, discovering alloy compositions that form these materials has required a lengthy process of trial and error in the laboratory.

A new research published in the journal Nature Communications describe the first model of the atomic structure of metallic glass, which allows scientists to predict the metal combinations that will have glass forming ability.

They have used their model to successfully predict more than 200 new metallic glass alloys based on magnesium, silver, copper, zinc and titanium in the past few years.

With our new instruction manual we can start to create many new useful metallic glass-type and begin to understand the atomic fundamentals behind their exceptional properties. We will also be able to engineer these materials on an atomic scale so they have the specific properties.

Metallic glass-alloys are expensive to manufacture and to date have only been used on niche products, such as ejector pins for iPhones, watch springs for expensive hand-wound watches, trial medical implants, and tennis racquets and

golf clubs. They are also planned for use in the next Mars rover vehicle.

But if they become easier and cheaper to make, they could be widely used in many applications including as exceptionally strong components in personal electronic devices, in space exploration vehicles, and as hydrogen storage materials in next generation batteries.

The research team includes Dr. Laws and Professor Michael Ferry of the UNSW School of Materials Science and Engineering, and Dr. Daniel Miracle of the Air Force Research Laboratory, US Materials and Manufacturing Directorate.

*Source: Science @UNSW, Alumni News-Issue 13*



Metallic glass alloys developed by UNSW materials scientists

## **Automatic fettling of steel castings**

Reichmann Castings Finishing, Wei enhorn, Germany, again confirmed its expertise in fettling. For a German steel foundry, a plane grinder was developed by taking into account the customer wishes. The machine offers a unique selling proposition in the sector regarding the abrasion performance.

The plane grinder PM 6 developed by Reichmann is constructed to withstand the demand of the harsh foundry environment. A high performance abrasive ring is used to remove risers and sprues on high-alloyed steel castings. The grinding process is numerically controlled and operates automati-

cally. The sound proof cabin protects the user effectively from flying sparks and swarf.

A high abrasion performance in the shortest time is an especially significant cost advantage when it comes to hard-to-cut steel castings. For the customer, which produces steel castings for construction and agricultural machines, an outstanding abrasion performance of up to 5mm per hub has been realized. Thus, the customer requirements could be met with particular success.

The business sector Casting Finishing has gathered a long-time experience and competence in developing solutions for fettling of steel and iron castings. Nevertheless, the existing know-how is continuously improved to reach further cost reductions in the future.

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

*Source: Casting Plant & Technology 1/2017, p.51*



Plane grinder PM 6, which was developed for a German steel foundry

## MIRDC's Hybrid Electric Train Takes On its Farthest Journey



The Department of Science and Technology-Metals Industry Research and Development Center (DOST-MIRDC), after securing the approval of the Philippine National Railways (PNR), transferred its Hybrid Electric Train (HET) from Tutuban Station in Manila to Calamba Station in Laguna on April 21, 2017. The Center sought the transfer in order for the DOST-MIRDC project team to have a longer testing track for the HET.

The PNR provided the DOST-MIRDC a locomotive to guide the project team throughout the course of the HET relocation. The locomotive was positioned ahead of the HET to forewarn people and vehicles crossing the railways along the relocation route. The HET safely arrived at the Calamba Station at 7:30pm.

Although there were technical problems experienced, the relocation progressed smoothly and was generally a success. At the PNR Buendia Station, the team encountered a protruded steel beam from a DMCI construction project that could hit the air conditioning unit atop the HET. The incident consequently hampered the relocation. The DMCI team had to trim first the excess beam for the rail track to be passable. The DMCI gave the necessary attention to address the situation eventually allowing the HET relocation to proceed.

The HET is now in its new temporary home. Further revisions and improvements are being planned and implemented at the PNR Calamba Station



## Mining Firms See Luster in Local Steel Industry

Mining stakeholders have a rosy outlook for local steel industry this year as the government seeks to revitalize the sector to sustain economic growth.

“We see an increased demand for products and services from the metals industry especially in human resource capital development (science and technology sectors), revitalization of the manufacturing industries, and leveling up of annual public spending on infrastructures,” said Artemio Disini, chairman of the Chamber of Mines of the Philippines.

Disini cited the need to strengthen the country's national policy to develop the mineral and steel industries.

He said the existing assets of the mothballed National Steel Corp.

(NSC) would be revitalized. Disini urged the government to foster research and investments in downstream processing and value-adding industries.

The Department of Trade and Industry earlier said the local steel industry was a critical component in achieving inclusive economic growth and sustainable development.

The Philippines currently ranks fifth in terms of steel production. Other top producing nations are Vietnam, Thailand, Indonesia and Malaysia.

Meanwhile, Mines and Geosciences Bureau (MGB) assistant director Danilo Uykieng said the government would focus on key areas to ensure a long-term and stable policy environment.

These include minerals and metal-led industrialization initiatives, streamlining of application and procedures, MGB-led inter-agency coordination of regulatory agencies in mining projects, strong community relations programs; and final use options of mineral lands.

“This shall be accomplished by ensuring continued supply of materials and commodities, revisiting regulatory and compliance policies, and conduct of inventory and exploration studies of the various mineral resources,” he said.

*Source: The Philippine Star, January 31, 2017*

## Mercury, Cyanide Gone in Mining Test Project

The country's first gold processing system that does not use mercury and cyanide was turned over by Science Secretary Fortunato de la Peña to small-scale miners in Benguet province on March 10.

The facility was developed by mining engineers of the University of the Philippines (UP), who put together a system that uses nontoxic and established scientific procedures for separating valuable metals from ore.

Dr. Herman Mendoza, leader of the UP project, said experts began researching cleaner ways of processing gold in 2009.

A P25-million pilot facility was set up here by the Department of Science and Technology (DOST) for field tests.

Three other plants are being built for small-scale mines in Agusan del Norte and Camarines Norte provinces, and Compostela Valley region.



CLEAN GOLD Small-scale miners in Benguet province will start processing gold using clean technology developed by the University of the Philippines through the help of the Department of Science and Technology.

The Benguet plant was the first to become operational. It sits on a lot that has been identified by Environment Secretary Gina Lopez as site for a Minahang Bayan in the province.

“If that Minahang Bayan is approved, this [gold processing] plant will make it the cleanest small-scale mining area,” said Lomino Kaniteng, president of Benguet Federation of Small-Scale Miners, the group tasked with operating the facility.

According to Mendoza, the processing system tries to replace the harmful chemicals used by small-scale miners to extract gold and copper from ore.

The plant is capable of processing up to 15 metric tons of gold ore a day and can recover up to 80 percent of metals from ore, he said.

Benguet miners are going to operate the plant, which was designed to reduce the impact of mining on the environment.

According to Mendoza, the system expels clean water and solid waste that can be used as material for construction projects.

“We used taxpayers' money to develop this for Filipinos. Let's spread the green technology,” he said.

*Source: Philippine Daily Inquirer, March 14, 2017*

## Equipment Developed to Prolong Life of Brown Rice



The developed Continuous-type Superheated Steam Treatment System for Stabilized Brown Rice.

An MIRDC R&D output, the Continuous-type Superheated Steam Treatment System (SSTS) for Stabilized Brown Rice is developed to prolong the shelf life of brown rice from 1-2 months to 5-9 months. The system has a capacity of 2 tons per hour, with an area requirement of 5.75m x 6.5m for its installation. It uses superheated steam to accomplish the combined process of steaming and drying of brown rice. The process deactivates the enzymatic activity to extend the shelf-life while retaining the sensory acceptability and quality of brown rice without chemical additives.

The SSTS has five major parts, namely: Feeding Unit, Treatment Chamber, Cooling Unit, Superheated Steam Generator, and Control System. The Feeding Unit is composed of a conveyor and a loading hopper that serve as reservoir and feeder of brown rice to the treatment chamber. It measures the correct amount of brown rice that enters the treatment chamber equivalent to its system capacity. The Treatment Chamber is where treatment of brown rice takes place and is made mainly of food grade stainless steel materials to keep it free from contamination. It has a spiral and baffles inside the perforated cylinder to stir brown rice while treatment is ongoing. The stirring action ensure an even treatment of brown rice. The

Cooling Unit is another component of SSTS that receives the treated brown rice. It is made of stainless steel wire mesh conveyor, support frame, and a centrifugal blower to cool down treated brown rice. The Steam Generator is composed of a standard boiler and a superheater to produce a superheated steam with a temperature of up to 300°C. The boiler has a capacity of 0.3 tons/hr. They are made of standard boiler materials and fabricated based on ASME and PSME standards to insure efficiency and safety during operations. The Control System sends and receives signal from every component to synchronize its sequence of activities and implement settings of operation. It also actuates the automatic or manual manner of operation.

The Continuous-type Superheated Steam Treatment System is developed by the Metals Industry Research and Development Center (MIRDC) of the Department of Science and Technology (DOST) together with its R&D Partners: the Project Management and Engineering Design Services Office & the Food and Nutrition Research Institute (FNRI). The equipment was recently launched on April 17th in the municipality of Pulilan, Bulacan graced by the Science and Technology Secretary Fortunato T.



Treated brown rice coming out from the Treatment Chamber. Brown rice grain retains its bran and germ layering leaving a brownish color which are high in fiber and have higher nutrients like B vitamins, vitamin E, iron, phosphorous, and essential fatty acids.

dela Peña and City Mayor Maritz Ochoa Montejo and likewise, attended by the farmer-beneficiaries. Currently, the technology is being adopted by the Pulilan Rice and Vegetable Producers Cooperative. As the technology is ready for commercial adoption, this will benefit both the farmers and equipment fabricators.

## WITCO: Surviving the Odds through Engineering and Entrepreneurship



Engr. Marcelo 'Mark' B. Villanueva

Having experienced a taste of how it was to attempt to put up businesses with his siblings when they were younger, Engr. Marcelo 'Mark' B. Villanueva (MBV) ventured into businesses of his own after more than 20 years of experience working in the industry. MBV is the Founder and President of three companies - the WITCO Inspection and Testing Corporation (formerly Welding Inspection and Testing Corporation), WITCO Construction and Development Corporation and Villcorp Resources, Inc. (VRI). He claims that his rise to become the accomplished man that he is now is backed up by three 'success secrets': luck, the ability to seize opportunity, and focus.



*On luck.* WITCO started in 1991, at a time when the country embarked into a massive Power Plant Construction Programs as a result of the crippling power outages of the 80's. Big players in the power industry like MIRANT, ENRON, Asea Brown Boveri (ABB), Alstom, Fluor Daniel, Babcock-Hitachi, Mitsui Engineering and Ship Building Company (MES) came in a big way to design and build

*Businesses are born out of an individual's desire to free himself from the binds of being an employee. That feeling of being confined to office work or tied to office rules and policies which, if one has total control, can be transformed into flexibility that leads to a significant expansion of customer base. With flexibility that comes as a perk of having a business, the owner then gets the upper hand not only in being able to provide a comfortable life to his family, but in creating jobs, spurring business activities, and improving the industry's economic landscape, among others, as well.*

coal, diesel power plants as well as power barges as quickly as possible.

Suddenly there was a shortage of qualified contractors and skilled workers to do these projects at the same time. It was a once in a lifetime "sellers market" for contractors. Profit margins hit the ceiling, terms of payment were shortened. WITCO provided welding and NDT testing services among others. "*Nung panahon na 'yon, hindi na pinag-uusapan ang cost, ang tinatanong lang ay kung kaya mo gawin at kung kailan ka pwede magstart.*" It was indeed a perfect timing for a starting company like WITCO.

It was Babcock-Hitachi Philippines (BHPI), a Japanese company based in Bauan Batangas, who gave WITCO its first major welding contract in late 1991. BHPI was a world leader in the manufacture of custom-made boiler panels for big power plants. The project, which lasted for over three (3) years, involved fit-up, welding and testing (x-ray) of boiler pipe joints. This project was so profitable that it contributed a lot in funding WITCO's initial expansion.

For MBV, it was luck that shaped him to become the entrepreneur that he dreamed of becoming when he was young. *'May element kasi ng luck yan, kung saan ka napwesto. Graduate ako ng metallurgical engineer sa UP. Normally, ang direction ng career ay toward the mining industry kasi at that time boom ang mining industry. It so happened na nung grumaduate na*

*kami, down na ang mining for the next 20 years. So wala ng choice. Initially I worked for a mining company, after one year I joined the MIRDC (Metals Industry Research and Development Center under the Department of Science and Technology). So dun ako napunta sa ibang industry.'* The DOST-MIRDC played a significant role in enhancing his technical expertise through hands-on practice and technical training opportunities both here and abroad. Here, he was Head of the Testing and Research Department, a position whose functions exposed him to various industry players, allowed him to develop linkages and strengthen his networks, and enhanced his managerial skills. Ten (10) years later he joined Atlantic Gulf & Pacific Co. of Manila (AG&P), one of the biggest engineering and construction companies in Southeast Asia. This opened up a new chapter in his professional career.

*On seeing and seizing opportunity.* The businesses that he is in now are really far from the career that he was expected to have had he decided to practice metallurgical engineering.

*'Yung inspection company was built dun sa expertise na na-gain ko sa MIRDC.'* It was not only about being honed as a technical expert, but being able to know first-hand where opportunities lie. In MBV's case, his interactions with internal and external clients of the DOST-MIRDC helped him see the growing demand for quality testing services such as X-ray testing, Ultrasonic Testing (UT), and Magnetic Particle Testing (MPT).

# Success Story .....

'Yung construction company on the other hand, was built based on my expertise gained at AG&P,' shares MBV.

Being successful requires observant eyes and a keen mind that comes up with solutions to clients' needs, solutions that are so practical that clients will tend to seek you out amid the stiff competition. MBV recalls how he was able to see opportunities from his previous experiences. At the MIRDC, he saw that the major drawback is the Center's inability to provide prompt service because of certain limitations such as lack of flexibility with regard to rendering overtime work and adjusting salary rates. 'Pero,' says Engr. Villanueva, 'dun ko nakita ang opportunities. If you can put up something which will provide prompt service to the industry, may business ka diyay.'

He spotted another opportunity when he was with the AG&P, which was at the peak of the construction business and was the biggest name in Southeast Asia at that time. 'Nakita ko naman dun, while we have that advantage of size, may mga pagkukulang din. You cannot respond very quickly to your customer. Halimbawa, the very simple ordering of consumables and materials, mejo natatagalan. May bureaucracy na. Oorder yung site, pupunta sa purchasing, maraming mag aapprove, it takes time. Sabi ko if you can cut this down, you're in business.'

In the late 1990's the telecommunications business was liberalized resulting in the entry of new players such as SMART, GLOBE, SUN etc. The initial roll out of cell sites attracted contractors looking for



Engr. Villanueva as a young MIRDC Engineer, training on electron microscopy at Aachen Technical University in Germany.

higher profit margins and prompt payment terms. WITCO seized this opportunity and shifted its resources to building cell sites. The company constructed up to 200 cell sites for various Telecommunication companies until it pulled out in late 1990's when profit margins dropped and payment terms extended to several months.

*On focus.* As a child, he would rather play than study but still ended up as valedictorian in elementary and high school. According to him, he was not the kind of student who opted to stay long hours to study but he would only focus on things that really matter. He brought that attitude with him when he became the Boss. 'Hindi ako yung type na magbababad talaga.' The one to two hours he spends in the office he makes sure that he has already done everything. He gets things done quickly because he is able to identify the important aspects of the business and stay focused on them rather than spending time on non-essential matters.

With WITCO's limited financial resources, it had to put its resources in projects, which will generate the highest profit margin at lower risk. It

has to choose its clients carefully and undertake a few good projects at a time rather than spend its resources thinly and get burned out in the end. MBV believes that one good project begets another as exemplified by the following stories.

In 1997, after a successful venture in the power and communications industry, WITCO found itself working at the Ninoy Aquino International Airport (NAIA) for the testing and inspection of a suspected leak in the underground fuel hydrant pipeline of Terminal 1. NAIA was losing thousands of liters of jet fuel a day. It was not only costly but also environmentally damaging. WITCO successfully pinpointed the leak and quickly plugged the hole and put the pipeline back in service. As a result of this, WITCO was recommended by NAIA Management to construct the new fuel hydrant system for Terminal 2 as a sub-contractor to TOKYU Construction Company of Japan. This also paved the way for its entry into the highly demanding oil and gas construction business.

Pilipinas Shell Petroleum Corporation (PSPC) who was managing the fuel hydrant system for NAIA at that time, took notice of WITCO's good performance in the hydrant project and immediately enlisted it as one of its accredited contractors. WITCO undertook dozens of projects for Shell for its various facilities nationwide. In 2006, it awarded WITCO a project to construct a 6 M liter-capacity diesel storage tank and related facilities in the Republic of Palau, this was considered a milestone



(L) MBV (rightmost) leads the AG&P team in charge of pre-fabrication of modular structures; (R) MBV supervises commissioning of pre-fabricated modular lead-zinc processing plant at Red Dog Mines, Alaska, USA.



MBV's WITCO team who were in charge of the six million liter-capacity fuel storage tank project in the Palau Republic.



# Success Story .....

project for WITCO since it was successfully done outside the Philippines.

In 2007, WITCO was awarded a contract by Leighton Contractors (Asia) Limited (an Australian Construction Company) to erect steel tanks and other plant facilities at Filminera's Masbate Gold Project. One of the reasons for the award was the company's good track record for constructing tanks for Shell which is known for its high standard of quality. This started WITCO's entry in the mining sector. Since then, it has successfully completed projects for other mining companies such as Greenstone's Siana Gold Project and FCF Minerals' Runruno Gold & Molybdenum Project – all foreign owned mining companies.

*On WITCO's strong relationship with MIRDC.* Aside from his 10-year stint at the DOST-MIRDC, Engr. Villanueva served as a Governing Council member of the Center for six years. His connection with the local metals, engineering, and allied industries has always remained strong. WITCO regularly avails of the Center's testing services. MBV is one of the founding members and a former President of the Philippine Welding Society (PWS), which happens to be one of the DOST-MIRDC's industry partners. According to him, WITCO's collaborative relationship with the DOST-MIRDC is instrumental in advancing the science and practice of welding in the country. On the other



Engr. Villanueva with his wife, Mrs. Alma Villanueva.

hand, WITCO Construction will soon be opening a new fabrication shop in Bi an, Laguna. The shop being constructed will be WITCO's new site for the fabrication of piping, storage tanks, structural steel members for plants/warehouses. The new fabrication shop will offer plate rolling, forming, cutting, and welding capabilities. Its operations will use automatic cutting, forming, and welding machines for the first time. With all the exciting expansions that the WITCO companies are going through, MBV envisions their continued collaboration with the DOST-MIRDC by means of availing the Center's laboratory services, as well as training and consultancy services in the field of automation.

*Enjoying the fruits of his hard work.* MBV is a hardworking man from the very beginning. His family is his motivation. *The reason why I work hard is really more for the family, for*

*the future of the kids. I was lucky with my family. I met Alma, my wife and business partner, in MIRDC. We have been happily married for 38 years now and we are blessed with six children, all of them are professionals. In fact, four (4) of them are working with me right now. My eldest, Cristina, is the Vice President for finance and administration. She is a graduate of Communications Technology Management in Ateneo De Manila University (ADMU); she also has a Master's Degree in Business Administration from UP Diliman. Eliza, my second child is a Civil Engineer. Like me, she also graduated from UP Diliman. She is an American Welding Society (AWS) – Certified Welding Inspector (CWI) and American Society for Non Destructive Testing (ASNT) Level III in 4 methods (RT, UT, PT and MT). She is now the General Manager of WITCO Inspection. My third child, Rosemarie finished Integrated Marketing Communications in the University of Asia & the Pacific (UA&P). She has established her career in media planning and sales in Singapore and has recently been promoted as a Senior Regional Sales Manager in Success for Mobile. My only boy, Gregory, finished Management Economics in ADMU. He is in charge of Business Development and Marketing for the WITCO Companies. He is also the General Manager of Villcorp, the trading arm of WITCO. My fifth child,*



(L) Villanueva siblings (left to right) Marianne Villanueva, Ma. Cristina Azana, Rosemarie Shorter, Gregory Villanueva, Ma. Eliza Mendez, Anna Katrina Villanueva; (R) Complete family photo with in-laws and grandchildren. Standing (L to R): Marianne, Gregory, Rosemarie, Jonathan, Anna Katrina. Sitting (L to R): Caroline, Adrian, Cristina, Olivia, Mark, Alma, Ma. Eliza, Paul, Audrianna.

# Success Story .....

Marianne, is a freelance Interior Designer. She graduated Cum Laude from the University of Santo Tomas (UST). She also manages the company's real estate properties and building/office improvements. My youngest, Nikki is also a Civil Engineer. Like me, she is also a graduate of UP Diliman. She will most probably manage WITCO Construction in the future,' says the very proud MBV.

'I was fortunate to have children who are interested to work for the family business. Others are not quite as fortunate. Before, I set just a modest limit to how WITCO will grow as a business concern. Now that WITCO has developed a young business management team to back it up, things have changed. With the new office and fabrication shop, the stage is set for the company to jump to a higher level.'

'Nakaka enjoy din ang business. It's not only the money. Nag-gogrow yung business mo at satisfied and customers mo. Satisfied ka. From where I came from, ok na yun. I have no regrets,' he ends with a quiet, satisfied smile that reveals a man who knows how it is to work hard and feels the fulfilment that his own success story brings.



The Villanuevas on some of their favorite family trips (clockwise from top left): at the Louvre Museum Paris, France (March 2011); at the Swiss Alps (March 2011); at Barcelona, Spain (April 2011); in Macau (December 2013).

## DOST-MIRDC Upgrades...from p6



Casting Unit was at the forefront of the MIRDC's commitment to put a QMS earning certification to ISO 9002:1994 in place in 1998. The MIRDC received a Center-wide certification to ISO 14001 Environmental Management System, as well as certification of the Industrial Training and Staff Development Section to ISO 9001:1994, which was upgraded to ISO 9001:2000 version in 2002.

The Center's rich history of accreditation and certification continued many years after its upgrade to latest ISO versions. The Analysis and Testing Division was re-accredited to PNS ISO/IEC 17025:2000, while the entire Center finally received in 2005 its certification to ISO 9001:2000. The MIRDC always welcomed opportunities to upgrade its ISO certification in the years that followed.

It is no surprise then that the Center remains very aggressive in its pursuit of continuous improvement. True to the achievement of its vision to become a center of excellence in science, technology, and innovation for a globally competitive metals, engineering, and allied industries by 2025, the MIRDC maintains a proactive stand in reaching performance excellence. In securing the latest version of ISO certification, the Center commits to comply with the requirements of the ISO 9001:2015 standard, and to achieve higher levels of customer satisfaction.

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