

MIRDC Launches Its Very First Coffee Table Book

The Metals Industry Research and Development Center (MIRDC) started the Technology Business Incubation (TBI) Program in 1987 with the goal of encouraging and nurturing small businesses during their start-up stages. In 1990, the MIRDC TBI program was incorporated in the Department of Science and Technology's (DOST) Bicutan Technology Business Incubation Program. Launched with the goal of commercializing the matured technologies developed by the DOST system, the TBI program served as a catalyst for the productive use and application of such technologies. Since its birth in 1987, a total of 38 firms have already benefited from the MIRDC TBI program.

The Coffee Table Book is a proud compilation of the business stories of some of the companies who were nurtured by the MIRDC through the TBI program. Although starting and maintaining a business is always made challenging by struggles along the way, the TBI beneficiaries were able to take advantage of the MIRDC's services. In so doing, these firms were given the opportunity to be technically equipped, a qualification that makes them more viable market players not only locally, but in the international market scene as well.

Featured in the book are nine of the TBI program's beneficiary companies. The pages contain testimonies from their top management and informative pictures that represent their products, services and operations. The nine TBI success stories came from the following firms:

1. Precision Foundry of the Philippines, Inc.
- manufactures firearms and electronic parts

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Engr. Arthur Lucas D. Cruz unveils the MIRDC TBI Success Stories Coffee Table Book

The Center's 45th Anniversary

The Metals Industry Research and Development Center (MIRDC) added yet another feather on its cap as it marked its 45th anniversary last June 18, 2011, a celebration that was held in conjunction with the Metals and Engineering (M&E) Week.

As the MIRDC holds twin celebrations, the Center conducted a week-long line-up of activities which are as follows:


June 13-17 (Mon-Fri)
- Tiangge at MIRDC

- June 14 (Tues.)
- Free Seminars on:
- (1) Material Testing Systems
Today in cooperation with Gryke Scientific Instruments Trading
 - (2) Plastic Injection Molding in cooperation with AVANCE Technical Education Center, Inc.

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Arthur Lucas D. Cruz, CESO IV
Executive Director



As the year 2011 progresses, the Metals Industry Research and Development Center continues to remain active in the pursuit of its mandate of providing professional management and technical expertise to both government and private sectors in the metals and engineering industry. Early this year, Presidential Proclamation No. 144 entitled "Declaring the period from June 13 to 18, 2011 and every third week of June thereafter as 'Metals and Engineering Week'" was issued by Malacañan Palace. This issuance is a much-celebrated milestone for the M&E industry for it secured the observance of the M&E Week from this year onwards. M&E Week 2011 was themed "Championing Public-Private Partnership in the M&E Industries." This clearly emphasizes the significance of strong linkages nurtured by the dedication and hard work of all of us in this industry. Another important celebration was the Center's 45th Founding Anniversary. MIRDC's sapphire anniversary was made even more meaningful with the presence of our founder, Dr. Antonio V. Arizabal, Jr., who was awarded the Legacy Trophy and named 2011 M&E Man of the Year. Equally significant segments of the celebration are the launching of the MIRDC TBI Success Stories Coffee Table Book, a publication which featured nine of the beneficiary companies of MIRDC's Technology Business Incubation (TBI) program; the MOA signing with AVTEC and Teknologix, Inc.; and the recognition of M&E industry associations as MIRDC partners. These activities, no doubt, will further strengthen our bonds and bring a deeper fulfillment to the Center's role in nation-building.

The Clustering of Regional Enterprises for Agro-Industrial Machinery and Parts Manufacturing (CREAMM) Program, aimed to promote countryside development, is making great progress. After its introduction to stakeholders in the Cordillera Administrative Region (CAR) last April, subsequent meetings with various metalworking shops in Baguio City were then held followed by discussions with other government agencies and local government units. MIRDC's initiatives for the CREAMM gained positive results with the Press Conference and MOU signing last 21 July 2011. Last August, the Cordillera Aerospace and Industrial Manufacturing Technology Corporation (CAIMTEC) was registered with the Securities and Exchange Commission as the first equipment and parts manufacturing cluster being organized in CAR. Likewise, the same initiatives are being done in other regions. Introduction of Cluster, Strategic Planning, and Focus Group Discussion were held in Region X. CREAMM Program was also introduced to Regions I, V and VI.

Featured in this issue of Trends and Events is Berpa-flex Technologies, manufacturer of expansion joints and other metal products. Owned and operated by Mrs. Inesitas L. Palermo, the Iloilo City-based company traces its origins back in the early '70s when it started out as JRS Automotive Repair Shop. A wide social network, backed-up by Mrs.

Palermo's strong will and determination led to new ventures and eventually to the birth of Berpa-flex Technologies. Her company became known in the field of metals fabrication and the manufacture of expansion joints. A healthy partnership with MIRDC started when she went to DOST Regional Office VI to seek consultation. Procedures in welding, cutting and metals identification were some of the technology interventions provided by the MIRDC. Along with the better understanding of the said technologies came bright developments for Berpa-flex: workforce grew bigger, new and sophisticated equipment were purchased, and the list of clients now includes multinational companies. This success story is surely one that inspires MIRDC to continue to be of valuable support to the M&E industry.

The MIRDC actively participated in the National Science and Technology Week held last 25-30 July, 2011. Featured in the NSTW exhibition were MIRDC-developed technologies, namely: Spin Casting and Non-Cyanide Copper and Gold Electroplating, while the NSTW's High Impact Technology Solutions (HITS) Forum included presentations of ongoing MIRDC projects such as Capability Development for CNC Machine Tool Refurbishment, Development of Vacuum Oil Quench Heat Treatment Furnace, and Development of a Prototype Automated Guideway Transit (AGT) System. The exhibits and forums were well-attended, an indication that the Center's technologies and services have reached out to more industry players and stakeholders.

Other exhibitions participated in by the Center were the 5th Philippine Die and Mould Machineries and Equipment Exhibition organized by the Philippine Die and Mold Association, Inc. held at the World Trade Center in Pasay City, and the first Lean to Green Manufacturing Conference organized by the Society of Mechanical Engineers held at SMX Convention Center. The said exhibits were held simultaneously from 17-20 August 2011. Featured in these exhibits were the coco coir processing equipment and again, the non-cyanide gold and copper electroplating technology.

The period from May to August has been a busy and very fruit-filled four months for the MIRDC. The Center's endeavors, through everybody's unwavering commitment, are meant to uplift the country's metals and engineering industries. We are looking forward to more positive things for the industry as we witness the unfolding of the remaining months of 2011.

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Printed in-house

MIRDC Launches...from cover

2. Inter Alloy, Inc.
 - produces both non-precious and high-quality dental alloys for dental suppliers and laboratories
3. Techno Molds, Inc.
 - fabricates mold, tool and die and produces plastic injection molded parts
4. EJ Metals and Allied Products, Inc.
 - ventures in architectural metal works with complex design
5. Euromerica Trade Phils., Inc.
 - exclusive distributor of advanced surface engineering technology product lines such as electrodes, rods, wires, powders and chemical aids of various industries
6. Shooters Arms Manufacturing, Inc.
 - manufactures firearms and ammunition
7. Eagle High Venture
 - manufactures industrial and agricultural equipment
8. Metro Arms Corporation
 - manufactures and assembles pistols and supplies the requirements of local and foreign markets
9. Choryo Toolings System, Inc.
 - manufactures aluminum casting products and construction equipment parts for German, American and European markets

With the Coffee Table Book, the MIRDC aims to spread the technologies offered by the beneficiaries and further promote the TBI program to those who are in the metals and engineering industries.

The Center's 45th...from cover

- June 16 (Thurs.)
- M&E Week Celebration
- June 17 (Fri.)
- Employees' Day

It was a very busy week for the MIRDC; nevertheless, the activities were held smoothly and successfully. The Employees' Day that was scheduled last June 17 was a welcome treat for the administrators and staff because it was a day for everybody to get-together for a whole-day program.

The day began with a Thanksgiving Mass which was immediately followed by the Center's Sapphire Anniversary culminating program. It started with the Welcome Remarks of MIRDC Executive Director Arthur Lucas D. Cruz. This was followed by a video presentation on the testimonials of technology transfer beneficiaries undoubtedly inspiring the MIRDC personnel since the beneficiaries are proofs of the Center's significant impact on its stakeholders. The employees then listened to their Deputy Executive Director for Technical Services, Dr. Agustin M. Fudolig, as he updated the employees on the Center's Philippine Quality Award (PQA) initiatives. To know that the Center is taking aggressive steps towards performance excellence is again another inspiration for the employees. The PQA presentation was followed by the Program on Awards and Incentives for Service Excellence (PRAISE) awarding. This adds another reason in keeping the MIRDC personnel inspired to do their job well and strive to reach excellence. The morning was capped with a "salu-salo together."

Another highlight of the day was the presentation of candidates for the search of the "Face of MIRDC." MIRDC ladies, blessed with beauty and brains, paraded and were serenaded during the program. Casting of votes was done prior to the program and special awards were given along with the announcement of the top three winners of the contest. Intermission numbers further livened up the event as new employees entertained the audience with exciting song and dance numbers. The day's program was concluded by Dr. Danilo Pilar, Chairman of the MIRDC 45th Anniversary, as he delivered his Closing Remarks.

This year's anniversary celebration is a memorable experience for all of the employees at the MIRDC. It has

been a productive 45-year journey, and the Center is looking forward to more productive years ahead.



New employees perform an intermission number to the delight of MIRDC officials and employees



The beauty and brains: (L-R) Miss Karen R. Cagalingan – Miss Photogenic; Miss Marie Sharon A. Abilay – 2nd Runner Up; Miss Carla Joyce C. Nocheseda – The Face of MIRDC; Miss Millet A. Manguanay – 1st Runner Up; and Miss Jaquelin J. Agonoy – Miss Congeniality

ABS CBN UKG Features MIRDC Coco Coir Technology

The MIRDC's Coco Coir Technology was featured in Umagang Kay Ganda (UKG), an early morning television show of ABS-CBN Channel 2, aired live last 5 August 2011. Dr. Danilo N. Pilar, OIC-Deputy Executive Director for Research and Development was the resource person.

The Coco Coir Technology consists of several equipment such as the Coco Coir Husk Beater machine, Micro Decorticating machine, Defibering machine, Carding machine, Winnowing machine, Baling machine, Slivering machine, Twining machine, Loom machine, Biolog Extrusion machine, Coco Mat Roller Press and Latex Rubber Mixer. These machines can produce products that can be helpful in slope stabilization, control of soil erosion, landslide, etc. Sample products were displayed in the UKG studio, e.g., decorticated coco husk, coir board, peat block, twined coir, plant hanger, door mat, biolog, and geo-textile.

In the segment, Ms. Venus Raj, one of the hosts, asked Dr. Pilar how the coco coir products are used in the prevention of soil erosion and flooding. Dr. Pilar briefly mentioned about Pres. Aquino's most recent SONA wherein PNoy said that "coco fiber-based products are effective ways of strengthening our roads."

Then Dr. Pilar gave a concise discussion of the soil preparation process, how the geotextiles are laid on the exposed soil surface, how wooden pegs are added to ensure that the geotextiles are neatly hugging the contour of the affected area, and how biologs are laid out to slow down the velocity of run-off which is a major agent of erosion. He cited Mt. Banahaw in the province of Quezon as one area that has greatly benefited from this technology. He also stressed that coco coir technology promotes slope stabilization, therefore, addresses our country's problems regarding landslides and floods during the rainy seasons.

Coming from a series of typhoons which left several parts of the country devastated, this technology breakthrough is necessary

and very timely considering its important application in flood and landslide control.



Dr. Danilo N. Pilar, while being interviewed by Ms. Venus Raj, host of ABS CBN's Umagang Kay Ganda, elaborates on how the coco coir technology and its various products help prevent floods and landslides

MIRDC Extends Its Services to Barangays

In line with the celebration of the 2011 National Science and Technology Week (NSTW), the Metals Industry Research and Development Center (MIRDC) conducted activities aimed at promoting the Center's technologies to the public. These activities are also part of the Center's Corporate Social Responsibility (CSR) efforts toward helping participants acquire basic knowledge and skills on these technologies that could give them opportunities to earn a living.

The MIRDC conducted free information seminars on July 28th & 29th at the MIRDC Auditorium.

The seminars include:

- Electroplating Process
- Metal Fabrication
- Torch Brazing Process
- Oxy-acetylene, Cutting and Welding

The conduct of these seminars is aligned to President Aquino's commitment towards poverty alleviation and empowerment of the poor and vulnerable, which is spelled out in EO 43 or commonly known as "Key Result Areas of Social Contract."

The seminars were attended by thirty-seven (37) barangay constituents from ten (10) barangays

of Taguig City, Paranaque City and Quezon City. Most of the participants are unemployed high school graduates while some are engaged in various skilled jobs. The seminars provided them with the necessary information regarding the technology processes mentioned above. Through information dissemination coupled with the conduct of technology demonstration, the Center encourages the participants to venture into technology businesses. The promotion of such technologies is a means for the metal industry to reach out to more interested individual.

MIRDC, DOST-NCR, MIAP & PDMA Implement Technical Upgrading Program

The capability upgrading through training of the micro, small and medium enterprises in the metals and allied engineering sector was conducted by the Metals Industry Research and Development Center (MIRDC) through the generous efforts of the Philippine Die and Mold Association (PDMA), Metalworking

Industry Association of the Philippines (MIAP) and Department of Science and Technology (DOST) – National Capital Region.

The objective of this activity is to improve the technical know-how of qualified and interested association members and enhance their competitiveness locally and abroad by

providing free training courses and technical assistance. Qualified to attend are personnel of active members of the associations who are in good standing.

To date, there are 134 participants who benefited from this endeavor. The training programs that were conducted are as follows:

TRAINING PROGRAMS	SCHEDULE	RESOURCE PERSONS & TECHNICAL ASSISTANTS
Production Planning and Control	Apr. 14-15, 2011	Danilo N. Pilar/Linda G. Rivera
Occupational Safety and Health	June 1-2, 2011	Reynaldo L. Dela Cruz/Pablo Q. Acuin
Machine Shop Operations	June 6-10, 2011	Edilbert M. Dela Peña/Tirso P. Entereso
Heat Treatment of Steels	June 21-24, 2011	Edilbert M. Dela Peña/Nelson L. Tumibay/ Celso L. Aguisanda/Serafin N. Aguilar
Dimensional Metrology 1 (DM1)- Basic Measurement	June 28-30, 2011	Wilbert H. Balingit/Eduardo V. Diasanta, Jr.
Practical Accounting for Non-Accountants	June 30, 2011	Angelina M. Go
CNC Milling Programming and Operations	July 11-15, 2011	Augusto S. Atanacio, Jr./ Simplicio N. Morla, Jr.
CNC EDM Wire Cutting, Programming and Operation	July 25-29, 2011	Ramon M. Martin/Efren A. Andal
Project Management	Aug. 3, 8,11, 2011	Dominic S. Guevarra/ Ma. Elena G. Gurimba
CNC EDM Sinking Programming and Operation	Aug.15-19, 2011	Ramon M. Martin/Tirso P. Entereso

Moreover, the lined-up training programs are as follows:

TRAINING PROGRAMS	SCHEDULE
Plastic Injection Molding Machine Programming and Operation	Sept. 19-23, 2011
ISTIV 2 for Managers & Supervisors	Sept. 21-22, 2011
Occupational Safety	Sept. 28-29, 2011
Effective Presentation Skills	October 6, 2011
Basic Plastic Injection Mold Design	Oct. 10-14, 2011
Manufacturing Cost Estimation	Oct. 12-13, 2011
ISTIV 1 for Employees	Oct. 20, 2011
ISTIV 1 for Supervisors	Oct. 26-27, 2011
Dimensional Metrology 2 - Basic Length Calibration	Nov. 9-11, 2011
Supply Chain Management	Nov. 17, 2011
Dimensional Metrology 3 - Limits and Fits and Inspection of Geometrical Tolerances (DM3)	Nov. 29-30, 2011
Basic Coordinate Measuring Machine (CMM) Operation	(to be announced)

Those who are interested to attend these free training programs may contact the PDMA Secretariat at tel. 837-0431 to 38 local 320 or MIAP Secretariat at tel. nos. 687-5123 local 114 and 687-4114. Reservation is on a first-come-first-serve basis.

MIRDC Participates in the DOST Sports Olympics

To promote well-roundedness among its employees, the Department of Science & Technology holds the DOST Sports Olympics annually. This year, the opening ceremonies was held last May 20, 2011 at the Philippine Science High School (PSHS) grounds. 3K and 5K fun run participated in by several employees from the MIRDC and other DOST agencies was held prior to the opening rites. This was immediately followed by the traditional parade of athletes, oath of sportsmanship and lighting of the torch.

Another highlight of the event was the parade of muses who represented each of the participating agencies. MIRDC's bet for the Best Muse category was Ms. Florale M. Galicha. The basketball games commenced after the coronation of the Best Muse.

MIRDC's basketball team played against their counterpart from the DOST-Central Office, Philippine Nuclear Research Institute (PNRI), Advanced Science & Technology Institute (ASTI), Technology Research Center (TRC), Philippine Institute of Volcanology & Seismology (PHIVOLCS), and Industrial Technology Development Institute (ITDI). Not being successful in the first two games, the Center's players sat together to come up with better game plans, which included certain adjustments especially in defense. The team emerged victorious in the last four games with a huge margin, demonstrating that the MIRDC basketball team is a force to reckon with.

As the basketball games continue to unfold, it is not yet clear whether the MIRDC Team will make it to the semis or not. All who are involved in the game are looking forward to positive results. The players are optimistic and are united with the motivation to make next year an MIRDC year.

The Center likewise participated in the bowling event, with its Bowling Team giving its best in competing with the best of other DOST agencies. The games were held at the Puyat Sports Starmall in Alabang. Although our team did not make it to the next level of the competition, having the Center's very own Engr. Edilbert M. Dela Peña as one of the top 20 male scorers of the tournament gave MIRDC a big boost in its campaign. Engr. Dela Peña believes that with new hirees, next year's games will have a different outcome.

The DOST Sports Olympics is far from over. Other games lined-up to complete the event are: Darts, Badminton, Billiards, and Chess. MIRDC's Mitchel Hernandez and Jaquelin Agonoy make up the team who will be MIRDC's bet to the Ballroom Dancing Competition which is set to be held in December 2011.



MIRDC Contingent at DOST Sports Olympics Opening Ceremonies



MIRDC Bowling Team with Dir. Arthur Lucas D. Cruz



MIRDC Basketball Team

DOST Pursues Monorail's Initial Test

The DOST, PCIEERD and MIRDC in cooperation with the industry and academe initiated the implementation of the project "Development of Prototype Automated Guide-Way Transit (AGT) System." With the aim of curbing serious threats to health and the environment brought about by the high level of pollutants emitted by the transport sector, the AGT will provide the public with an environmentally sustainable technology alternative for a low cost mass transit.

Upon the project's approval, the wheels were set into motion. Filipino ingenuity and engineering capabilities were put together to conceptualize and produce the AGT, commonly called monorail. The realization of sophisticated and cutting edge engineering concepts gave rise to the electric powered transit that is made to operate on a single rail. The monorail's initial test run was conducted on May 5, 2011. The prototype initially ran on a 500-meter track at 50-60 kph speed. DOST Secretary Mario G. Montejo revealed that the speed will be increased to 100-120 kph in the project's next phase.

Among the major responsibilities of the MIRDC on the said project are: a) to ensure the stability of tracks, stations and foundations; b) to design and develop a functional coach, and c) to design, develop, and install electrical and communication systems. The test run gave the MIRDC and all concerned agencies the opportunity to focus on particular aspects of the monorail that need improvement.

Based on inputs provided by the DOST-PMEDSO, the most recent



The monorail during its test run last 5 May 2011 held at the DOST Complex in Bicutan, Taguig City

updates on the AGT are as follows:

- Current collector assembly design was revised, fabricated and assembled,
- Center guide rubber tires were replaced with solid tires,
- Deflected main and secondary shafts were replaced,
- Fasteners for motor differential coupling were replaced with high tensile bolts,
- Control designs were updated, and
- System inertia in motor drive is undergoing further tuning.

In view of these improvements, the DOST led by Secretary Mario G. Montejo and the University of the Philippines' President Alfredo E. Pascual signed a memorandum of agreement to build a mass railway transit that will run on a two-kilometer stretch across the vast UP Diliman campus. A groundbreaking ceremony followed the MOA signing. With Secretary Mario G. Montejo and UP President Alfredo E. Pascual were MIRDC Executive Director Arthur Lucas D. Cruz, DOST-PCIEERD Director Amelia P. Guevara, UP Diliman Chancellor Caesar A. Saloma and UP Vice President for Development Elvira Zamora.

PSNT Conducts Seminar-Demo on Time of Flight Diffraction (TOFD)

A lecture-demonstration on Time of Flight Diffraction (TOFD) was conducted by the Philippine Society of Non-Destructive Testing (PSNT) last August 5, 2011 at the Philippine Nuclear Research Institute (PNRI) Audio Visual Room. Engr. Isidro D. Millo, Chief, Equipment Prototyping

Section-Prototyping Division of the Metals Industry Research and Development Center actively contributed to the success of the event. Being one of the directors of PSNT and chairman of the Technical Sessions Committee, he coordinated the said event and handled the forum.

It was attended by sixty five (65) participants from both the government and private sectors who are engaged in non-destructive testing activities. The event is just one of the activities lined-up for the year; another significant



event is the PSNT Convention that will be held on November 18, 2011.

“Time of Flight Diffraction (TOFD) is a method of Ultrasonic inspection which is very sensitive and accurate for nondestructive testing of welds for defects. TOFD is a computerized system that was invented in the UK in the 1970s for the nuclear industry by Dr. Maurice Silk. The use of TOFD enabled crack sizes to be measured more accurately, so that expensive components could be kept in operation as long as possible with minimal risk of failure.

Principle of Operation
Measuring the amplitude of reflected

signal is a relatively unreliable method of sizing defects because the amplitude strongly depends on the orientation of the crack. Instead of amplitude, TOFD uses the time of flight of an ultrasonic pulse to determine the position of a reflector.

In a TOFD system, a pair of probes sit on opposite sides of a weld. One of the probes emits an ultrasonic pulse that is picked up by the probe on the other side. In undamaged pipe, the signals picked up by the receiver probe are from two waves: one that travels along the surface and one that reflects off the far wall. When a crack is present, there is a diffraction of the

ultrasonic wave from the tip(s) of the crack. Using the measured time of flight of the pulse, the depth of a crack tip can be calculated automatically by simple trigonometry. This method is even more reliable than Radiographic testing of a weld.

Source: http://en.wikipedia.org/wiki/time_of_flight_diffraction_ultrasonics 8/9/11

PDMEX 2011 Features Advanced Machineries and Equipment

Once again, the Philippine Die and Mold Association (PDMA) successfully organized “PDMEX 2011,” the 5th Philippine Die and Mould, Machineries and Equipment Exhibition last 17-20 August 2011 at the World Trade Center Metro Manila (WTCMM). Spearheaded by PDMA president, Mr. Louie T. Fuster, together with the Board of Trustees and officers and strongly supported by its members, the “2011 PDMEX” was held in cooperation with the MAI Management Philippines. The 4-day event is one of the most awaited events in the local metals and engineering industry as it featured the latest, best available technology, and various state-of-the-art machineries and equipment used in die and mold making, plastic injection, pneumatics and controls, among others. It incorporates allied industries engaged in automation and control robotics, metal finishing, metrology, outsourcing and process engineering, plastics, welding, and sheet metal.

This year’s event was participated in by 275 exhibitors composed of local and foreign industry players. Foreign exhibitors came from Malaysia, Singapore, Taiwan, Japan, Korea, U.S.A., United Kingdom, China, Thailand,



Hongkong, Australia, Texas, Switzerland, Germany, Sweden, France, United Kingdom, Italy, Spain, and Israel. Viewers benefited from the fair as well as from the free technical presentations offered, namely: OSG Cutting Tools Basic Principles, Shrink Fit Technology from Start to Finish & Balancing Technology in Modern Machining, Real Productivity with Safety Cutting Tools, Modern Art of Milling, IKA Laboratory and Analytical Equipment Technology, Sustainability Solutions & Recycled Engineering Plastics/LED Engineering Plastics Introduction,

Vacuum Hardening: Heat Treatment in the 21st Century, Plastic Injection and Casting Simulation Technology, Now Within Reach, Technology Update: 3D CAD Design and Rapid Prototyping with Solid Edge ST3 and Z Builder Ultra, Real Productivity with Safety Cutting Tools, and Introduction of Premium Welding Gases ARCAL & LASAL for MIGMAG, TIG, LASER, Manual and Robotic Applications.

Journey to a cleaner future- Electric and hybrid vehicles will take over the cities

New concepts are needed for individual and local public transportation. In the large-scale project 'Fraunhofer System Research on Electric-Powered Mobility,' researchers are developing solutions for mobility of the future. The first results have now been presented.

The city traffic of the future will be different: buses will not be the only vehicles propelled by electricity, hydrogen or a combination of hybrid propulsion methods. One of these vehicles of the future is the AutoTram. A streetcar as agile as a bus, it combines the benefits of both vehicles- with no need for rails or overhead contact lines, the 'bustrolley' rolls on rubber tires and follows a simple white line on the road surface.

Unlike cars, which remain parked for an average of 23 hours a day, buses and trams are in motion all day long which does not leave much time to recharge the batteries. One solution approach for the AutoTram involves fast-charge docking stations positioned at the stops along the route.

Current can then be drawn at every third or fourth stop. The requisite amount of energy must be recharged in just 30 to 60 seconds at more than 1,000 amperes and 700 volts. Accomplishing this in such a short period of time requires super-capacitors.

Researchers are working to develop the modules required: for instance on energy storage units based in double-layer capacitors, on high-performance converters and on contact

systems for the transmission of current. Unlike batteries, double-layer capacitors- also known as 'supercaps'- have a high power of density. Those capacitors ensure that the charge can be quickly stored.

Dr Ulrich Potthoff, department head at IVI, offers a vivid explanation on how the principle works: "Batteries take their time charging. You can compare this to a big bathtub with a small spigot. Capacitors, on the other hand, quickly take up the charge, like a small bathtub with a large spigot. However, they can only store a smaller quantity of energy."

His colleagues at the Fraunhofer Institute of Integrated Systems and Device Technology IISB are contributing developments for the power-electronic components, such as direct voltage converter that adjusts the voltage level. These DC/DC converters are needed to link the double-layer capacitors with the drive train. Also decisive in this regard are materials that can withstand transmission of high levels of current. The surface of the contacts must be very stable and wear-resistant.

"These newly developed concepts must be coordinated with one another so they will harmonize with all of the other components. At IVI, we are incorporating the modules into the overall tram system and configuring the Interfaces," Dr. Potthoff explains.



This also includes the lithium-ion battery systems for electric vehicles.

Experts have been working to advance the batteries and electrical systems. These systems need to be safe, durable and efficient. Usually, the battery system consists of several hundred cells, and these do not always discharge at the same rate. And if individual cells should fail or no longer deliver the intended performance, this can take a toll on the entire battery.

The individual cells are controlled using an oversearching energy-management system. Project manager Dr. Matthias Vetter of the Fraunhofer Institute for Solar Energy Systems ISE, who coordinates the project, explains the basic principle involved. "Within a few fractions of a second, the electronics measure the current, the voltage in the individual cells and the temperature and use these parameters to derive values for the battery's state of charge and health. This way, a determination can be made for each cell as to whether there are any threats of overload, deep discharge, excessive heating or premature aging."

Source: Asia Pacific Metalworking Equipment News, April 2011, p. 74

Schaeffler: High-Performance Spindle Bearings

The FAG spindle bearings of series RS combine the speed capability of the HS high-speed series with the robustness and load capacity of bearings with large balls (B - spindle bearings).

The friction-optimized internal design and uniform 20-degree contact angle have resulted in maximum speed capability, high load capacity and

minimal sensitivity to operational and environmental influences.

As such, the series open up new possibilities when it comes to designing high-speed spindles for high machining forces. Their improved speed capability allows a more cost-effective realization of high-speed operation.

Source: Asia Pacific Metalworking Equipment News, May-June 2011, p. 82



Seco: Solid Drills for Composite Materials

Seco Tools have developed two geometries for drilling of composites and composite stacks. Designed to produce high quality holes in a highly productive environment, C1 and C2 have optimized point geometries to improve and secure the hole quality.

The Dura diamond coating achieves higher cutting data and extended tool life when compared to conventional TiCN/TiAlN coated tools.

The C1 geometry is designed for a variety of composite materials. The main feature is the point angle design, which is developed to reduce the axial forces and minimize splintering or delamination of the work piece. The C2 geometry has been designed to provide optimum results when drilling stacked materials.

Source: Asia Pacific Metalworking Equipment News, May-June 2011, p. 82



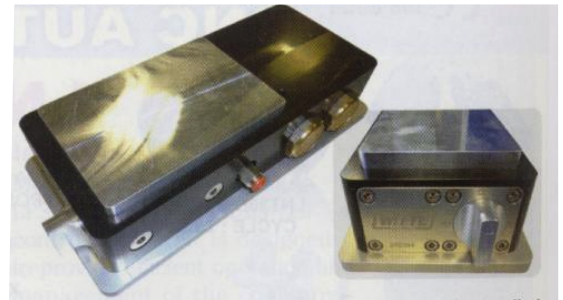
Witte: Cool Clamping Method

For complicated applications with intricate, thin walled components it is not so much the machining process which is a challenge, but more the correct method of holding the parts. Where flat large surfaces are concerned, vacuum clamping technology is often the best method.

The Ice Vice chuck developed by Witte Germany is available in standard dimensions of 75 x 140 x 300 mm (clamping surface 100 x 150 mm). For

operation, only a compressed air supply of six to eight bar is required and air consumption amounts to approximately 25 m³/h.

Freezing and thawing - corresponding to clamping and releasing - is done with a simple on/off switch. Integrated mufflers ensure a comfortable reduction in operating noise level.



Source: Asia Pacific Metalworking Equipment News, May-June 2011, p. 82

Resource-friendly manufacturing

Magnesium instead of steel- this could be an option for lightweight car body parts. A car door made of magnesium is roughly 50 percent lighter. This is one of the exhibits drawn from along the automobile manufacturing chain researched at the Fraunhofer Automobile Production Alliance.

Lighter, more economical, more reasonably priced- that is the motto. If possible, equipped with electric drive. Carmakers have lots of demands to meet. Researchers are presenting the results of their work at the Hannover Messe in the form of a "glass car".

One example is the car door made of magnesium, a development by researchers at the die Fraunhofer Institute for Machine Tools and Forming Technology IWU in Chemnitz. The door weighs just around 4.7 kgs. By way of comparison: the version in steel weighs some 10.7 kgs.

"Magnesium is available in large quantities worldwide, it can be

molded, and for similar structures - a car door, for instance - it has virtually the same properties as steel. "For example, it has a comparable rigidity," summarizes Soren Scheffler, group manager at IWU. "We have developed specific molding technologies for wrought magnesium alloys. This makes the lightweight material available for future use in series production of car bodies."

The researchers will be presenting a slide-ground tumbled alloy wheel rim. In the process of slide-grinding and tumbling, the wheel rim is moved through a fill of abrasive media moving with a particular frequency. As one would with sand paper, manufacturers begin with coarse abrasive media and replace this

with finer and finer abrasives over several steps.

Car manufacturing can also be optimized through the use of new joining processes. Researchers at the Fraunhofer Institute of Manufacturing Technology and Advanced Research IFAM in Bremen have come up with gluing process that allows for markedly faster production, such as in the glass front of a headlight. Conventional adhesives need several hours before they are hardened through humidity- and the headlight has to be held in place throughout this period.

Source: Asia Pacific Metalworking Equipment News, May-June 2011, p. 22



World's Top 10 Steel-Producing Country

World's Top 10 Steel Exporters (million tonnes)

Rank	Country	2009	2010	% Change
1	Japan	33.0	42.4	+28
2	China	21.7	38.8	+79
3	EU-27	30.4	32.9	+8
4	Russia	27.4	27.2	-1
5	Ukraine	23.8	25.0	+5
6	South Korea	19.6	23.9	+22
7	Turkey	17.2	16.0	-7
8	USA	8.8	11.2	+28
9	Turkey	9.8	9.9	+1
10	Brazil	8.5	8.9	+4

World's Top 10 Steel Importers (million tonnes)

Rank	Country	2009	2010	% Change
1	EU-27	20.8	26.7	+28
2	South Korea	19.9	24.3	+22
3	USA	14.3	21.1	+48
4	China	22.0	16.8	-24
5	Thailand	8.9	12.1	+36
6	India	7.8	10.2	+31
7	Turkey	10.2	10.6	+5
8	Iran	9.0	9.1	+1
9	Vietnam	9.3	9.1	-2
10	Canada	5.8	8.6	+47

Source: Iron & Steel Statistics Bureau

BOI Investments Rise 262% in Jan-April

Investments registered with the Board of Investments (BOI) grew by 262% to P147.9B in the first four months of the year – or more than threefold that of the P40.9B approved in the same period last year – indicating a reinvigorated investor confidence in the country.

“More investors are coming back from a slowdown in 2010,” said BOI Executive Director Efren V. Leño.

The BOI approved a total of 97 projects in the period or 67.2% more than the 58 projects registered in the same period last year.

Once fully operational, the newly-approved projects are expected

to generate 18,916 jobs, or a 161.9% expansion over the 7,222 jobs expected from the approvals in the comparative period in 2010.

Notably, local investments underpinned the strong investments significantly rising by 255.6% to

M&E Week in Focus

From its inception in 1966, the Metals Industry Research and Development Center (MIRDC) continuously undertakes activities pursuant to its mandate focusing on functions aligned with the strategic thrusts of the government specifically research and development services, technology transfer services and scientific and technological (S&T) services. In its efforts to help achieve global competitiveness for the metals and engineering (M&E) industries, the Center has remained a vital partner of the local M&E sector in setting new goals, meeting challenges, creating innovations, and providing business opportunities.

The MIRDC, on its 45th year of fruitful journey, has reached another milestone. Under the auspices of the MIRDC and the DOST, Malacañan Palace recently issued Presidential Proclamation No. 144 dated April 11, 2011, entitled “Declaring the period from June 13-18, 2011, and every third week of June thereafter as “Metals and Engineering Week.” Truly an important event in the history of the M&E industries, the issuance secures the annual celebration of the M&E Week in the years to come. This leaves a lasting statement of the government's recognition to the vital and significant role played by the M&E sector in the country's economic growth and development.



MIRDC Executive Director Arthur Lucas D. Cruz, assisted by Ms. Carmen G. Quiambao, FAD Chief and Mr. Danilo A. Cruz, a senior personnel, confers the legacy trophy to Dr. Antonio V. Arizabal, Jr.

June 16, 2011 saw the successful celebration of the 3rd M&E Week. Themed as “Championing Public-Private Partnership in the M&E Industries,” this year's M&E Week was held in cooperation with the Metal Engineering Industry Foundation, Inc. (MEIFI), and in conjunction with the MIRDC's 45th anniversary. Keynote speaker Dr. Antonio V. Arizabal, Jr. was conferred the “2011 M&E Man of

the Year.” He was also awarded the Legacy Trophy as the Center's founder and first Executive Director. Dr. Arizabal zealously worked for the passage of R.A. 6428 establishing the MIRDC (originally named Metals Industry Development Center or MIDC).

Meanwhile, the first-ever coffee table book of the Center “MIRDC-Technology Business Incubation

P139.9B from P39.3B in the same period last year. Foreign participation also improved by 430.3% to P8.1B from P1.5B.

“This is a good indication that Filipino businessmen's confidence for their country is back and they are putting money in their home country,” Leña said.

“It is also good to note that foreign investors are coming back,” he added.

Investors from the Netherlands poured in the biggest chunk of foreign investments in the country, putting in some P4.5B worth of business ventures, or 7,718% higher than its 2010 January-April investments.

Among the Association of Southeast Asian Nations (ASEAN) countries, Singapore emerged as the most consistent top investor, with Singaporean investments rising by 5,985% to P562.9M over its P9.3M investments in the same first four months in 2010.

“We are confident we are making headway in our government priority projects,” he further said.

Employment opportunities arising from these projects, he said, could help absorb some of the displaced overseas Filipino workers (OFWs) affected by the crises in the Middle East, North Africa, and Japan.

Leña particularly noted that the newly approved projects are widely dispersed in the countryside.

Region 3 or the Central Luzon area got the highest amount of investments worth P75.6B, largely due to the P74.8B refinery expansion project of Petron Corp. in Bataan. Region 1 followed with P26.5B and the National Capital Region (NCR), with P17.5B.

The manufacturing sector lured the biggest portion of capital infusions worth P92.9B, or 62.8% of the total approved projects. The energy and energy-related projects followed with P25.6B worth of investments.

(TBI) Success Stories” was also launched. It features stories of companies who availed of and benefited from the services and technology interventions of the MIRDC under its TBI program. Relatedly, the Center highlighted MIRDC’s technology transfer beneficiaries from Luzon, Visayas and Mindanao. The MIRDC also held the MOA signing with Avance Technical Education Center, Inc. (AVTEC), a training provider on plastic injection molding technology and Teknologix, Inc., a firm which is into CAD/CAM/CAE solutions software.

True to the theme of this year's celebration, M&E Industry Associations were then recognized as MIRDC partners – a gesture that will further strengthen strategic linkages between the government and the private sector. The M&E industry associations, being the valuable partners of MIRDC in its endeavors, were given plaque of recognition, among them were: Philippine Die and Mold Association, Inc. (PDMA); Metalworking Industries Association of the Philippines, Inc. (MIAP) - National; MIAP Metro Manila Chapter; Agricultural Machinery Manufacturers and Distributors Association, Inc. (AMMDA); Philippine Metalcasting Association, Inc. (PMAI); Philippine Welding Society (PWS); Original Equipment Manufacturing Association of the Philippines (OEMAP); Mechatronics and Robotics Society of the Philippines (MRSP); Philippine Iron and Steel Institute (PISI); Society of Manufacturing Engineers (SME) – Manila Chapter; Philippine Society for Nondestructive Testing, Inc. (PSNT); and Metal Engineering Industry Foundation, Inc. (MEIFI). Dr. Agustin M. Fudolig, Deputy Executive Director for Technical Services, gave the guests a run-down of the MIRDC's future plans and programs which are sure to keep the wheels of the M&E industries in constant and productive motion.



Dr. Antonio V. Arizabal, Jr. receives the 2011 M&E Man of the Year award from MEIFI chairman, Mr. Eduardo N. Chua Co Kiong, witnessed by representatives from M&E industry associations



MIRDC Executive Director Arthur Lucas D. Cruz (middle) together with Dr. Danilo N. Pilar award the plaque of appreciation to Mr. Rey Mabarrang of Choryo Toolings System, Inc., a successful graduate of TBI program



Representatives from M&E industry associations receive plaque of appreciation for their exceptional efforts and commendable partnership with MIRDC in pursuing programs and initiatives for the development and enhancement of the competitive advantage of the metals and engineering industries

Berpa-Flex Technologies: From Zero Capital to a Company Worth Millions

Resource Person: Mrs. Inesitas Lacson Palermo



MIRDC personnel provide technical consultancy on welding technology to Bepre-Flex Technologies

Behind every company's success is a person with a strong determination to make a difference. Mrs. Inesitas L. Palermo was groomed by her mother to become an educator. Although aptitude test results showed that she had an inclination toward technology courses, she went to take up education instead. While pursuing a career in teaching, she also owned and operated an automotive repair shop (named JRS Automotive Repair Shop) located at the Iloilo town proper. Mrs. Palermo likewise tried her hand at being an operator of passenger jeepneys. Individual passenger jeepney lines of LTFRB at that time were rare and so aside from the jeepney units that were under her name, other units were attached to her line and were her responsibilities as well.

Operating a passenger jeepney line, owning an automotive repair shop, and teaching, on top of her lifetime career as a wife and a mother, are careers that she was able to successfully juggle. For many years, JRS Automotive Repair Shop continued to be in its top performance. It was a business that grew without capital – it was self-

liquidating. Since she has already established a name, her welding machine was acquired on loan from Iloilo National Hardware. Also, Mrs. Palermo signed a one year contract with Francisco Motors Corp. in 1977 and was in charge of the repair of all pulled-out units that were to be sold again. The down payment given by her client was used to defray costs of labor and purchase of supplies. Having earned relevant experience from being a teacher, she was systematic at recording and taking note of details, which was a skill she used in laying down business plans and determining if business was doing good. It was, according to her, "like doing an individual project costing." The revenue from the business was kept intact for her family had other sources of income – Mrs. Palermo was into teaching, and her husband was Chief Engineer at Negros Navigation. The next thing she knew, her business boomed. Earnings were then used to buy lathe and drilling machines, and to upgrade her shop.

Because of her husband's connection with Negros Navigation,

Mrs. Palermo had very good rapport with the top management. Confident with the relationship that she has established, she later on offered her shop for some services to Negros Navigation. She then started making bunks for their ships and eventually landed bigger contracts. She later joined the ship-building/ship-repair industry in 1983. At this point, she decided to give up teaching to be able to engage herself full time in a career that made her feel more fulfilled. Her company then started to venture into dry docking in 1984. Equipped with a better understanding of ship-building, her company has slowly gone through the process of gearing up to offer ship-building services. It was not an easy undertaking. The Maritime Industry Authority (MARINA) issued a memo requiring all dry docking service contractors to be MARINA-accredited. This meant that she had to take a qualifying exam. Out of the 31 successful test-takers from a total of 333 examinees, she was the lone female passer. Her company became accredited in dry docking and she has triumphantly proven herself a worthy player in an

Success Story

industry that has long been considered a man's world.

She used to manage as "one-man army" but had to hire an assistant when business started picking up. She later on needed more staff and employment eventually grew. In 1987, the company name was officially changed to JRS Marine. After ten years of doing dry-docking, the company underwent expansion and its name was once again changed into Berpa-Flex Technologies in 1997. As Berpa-Flex, Mrs. Palermo focused the company's direction into the fabrication of metal products and the manufacture of expansion joints. Built to overcome the effects of jarring movement caused by thermal, torsional and lateral expansion, expansion joints are necessary fixtures in all industries, from light to heavy including food, marine, cement, sugar centrals, pharmaceutical, and power generation. Mrs. Palermo once again made a name in the industry as she brought Berpa-Flex towards quality performance. For her, "the best bellows are those that are made from the meeting of the minds and the best understanding between the manufacturer and the end-user." She strongly believes that in order to stay strong and respected in the industry, it is a must that the company remains true to its goal of coming up with quality products for its clients.

With her long-range plans for the company already accomplished after 10 years of operations, she had to slow down and reassess her company's direction. This is when she went to the DOST Regional Office VI to seek consultation. She was then referred to Engr. Felipe G. Pachoco,

the Extension Officer of MIRDC in Region 6. Her meeting with Engr. Pachoco paved the way for a healthy partnership that proved beneficial for her company. After the consultation, MIRDC kept an open line of communication with Berpa-Flex and constantly provided them with essential trainings that greatly contributed to the company's effective operations. Since then, MIRDC has never let her down, especially on occasions when operations cannot proceed until they are given immediate attention by MIRDC experts.

Berpa-Flex Technologies rightfully deserves the success that it has reached in all of its years of operations. With technical support and guidance from MIRDC and a strong leadership from its proprietor, Berpa-Flex gained its ISO 9001:2008 certification and became a DTI Bagwis Awardee. These accomplishments further motivated Mrs. Palermo to take the company to achieve more in the future by being the proactive person that she was when she was only starting to establish the company. She is an active member of major industry associations, she conducts products and technical presentations, participates in seminars and does a lot of reading.

Her company's clear-cut direction and her ability to make decisive moves for the business were greatly enhanced through MIRDC's intervention in technologies that include procedures such as welding, cutting and metals identification. According to her, they gained a better understanding of the procedures that they have long been

doing through the help of MIRDC. From a firm that started with no capital, it has now grown to be a high-earning company worth millions. Along with the company's growth, Berpa-flex is now a proud owner of additional equipment such as SMAW and TIG welding machines, and a plasma cutter. Workforce has grown from a "one-man-army" to 25 regular and 25 casual employees. Their main office is in Iloilo City, their Buying and Marketing Office is in Manila and they also operate a branch in Malaysia. They currently have a line-up of clients from different industries: Asia-Brewery, Aboitiz Transport System, Universal Robina Corporation, and Magsaysay Shipping Corporation, to name a few. Mrs. Palermo's future plans include undergoing further training, for she believes in the value of upgrading the skills of the workforce. She has already enlisted in the DOST's SETUP program for her plans to purchase additional shearing and lathe machines. She is also looking at the possibility of putting up a training school, in order to make sure that her company will be well taken care of in the hands of the right people with the best know-how. In doing so, she is able to leave an assurance that the industry will have a stable future. She summarized her experience in the business by leaving us with this: "even a non-technical person can make it in a highly technical business as long as one has the passion and interest and puts in a lot of hard work."

Samples of expansion joints manufactured by Berpa-Flex Technologies:



Rectangular compensator



Rectangular expansion joint application

Success Story

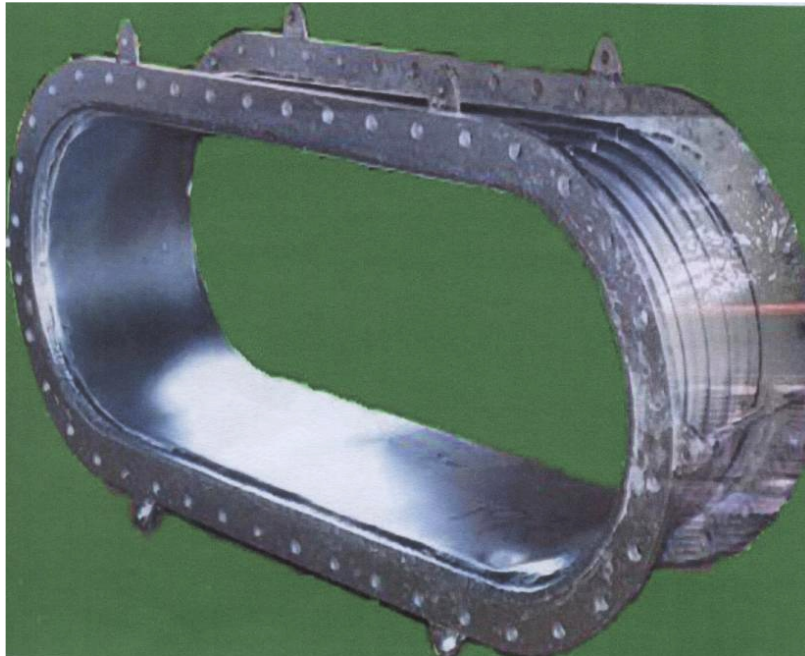
Samples of expansion joints manufactured by Berpa-Flex Technologies (continued):



Circular compensator



Circular compensator application



Oval compensator for MIV Superferry 5

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