

Department of Science and Technology
METALS INDUSTRY RESEARCH AND DEVELOPMENT CENTER
Major Projects, Programs and Activities, Beneficiaries, and Status of Implementation 2019

Item No.	Title	Duration	Project Type (as source of fund)	Project Objectives	Beneficiaries	Implementing Division	Total Budget	Status of Implementation (as of September 30, 2019)
I. MACHINE BUILDING PROGRAM								
1	Establishment of Advanced Mechatronics, Robotics, and Industrial Automation Laboratory (AMERIAL) in Support to Metals and Engineering Industry	January 1, 2019 - December 31, 2019	GIA	To establish the AMERIAL to support the technological advancement, workforce improvement, and competitiveness of the metals and engineering (M&E) industries.	Metals and Engineering Industry	Prototyping Division	40,906,435.00	<ol style="list-style-type: none"> 1. Completed inception meeting with MRSP and Academic institution 2. Completed hiring of personnel 3. Completed inception meeting with DOST Regional Offices (NCR, Region 3, and 4A) 4. Prepared TOR 5. Identified and assessed projects. 6. Ongoing training of MIRDC Personnel (Local and Foreign) 7. Ongoing conduct of automation services to SET-UP beneficiaries 8. Ongoing analysis of impact of automation services to SET-UP beneficiaries (cost benefits, productivity, etc) 9. Ongoing bidding
2	Research on Advanced Prototyping for Product Innovation and Development Using Additive Manufacturing Technologies (RAPPID-ADMATEC)	December 1, 2018 - November 30, 2021	GIA	To establish a National Additive Manufacturing Center as a technological hub for additive manufacturing, to help sustain the global competitiveness of the country. Specifically, the project aims to: 1. Renovate existing building to serve as the location of AMCen and RAPPID-ADMATEC facility; 2. Acquire additive manufacturing technologies for different types of materials to make available for product innovation and rapid prototyping; 3. Create research and development activities utilizing additive manufacturing technologies; and 4. Develop and conduct training program for additive manufacturing design and manufacturing.	Metals and Engineering Industry	Materials and Processes Research Division	296,525,414.26	<ol style="list-style-type: none"> 1. Hired and engaged Consultant for building plans and designs 2. Conducted meetings and discussions with GIBMA for the proposed plans and designs for building the renovation 3. Ongoing collaboration with possible partners for possible identification of additional R&D projects 4. Identified five (5) possible projects 5. Identified five (5) trainees for CWRU-USA. Completed processing of J1 Visa of the 1st batch of trainees 6. Completed drafting of TOR for AM equipment. Ongoing processing of bidding documents 7. Ongoing processing of bidding documents
3	Design and Development of Metal Injection Mold for GI HAMMER	December 7, 2018 - June 6, 2019	Contract Research	To improve the process of fabrication from investment casting to metal injection molding (MIM) Specifically, to design and develop a metal injection mold set for GI HAMMER part.	Metals and Engineering Industry	Prototyping Division	189,309.40	<ol style="list-style-type: none"> 1. Conducted meeting with stakeholder 2. Conducted FGD 3. Identified product requirement 4. Prepared initial concept design 5. On-going coordination for the presentation of initial concept design

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4	Design Improvement of Gear Transmission System for Riding-Type Rice Transplanter (Design Improvement of a Rice Transplanter Transmission System)	June 1,2018 - June 30, 2019 Extension 1: July 1,2019 - November 30,2019	Contract Research	The project aims to improve the design and fabricate the riding-type rice transplanter transmission system. Specifically, it aims to: • Improve the design of a rice transplanter gear transmission system; • Fabricate the improved design of the rice transplanter transmission system; and • Test and evaluate the functionality of the improved transmission system of the rice transplanter.	Agricultural Sector, Metals and Engineering Industry	Prototyping Division	358,830.00	1. Completed documentation of existing design 2. Completed 3D modeling and simulation of gear system 3. Completed design review and modification 4. Ongoing preparation, detailing and checking of technical drawing 5. Ongoing materials procurement
5	Development of Automatic Trash Rake for Malabon	February 1,2018 - November 30,2019	GIA	1. To mobilize the stakeholders through the organization of community that will act as social fence against encroachment or intrusion into the ecologically sensitive parts of the river system. 2. To keep floating debris, leaves, and other solid waste from entering Manila Bay particularly Malabon River, Navotas River, Tullahan and Tinajeros River(MaNaTuTi) 3. To reduce pollution loading discharges in Malabon. 4 To establish a partnership mechanism that will coordinate approaches to the management of the area. 5. To establish 1 Automatic Trash Rake Facility along MaNaTuTi River System	Metals and Engineering Industry	Prototyping Division	9,000,000.00	Conducted a post-qualification on August 14, 2019
6	Development of Alternative Manufacturing Process for The Production of Stainless Steel Impeller for Small Fishing Boats	October 1,2018 - February 28,2019 Extension 1: March 1,2019 - May 31,2019 Extension 2: June 1,2019 - December 31,2019	Contract Research	1) To develop the design including flat patterns for blade materials; 2) To develop dies and fixtures for the mass production of stainless steel impeller; 3) To develop the optimum process parameters for the production of stainless steel impellers; and 4) To fabricate and evaluate the developed product.	Metals and Engineering Industry	Prototyping Division	350,000.00	1. Conducted prior art search and reviewed other technical references 2. Scanned in 3D the sample impeller subjected the sample impeller provided by ATON to 3D scanner 3. Designed in 3D model the forming die and blanking die 4. Conducted design review and modification 5. Ongoing detailing of forming die and blanking die 6. Ongoing materials procurement 7. Ongoing fabrication of dies and fixtures

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II. DEFENSE AND SECURITY PROGRAM								
7	Project BUHAWI (Automated Gun Mount for Browning 0.50 Caliber Machine Gun, M2, Heavy Barrel)	December 15, 2018 - December 14, 2019	GIA	To improve the firepower capability of navy floating assets through the design and development of an automated gun mount for Browning 0.50 Caliber Machine Gun, M2 (Heavy Barrel)	Metals and Engineering Industry	Prototyping Division	24,587,976.00	<ol style="list-style-type: none"> 1. Identified Project members 2. Signed Office order 3. Prepared and submitted RFE for Contract of Service personnel 4. Hired Contract of Service personnel and job descriptions were prepared 5. Completed initial mechanical design 6. Conducted design review 7. FGD conducted 8. Bidding completed 9. Ongoing fabrication of mechanical system
III. CAPABILITY BUILDING (TRAINING AND CONSULTANCY) & OTHERS								
8	Strengthening the DOST RML Services – Phase 3	March 16, 2019 - March 15, 2020	GIA	<p>The general objective of the project is to expand the services and operations of the Regional Metrology Laboratories (RMLs) in order to be responsive in the calibration requirements both in the urban areas and in the countryside that are necessary for the industry to be more competitive and for the attainment of a better quality of life by sustaining the delivery of accurate and reliable calibration services. Specifically, it aims to:</p> <ol style="list-style-type: none"> 1. To expand the facilities and services of the RMLs 2. To conduct Awareness Seminars and Trainings 3. To harmonize Calibration Procedures among Regional Metrology Laboratories 4. To maintain and expand the scope of ISO 17025 accreditation 5. To sustain the delivery of accurate and reliable services 	Metals and Engineering Industry	Analysis and Testing Division	4,069,993.00	<ol style="list-style-type: none"> 1. Prepared Training Modules on: <ul style="list-style-type: none"> -Dimensional Metrology and Calibration of Basic Measuring Instruments -Calibration of Balances and Pressure Gauges -Calibration of Hygrometer and Thermometry -Uncertainty of Measurement 2. Approval of Purchase Requests, and Terms of Reference <ul style="list-style-type: none"> - Conducted pre procurement on 18 July 2019 - Conducted opening of bids on 02 August 2019 3. Advocacy Seminar conducted on 20 August 2019 4. Existing laboratory procedure for revision 5. Review completed 6. Samples Calibrated: 7044 (Sample) 7. Corrective action submitted on 04 June 2019 8. Corrective action completed on 28 July 2019 9. Documents and application submitted to PAB on July 14, 2019 10. Reassessment scheduled on August 14-16, 2019 11. TSR Served: 698 (Company) 12. Firms Served: 1760 (TSR) 13. Income Generated: 8.34M

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9	Enhancing One-Lab for Global competitiveness (OneLab V2-Year 3)	January 1, 2019 - December 31, 2019	GIA	The general objective of the project is to enable the network of laboratories (OneLab) to provide global access to comprehensive testing and calibration services at a single touch point. Specifically, it seeks to: (1) meet extensive customer requirements with satisfaction; (2) ensure that its processes are at par with international standards, compliant with good governance requirements and with robust and secured IT system; (3) sustain an engaged and integrated network of competent, proficient and internationally recognized laboratories; and (4) secure the operation of the network.	Metals and Engineering Industry	Analysis and Testing Division	1,800,000.00	<ol style="list-style-type: none"> 1. 20 CSM with 100% CSI rating 2. Submitted request for assessment, waiting for PAB reply. 3. Waiting for the rescheduling of PRC inspection as per PRC request (PDEA, FDA, EMB, PNP Complied) 4. BCP maintained at Analysis and Testing Division. 5. No. of test conducted actual accomplishment for Aug=2,514.00 6. No. of samples received for Aug= 2,366.00 7. No. of firm served for Aug= 30.00 8. No. of customer served for Aug= 37 9. No. of customer served (warm bodies) for Aug=458 10. Fees collected for Aug= 2,353,950.00 11. 2 personnel attended on Statistics and Uncertainty in Chemical Analysis 12. One (1) Profile of testing laboratories per agency (survey) conducted
10	Capability Building for Enhancing the Competitiveness of Die and Mold Industry Through the Engagement of Local Experts (DiMo GURU) - Phase II	July 1, 2019 - December 31, 2019	GIA	To enhance the competitiveness of the local tool and die sector in support of metals, engineering, and allied industries, specifically, to: • Identify companies and capacitate them in the area of Die and Mold Making and Die and Mold Design through training and consultancy services conducted by local experts • Support the implementation of MIRDC's Die and Mold Solution Center (DMSC) through the provision of training by a local expert to industry and MIRDC engineers and technicians.	Metals and Engineering Industry	Technology Diffusion Division	3,102,000.00	<ol style="list-style-type: none"> 3 September 2019 - Inception Meeting was conducted 11 Sep 2019 - Conducted ocular visit of Don Bosco facilities in Makati and discussions were made for the possibility of sourcing out the services of their instructor as Resource Speaker

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11	Establishment and Strengthening of Information and Communication Technology (ICT) Infrastructure (ICT INFRA) and Business Online Solution System (BOSS) of the Center in Support to the Productivity and Competitiveness of the M&E Industries (Phase II)	January 1, 2019 - December 31, 2019	DGIA	To provide fast and efficient S&T services - Enhanced ICT capability - Increase number of clients from the Metals and Engineering (M&E) sector thru online service facilities - Maintain ISO and PQA standard - Contribute to the overall income of the national government	Metals and Engineering Industry	Planning and Management Division	3,440,000.00	<ol style="list-style-type: none"> 1. Hired three (3) Computer Programmers 2. Enhancement / development of Project Management Information System (PMIS) 3. Enhancement / development of Job Order Information System (OneShop) 4. Enhancement / Development of Purchase and Property Management System (PPMS) 5. Prepared of purchase request for memory module, storage for server and removal disk 6. Prepared purchase request for Full HD/Smart TV and Professional Camera 7. Prepared purchase request for Firewall Port Module 8. Prepared purchase request for Email Server System and Gigabit switch 9. Attended / participated in the Windows Server Administration 10. Inspected and deployed Full HD/Smart TV and professional camera 11. Installed memory modules, storage and upgrading of server 12. Installed and configured Gigabit Switch 13. Completed installation, testing and deployment of Email Server 14. Attended/participated in ISO 9001:2015 Document Control and Advanced Excel Training 15. Ongoing enhancement / development of Online Training Reservation System
IV. MATERIALS AND MINERALS PROCESSING PROGRAM								
12	A Comparative Study on the Metallographic Structure of Threaded Low Carbon Steel Bolts Case-Hardened Using Vacuum Carburizing and Pack Carburizing Heat Treatment for Rice Thresher Application	September 9, 2019 - November 3, 2019	GAA-Internal	To investigate the metallographic structure of low carbon steel bolts subjected to vacuum carburizing and pack carburizing heat treatment, and determine the case depth of the carburized layer.	Metals and Engineering Industry	Materials and Processes Research Division	141,700.00	<ol style="list-style-type: none"> 1. Procurement of nitrogen 2. Pack carburizing (2 trials) - ongoing 3. Vacuum Carburizing (3 trials) - ongoing 4. Ongoing conduct of metallographic examination 5. Ongoing conduct of Hardness Test 6. Ongoing comparison of results of vacuum and pack carburizing 7. Ongoing training of personnel 8. Ongoing establishment of parameters


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13	Optimization of MPEW Cast Iron and Non-Ferrous Melting Process and Equipment for Enhanced Energy and Output Efficiency	September 1, 2019 - August 31, 2020	Contract Research	1. To assess the existing melting process of cast iron and aluminum and copper alloys at MPEW; 2. To upgrade the performance of the MPEW cupola furnace used in cast iron melting process; 2.1. Increase melting rate from the current 120kg/hour to at least 1500kg/hr; and 2.2. Improve fuel efficiency from the current 1:4 metal to coke ratio to at least 1:10 coke to metal ratio. 3. To improve the performance of MPEW crucible furnaces used in non-ferrous metal melting process; 3.1 Improve melting speed by at least 10%; and 3.2 Reduce fuel consumption by at least 10%.	Metals and Engineering Industry	Materials and Processes Research Division	562,405.60	Process assessment
14	Development of New Product Platform for Jewelry Line	July 1, 2019 - February 29, 2020	Contract Research	1. To identify a new metal alloy to be used for a new range of product lines: a. The new metal alloy must be white and has a lower cost than gold or silver alloy; b. The new metal alloy must have an acceptable hardness to allow easy and economical metalworking and polishing; c. The new metal alloy must have a chemical composition approved for US or EU markets; 2. To establish the jewelry manufacturing system for the new alloy; 3. To train personnel in the applications of the new alloy in jewelry products;	Metals and Engineering Industry	Materials and Processes Research Division	303,760.00	1. Equipment identification, evaluation and qualification (Project team together with our partner R&J traveled to Thailand and was able to identify equipment for jewelry making.) 2. Project team has identified Stainless Steel 316 as base alloy alternative.
15	Electroless Ni-P Plating of High Tensile Steel with Heat Treatment as Alternative to Conventional Chromium Coatings	June 27, 2019 - December 27, 2019	GAA-Internal	1. Investigate the process route for electroless Ni plating with vacuum and conventional heat treatment using locally and commercially available Ni bath; 2. Investigate the factors affecting coating process; 3. Investigate the effects of heat treatment; 4. Look at the physical and mechanical properties of coating.	Metals and Engineering Industry	Materials and Processes Research Division	20,000.00	On leave

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16	Investigation on the Effects of Temperature Regulation using PID-based SCR Controlled Furnace on Heat Treatment of Steels	May 1, 2019 - October 31, 2019	GAA-Internal	To investigate the effect of SCR-controlled temperature regulation on heat treatment process and properties of heat treated steels.	Metals and Engineering Industry	Materials and Processes Research Division	20,000.00	<ol style="list-style-type: none"> 1. First Phase: Heat Treatment using On-Off Controller completed 2. Procurement of various steel grades and power meter completed 3. Hardness of all steel samples prior to heat treatment determined and recorded. 4. The power meter was installed in the furnace to monitor the energy consumption during heat treatment. 5. The energy consumption was recorded for all processes. 6. As-quenched and as tempered hardness were determined and recorded. 7. The microstructure of the quenched and tempered parts were observed using the optical microscope. 8. Second Phase: Heat Treatment using PID-based SCR Control System completed 9. Procurement of SCR and other electrical components done. 10. Design and Installation of a PID-based SCR control system completed. 11. Created Optimized Control Tuning Algorithm 12. Hardness of all steel samples prior to heat treatment were determined and recorded
17	Development of Hexavalent-Chromium Free Anodizing Solution by Using Tartaric-Sulfuric Acid	May 1, 2019 - October 31, 2019	GAA-Internal	<ol style="list-style-type: none"> 1. To establish parameters for TSA anodizing. 2. To characterize the anodized materials as to requirement such as thickness, surface morphology, and corrosion resistance. 	Metals and Engineering Industry	Materials and Processes Research Division	50,000.00	<ol style="list-style-type: none"> 1. Completed procurement of chemicals / materials 2. Ongoing establishment of parameters for Tartaric-Sulfuric Acid Anodizing 3. Ongoing characterization of the plated materials as to requirement such as thickness, surface morphology, and corrosion resistance 4. Ongoing quality testing and documentation.
18	Development of Carbon Conductive Paint for Electroplating of Non-Conductive Materials	May 1, 2019 - October 31, 2019	GAA-Internal	The goal of this project is to make an alternative to commercially available but expensive conductive paint and its application on electroplating of non-conductive materials.	Metals and Engineering Industry	Materials and Processes Research Division	20,000.00	<ol style="list-style-type: none"> 1. Completed procurement of chemicals / materials. 2. Completed formulation of carbon conductive ink. 3. Ongoing investigations on appropriate materials and process of producing a conductive ink 4. Ongoing evaluation of the ink's conductivity. 5. Ongoing evaluation of the ink's adhesion to the surface 6. Ongoing characterization of the plated materials as to requirement such as adhesion & corrosion resistance. 7. Ongoing quality testing.

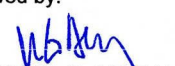
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19	Development of Exothermic Sleeves	April 1, 2019 - November 30, 2019	Contract Research	a. To be able to have the right formulation of cheaper raw materials in producing exothermic materials; b. To be able to produce an exothermic sleeve at a lower cost with properties comparable to the one available in the market	Metals and Engineering Industry	Materials and Processes Research Division	49,630.00	1. Completed validation and verification of raw materials 2. Ongoing purchase of raw materials 3. Ongoing formulation of different raw materials for exothermic sleeves 4. Ongoing inspection and documentation of result of formulated exothermic sleeves 5. Ongoing pattern making for sleeves, molding , melting, pouring
20	Rollmaster Casting Conversion Project: Gearbox Housing	January 16, 2019 - August 31, 2019 Extension 1: July 1, 2019 - August 31, 2019 Extension 2: September 1, 2019 - December 31, 2019	Contract Research	a. To convert manufacturing process of gearbox housing from cut-and-weld fabrication to casting b. To achieve at least 15% savings against the total cost of cut-and-weld fabrication method	Metals and Engineering Industry	Materials and Processes Research Division	86,065.00	1. Acquired casting supplies 2. Developed casting design 3. Completed patternmaking 4. Completed casting and machining 5. Prepared samples for analysis 6. Completed testing and analysis of samples 7. Completed casting drawing/design 8. On going canvass for patternmaking services 9. Ongoing casting of 2nd prototype
V. NATIONAL SCIENCE AND TECHNOLOGY WEEK (NSTW) 2018 PROJECTS								
21	Implementation of Committee on Physical and ICT Logistics Activities for the CY 2019 NSTW	May 27, 2019 - September 26, 2019	GIA	The project aims to: (1) take charge of the physical arrangements for the opening/closing ceremonies; (2) facilitate provision of internet services, video streaming/conferencing, when needed.	Metals and Engineering Industry	Technology Diffusion Division	1,619,500.00	Ongoing post event assessment, liquidation, and preparation of terminal report and AFR
22	MIRDC Participation to the Celebration of 2019 NSTW	May 27, 2019 - September 26, 2019	GIA	The project aims to: (1) promote public awareness of the MIRDC's initiatives to develop equipment as substitute to imports; (2) present to exhibit viewers, both fabricators, end-users, and product clienteles as well as cooperatives, researchers, academe and the public the technologies developed by the MIRDC that contribute for our country's economic growth.	Metals and Engineering Industry	Technology Diffusion Division	803,300.00	1. Ongoing development of IEC materials for the above technology 2. Post event assessment. liquidation and preparation of terminal report and AFR

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VI. LOCALLY FUNDED PROJECT								
23	Rehabilitation of the Mechanical Workshop II Building	Phase IV: January 1, 2018 - December 31, 2019 Phase V January 1, 2019 - December 31, 2019	GAA-LFP	To renovate and improve the Mechanical Workshop II (MWS II) Building	Metals and Engineering Industry	Finance and Administrative Division	2019 Allotment: 18,344,000.00	Phase IV - 75% Completion Phase V - 40.35 Completion
24	Repair of Perimeter Fence of the Center	January 1, 2019 - December 31, 2019	GAA-LFP	Repair will upgrade the existing perimeter fence with deteriorated steel fences and collapsing concrete walls in view of wear and tear.	Metals and Engineering Industry	Finance and Administrative Division	2019 Allotment: 8,000,000.00	Retaining wall and CCTV Phase II (73.55% Completed)
25	Upgrading of MIRDC Laboratory and Administrative Building	January 1, 2019 - December 31, 2019	GAA-LFP	To extend the useful life of the ATD Building and ensure long-term safety, reliability and strengthen its seismic resistance required for modern buildings.	Metals and Engineering Industry	Finance and Administrative Division	2019 Allotment: 12,000,000.00	50% Completion
26	Construction of New Cistern Tank and Upgrading of Center's Water Supply	January 1, 2019 - December 31, 2019	GAA-LFP	To meet the increasing demand for water supply, extend the useful life of the Center's overhead tank, rehabilitate the old water and sanitary lines and install fire hydrants in each building in compliance with BFP requirements.	Metals and Engineering Industry	Finance and Administrative Division	2019 Allotment: 15,000,000.00	49.66% Completion


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