

**Department of Science and Technology**  
**METALS INDUSTRY RESEARCH AND DEVELOPMENT CENTER**  
**FY 2024 Major Projects, Programs and Activities, Beneficiaries, and Status of Implementation**  
**(as of November 30, 2024)**

Item No.	Title	Duration	Project Type (as source of fund)	Project Objective	Beneficiaries	Implementing Division	Status of Implementation
<b>A. AGRO-INDUSTRIAL</b>							
1	Design Improvement of Existing Chain Link Fencing Machine to Produce Slope Protection Circular Wire Mesh	1-Apr-22 to 30-June-23 Extension 1 1-Jul-23 to 31-Dec-23 Extension 2 1-Jan-24 to 31-March-24 Extension 3 1-April-24 to 30-June-24	GIA	The joint R&D collaboration project brings together the following parties: Rebrtrade International Corporation (RIC) as the private partner and committed adopter of the resulting technology, and the Metals Industry Research and Development Center (MIRDC) of DOST as the technology partner. The project aims to design and fabricate the prototype mold to modify the chain link fencing machine to produce circular wire mesh.	Metals and Engineering Industry  Rebrtrade International Corporation (RIC)	PD	Completed on June 28, 2024
2	i-POND: An IoT-based Pond Water Quality Control and Monitoring System for Shrimp Farms	1-November-22 to 30-April-24	GIA	The project aims to design and develop a long-range wide area network (LoRaWAN)-based automated water quality control and monitoring system for shrimp farms.	Metals and Engineering Industry  Aqua Tierra Agri-Industrial Farms Inc. (Aqua Tierra)  Mindoro State University	PD	Completed on April 29, 2024
3	Development and Evaluation of an Automated Control and Monitoring System in the Overall Productivity of Recirculating Aquaculture System (RAS)	2-Nov-22 to 30-April-24 Extension 1: 1-May-24 to 31-Jul-24 Extension 2: 1-Aug-24 to 31-Oct-24	GIA	The joint R&D project comprises AGRITEKTURA Enterprises as the private partner and committed adopter of the resulting technology and the Metals Industry Research and Development Center (MIRDC) of DOST as the technology partner. The project aims to design and develop a low-cost automated control and monitoring system for land-based aquaculture.	Metals and Engineering Industry  AGRITEKTURA Enterprises	PD	Completed on October 29, 2024
4	Pre-commercialization of IOT-Based Monitoring System for Machine Shop	20-Dec-2022 - 19-Dec-2023 Extension 1: 20-Dec-23 to 18-Apr-24	GIA	The project will fabricate and field test five modules of the MIRDC-developed IoT-based machine shop monitoring system, evaluate its performance, and establish its marketability. Market analysis will be conducted to identify the target market and customer willingness to adopt the technology.	Metals and Engineering Industry  -System Integrators -Fabricators -Machine Shops	PD	Completed on April 18, 2024
5	Rapid and Advanced reManufacturing of Marine Propulsion System (RAMMPS)	26-April-23 to 25-April-24	GIA	The project aims to remanufacture marine propulsion system components using advanced hybrid manufacturing processes, with specific objectives to identify failure modalities, adopt an agile manufacturing process, and determine resource savings.	Metals and Engineering Industry  DOST-VI Aklan State University	MPRD	Completed on April 22, 2024

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6	Study on the 3D Printed Assisted Investment Casting for Detailed Ring Designs	15-May-23 to 14-Nov-24	Internal Project	The project aims to incorporate additive manufacturing (AM) methods into the investment casting process for jewelry, specifically focusing on rings. It will investigate variations in casting conditions, including but not limited to dewaxing and shell firing. The study will compare traditional investment casting with the AM-assisted process, considering factors such as production time, rejection rates, post-production treatments like polishing, and the overall quality of the final castings.	Metals and Engineering Industry -Local 3D printing sector -Parties involved in investment casting -Creative industry of jewelry making	MPRD	Completed on November 14, 2024
7	Comparative Study of Analytical Techniques using hand-held Laser-Induced Breakdown Spectrometer (LIBS) and X-ray Fluorescent Spectrometer (XRF) with spark Optical Emission Spectrometer (OES)	1-March-2023 - 28-Dec-2023 Extension 1: 29-Dec-2023 to 29-March-2024	Internal Project	The project aims to develop an elemental fingerprinting technique applied to Reinforcing Bars in the Philippines.	Metals and Engineering Industry Iron and Steel industry	ATD	Completed on February 21, 2024
8	Development of Casting Design of a Fan Shaft with Verification through Casting Simulation and Trial Casting Validation	13-May-24 to 12-Nov-24	Contract Research Project	The project aims to demonstrate the value of using casting simulations to develop effective casting designs for parts that feature a combination of long sections and thin features. The goal is to ensure proper casting results, particularly for consumable parts that have specific lifecycle requirements.	Metals and Engineering Industry Metals Engineering Technologies Corporation (METERCOR)	MPRD	Completed on November 12, 2024
9	M-Eye Fry Counter: An Innovative Machine Vision-based Precision Fry Counting Solution to Streamline Milkfish Fry Distribution	1-Aug-24 to 31-Jan-26	GIA	This project covers the automation of fry counting, which would be convenient for hatchery operations. This project would include machine vision and digital image processing to improve the counting method of fry.	Metals and Engineering Industry -Aquaculture industry in the Philippines -Milkfish hatchery operators and grow out farmers -System integrators and fabricators in the metals, engineering, and allied industry involved in aquaculture	PD	Ongoing project
10	Development of Artificial Intelligence for Dimensional Accuracy of Additively Manufactured High-Precision Gears	1-Oct-24 to 30-Sep-25	GIA	The project aims to enhance the precision of gears produced through additive manufacturing (3D printing) by leveraging artificial intelligence (AI).	Metals and Engineering Industry Line Seiki Philippines, Incorporated (LSPI)	MPRD	Ongoing project

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11	ASCaI: An Automated System for the Calibration of Handheld Digital Multimeters (DMM)	1-Oct-24 to 31-May-26	GIA	This research aims to develop an automated system for the calibration of handheld digital multimeters (DMM) and evaluate its suitability in a local calibration laboratory.	Metals and Engineering Industry Sonju Engineering Services -Machine shop and fabricators -Calibration Laboratories -Technicians and workers in the related field	PD	Ongoing project
12	Development of Automated Banana Leaf Singeing Technology Using Rice Hull Gasifier	2-Jan-24 to 30-June-25	GIA	This project aims to address the needs of MSMEs (Merl's Native Delicacy) to provide safer, reliable, and cost-efficient banana leaf singeing technology for Food Contact Materials (FCM).	Metals and Engineering Industry MSME (Merl's Native Delicacy)	PD	Ongoing project
13	HATCH: Heat-Assisted Temperature Control and Monitoring System for Hatchery Management of Milkfish	1-Jan-24 to 30-June-25	GIA	This project aims to maintain the optimum water quality in the milkfish broodstock tank using a heater and Recirculating Aquaculture System (RAS). The primary focus of the research is to establish a cost-effective and reliable heating system that can maintain the optimal water temperature in the broodstock tank during cold months.	Metals and Engineering Industry National Fisheries Development Center (NFDC) -Aquaculture industry in the Philippines -Consumers of milkfish -Metals, Engineering and Allied Industry involved in aquaculture	PD	Ongoing project
14	Kabut-i: An Intelligent Mushroom House with Environmental Control and Monitoring System for Ganoderma Mushroom Production	1-May-24 to 31-Oct-25	GIA	This project, aligned with the DOST-MIRDC roadmap on Smart Farming, aims to integrate smart environmental control and monitoring system for mushroom houses.	Metals and Engineering Industry Malakas Farm Livelihood Development Enterprises -Agriculture industry in the Philippines; -System integrators and fabricator in the Metals, Engineering and Allied Industry involved in mushroom business; -The economies of the local communities through improved and efficient agriculture systems; -Consumers of mushroom products.	PD	Ongoing project
15	Development of Floating Solid Waste Collector System for DENR	16-Jan-23 to 17-Jan-25	Contract Research Project	The project aims to develop a system that will handle the removal of water hyacinth and other floating solid wastes in bodies of water. The system will comprise of a dedicated water hyacinth harvester, a dedicated trash collector and a powered barge for water hyacinth.	Metals and Engineering Industry DENR (EMB-NCR)	PD	Ongoing project

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16	Development of Lattice-Based Cubesat Panels via Direct Metal Laser Sintering (DMLS)	15-Jul-24 to 14-Jul-25	Contract Research Project	The project aims to fabricate and characterize lattice-based panels produced via direct metal laser sintering (DMLS) Additive Manufacturing (AM) technology for Satellite applications.	Metals and Engineering Industry Philippine Space Agency (PhilSA)	MPRD	Ongoing project
17	The Development of Cold Gas Propulsion System for Cube Satellite Using Additive Manufacturing	15-Jul-24 to 14-Jul-25	Contract Research Project	The project aims to analyze, design and develop a unified 3D printed cold gas propulsion system that is compliant to space and mission standards.	Metals and Engineering Industry Philippine Space Agency (PhilSA)	MPRD	Ongoing project
18	Development of a Modular Enclosure for 3U Cube Satellite	15-Jul-24 to 14-Jul-25	Contract Research Project	The project aims to fabricate a 3U cube satellite frame using additive manufacturing technologies and qualify them according to aerospace standards and launch provider requirements.	Metals and Engineering Industry Philippine Space Agency (PhilSA)	MPRD	Ongoing project
19	Design and Fabrication of a Space-Grade 3D-Printed Antenna	15-Jul-24 to 14-Jul-25	Contract Research Project	This project aims to develop a satellite GPS antenna using additive manufacturing technologies and qualify them according to aerospace standards and launch provider requirements.	Metals and Engineering Industry Philippine Space Agency (PhilSA)	MPRD	Ongoing project
20	Rapid Prototyping of Printed Circuit Boards through Additive Manufacturing	15-Jul-24 to 14-Jul-25	Contract Research Project	The project aims to fabricate a printed circuit board (PCB) designed for cube satellite electronic components using additive manufacturing (AM) technologies.	Metals and Engineering Industry Philippine Space Agency (PhilSA)	MPRD	Ongoing project
21	Design and Development of 3D Printed Vacuum Suction Tip	29-Jul-24 to 25-Jan-25	Contract Research Project	This project aims to develop ESD compliant 3D printed vacuum suction tips that could be used in various industries such as manufacturing, robotics and automation.	Metals and Engineering Industry CKKC Electrical Supply	MPRD	Ongoing project
22	Design Development and Evaluation of Ordance Fragmentation Shell	1-Jul-24 to 30-Apr-25	Contract Research Project	The project aims to develop a locally-made grenade shell to achieve the target fragmentation performance of the Philippine Army.	Metals and Engineering Industry Philippine Army	MPRD	Ongoing project
23	Design Modification of a Village-Scale Coconut Oil Expeller	1-Oct-24 to 30-June-26	Joint Research	The general objective of the project is to develop an improved village-scale coconut oil expeller in terms of extraction efficiency, input capacity, and output capacity.	Metals and Engineering Industry PHILMECH	PD	Ongoing project

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24	Formulation and Testing of Coconut Oil as Sustainability Machining Fluid In Collaboration with INTI (Instituto Nacional de Tecnología Industrial)	1-Jan-24 to 31-Dec-24	Internal Project	This project aims to investigate the effectiveness of coconut oil as an alternative to conventional machining fluids for sustainable machining.	Metals and Engineering Industry Instituto Nacional de Tecnología Industrial (INTI) -Potential coconut oil processors -Industrial and agricultural machine fabricators -Machine building sector -Coconut farmers and cooperatives	PD	Ongoing project
25	ISDA CV: Integrated Seafood Dimension Acquisition Using Computer Vision	1-Oct-24 to 31-Dec-24	Internal Project	This project aims to develop and implement a prototype system utilizing computer vision technology for the accurate and efficient measurement of fish length, enhancing data reliability and operational efficiency in aquaculture	Metals and Engineering Industry National Fisheries Research and Development Institute (NFRDI)	PD	Ongoing project
26	Surface Modification thru Anodic Oxidation of Titanium Alloy Fabricated by Direct Metal Laser Sintering	15-May-23 to 14-June-24	Internal Project	This project aims to develop an anodic oxidation process for additively manufactured titanium alloy. The process parameters for titanium anodizing will be established, and the samples will be characterized for their microstructure, morphology, surface roughness, topography, and thickness of anodized layer. The biocompatibility of the anodized sample will be determined by conducting a Body Fluid Simulation test and a Surface Wettability test.	Metals and Engineering Industry	MPRD	On-hold from 1-July-23 until the 3D printers are available / ready to print the samples.
<b>B. DEFENSE AND SECURITY</b>							
1	AeroComp: Enhanced Lightweight Fiber-reinforced Composites Structures for Defense Applications	01-Feb-22 to 31-Jan-24 Extension 1: 1-Feb-24 to 31-Jul-24 Extension 2: 1-Aug-24 to 31-Oct-24	GIA	The project aims to fabricate different molds needed in the production of ballistic products and to characterize the mechanical properties of the fabricated lightweight fiber-reinforced composite-based ballistic products	Metals and Engineering Industry UP Diliman Dept. of Mining, Metallurgical and Materials Engineering-(UPD-DMMME) Air Force Research and Development Center (AFRDC) Phil-Navy Naval Research and Technology Development Center (NRTDC)	MPRD	Completed on October 31, 2024
2	Project COBRA (Controller Operated Battle Ready Armament)	01-Jan-23 to 31-Dec-24	GIA	The project aims to improve the firepower capability of armored vehicles of the Philippine Army while also providing a new foundation for future PA defense initiatives.	Metals and Engineering Industry DOST-PCIEERD Philippine Army Mechatronics and Robotics Society of the Philippines (MRSP)	PD	Ongoing project With request for extension until 30-June-25

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<b>C. HEALTH</b>							
1	Prototype Development of a Metacarpal External Fixation System for Local Manufacture	1-May-24 to 31-Oct-24	Joint Research	The project aims to develop a metacarpal external fixation system prototype for eventual local mass production in the Philippine market.	Metals and Engineering Industry University of the Philippines - Manila	MPRD	Completed on October 29, 2024
2	Design Improvement of OstreaVent II Adult Ventilator (Ostreavent 2.2)	15-June-23 to 14-June-24 Extension 1: 15-June-24 to 30-Nov-24 Extension 2: 1-Dec-24 to 31-Dec-24	Contract Research Project	This project aims to develop an improved Ostreavent II commercial prototype for field testing. Its specific objectives are: 1. To evaluate the use of conventional machining using stainless steel for the manifold and additive manufacturing using ASA in the production of the casing of Ostreavent 2.2; 2. To establish production methodology, functional testing, and calibration protocols for the Ostreavent 2.2 prototype; 3. To prepare the ten (10) units of Ostreavent 2.2 for third-party calibration and field testing.	Metals and Engineering Industry Breathe of Life Foundation, Inc.	PD	Ongoing project
<b>D. MASS TRANSPORT SYSTEM</b>							
1	Assessment and Repair of the HERT for its Technology Demonstration and Promotion in Kidapawan City (Phase 1)	16-Oct-24 to 16-April-24 Extension 1: 17-April-24 to 16-June-24	GIA	The project aims to prepare and ready the HERT for demonstration and promotion, not just in Kidapawan City, but to also promote the available technologies of DOST. Specifically, it seeks (1) to assess the mechanical, electrical, and control systems of HERT; and (2) to conduct repairs and restorations of the HERT sub-systems.	Metals and Engineering Industry DOST-Region XII	PD	Completed on June 16, 2024
<b>E. CAPABILITY BUILDING</b>							
1	The Cars Program Capex Verification Study For Toyota Motors Philippines Corporation, F. Tech Philippines Manufacturing Inc. and Mitsubishi Motors Philippines Corporation	15-Sept-31 to 15-Dec-23 Extension 1 16-Dec-23 to 15-March-24 Extension 2 16-March-24 to 15-June-24 Extension 3 16-June-24 to 31-Jul-24	GIA	The project aims to validate the new and/or additional CapEx investments of Toyota Motors Philippines Corporation (TMPC) and F. Tech Philippines Manufacturing Inc. (FPMI), and review the CapEx under appeal by MMPC, in accordance with the following criteria: (1) direct necessity, (2) minimum economic capacity, (3) appropriateness of technology, and (4) reasonableness of price.	Automotive Industry	TDD	Completed on July 31, 2024


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2	Establishment of Metals and Engineering Innovation Centers in Cordillera Administrative Region (CAR), Regions I, II, III and X	01-Aug-20 to 31-July-23 Extension 1: 01-Aug-23 to 31-Jan-24 Extension 2: 1-Feb-24 to 31-Jul-24	GIA	<p>This project is in connection with MIRDC's desire to be present in the regions to be more responsive to the needs of the metals, engineering and allied industry nationwide. Sec. Fortunato De la Peña of DOST planned to put up different kinds of innovation centers, wherein the innovation center for metals and engineering will be centered around MIRDC.</p> <p>These innovation centers shall serve as venue for the conduct of research studies for the development of new innovative metal parts and components, products, machineries, and other services in collaboration with the academe and industry. It is also envisioned to offer practical solutions to pressing metals and engineering problems encountered in the community or in the region.</p>	Metals and Engineering Industry	DED-RD / TDD	Completed on July 31, 2024
3	Establishment of Metals and Engineering Innovation Centers in Regions IV-A, IV-B, V, VI, VII, VIII, IX, XI, XII and CARAGA	01-July-23 to 30-June-26	GIA	<p>Objectives: 1. To establish Innovation Centers inside the campuses of Batangas State University, Western Philippine University, Bicol State College of Applied Science and Technology, Technological University of the Philippines-Visayas Campus, Negros Oriental State University, Eastern Visayas State University, Zamboanga Peninsula Polytechnic State University, University of Southeastern Philippines, Mindanao State University-General Santos Campus and Surigao State College of Technology for the conduct of research and development in the field of agro-industrial machine development; 2. To develop and strengthen the capability of the manpower resources (faculty members and researchers) of the 10 partner State Universities and Colleges in the field of metalworking processes, and machine design and development; and 3. To increase the pool of accredited experts in the field of metalworking in various regions who will be tapped as consultants and/or resource persons.</p>	Metals and Engineering Industry	TDD	Ongoing Project
4	Operation and Management of the Mold Technology Support Center (MTSC)	1-Jan-23 to 31-Dec-32	GAA	<p>The establishment of the MTSC through the ODA has the following goals: 1. To develop the most needed human resources for the local die and mold companies; 2. To encourage the advancement of the Philippine manufacturing industry's competitiveness; and 3. To contribute to the industrial cooperation between the Republic of Korea and Republic of the Philippines</p>	Metals and Engineering Industry	DED-RD / TDD	Ongoing project
5	Smarter Onelab for Industry 4.0 through Testing and Calibration, Education, and Discovery (Onelab for TED)	1-Jan-23 to 31-Dec-25	GIA	<p>The project aims to sustain and level up the services of DOST laboratories to support the transition of MSMEs towards Industry 4.0 to be innovative and globally competitive through provision of high quality laboratory testing and calibration, research and development, and training service</p>	Metals and Engineering Industry	ATD	Ongoing project

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6	Technological Readiness and Innovation Through Advanced Manufacturing in the Philippines (TRIAMPH)	1-April-23 to 31-March-26	GIA	The objective of the project is to support the Additive Manufacturing Roadmap through R&D collaborations, education formation, and policy standard formation to ensure the sustainability of AMCen as the national hub for additive manufacturing and provide AM capabilities and consultancy for product and process development	Metals and Engineering Industry	MPRD	Ongoing project
7	Strengthening Technology, Research, and Extension for Advanced Manufacturing (STREAM) in Region VII	1-May-24 to 30-Apr-24	GIA	The project aims to strengthen the capabilities of DOST VII Regional Offices and Provincial S&T Offices in the promotion, adoption and mainstreaming of advanced manufacturing technologies to support a dynamic innovation ecosystem in the regions.	Metals and Engineering Industry	TDD	Ongoing project
<b>F. GAA-LFP PROJECTS</b>							
1	Advancement of Information and Communications Technology (ICT) and Implementation of Information Security Management System (ISMS) in MIRDC – (AIM)	01-Jan-21 to 31-Dec-24	GAA-LFP	The project aims to provide the Center's with innovative and secured S&T services thru ICT and improved information security management capability by ensuring compliance to international and local information security laws and other related policies/agreements, implementation of ISO/IEC 27001 certification standard and establishing highly reliable backup system and appropriate business continuity plan for the Center's main operations.	MIRDC	PMD	Ongoing project
2	Retrofitting and Renovation of Steel Building	1-Jan-24 to 31-Dec-28	GAA-LFP	The project aims to: 1.) Increase the level of safety of the building in case a major earthquake occurs. 2.) To extend the useful life of the Steel Building and ensure long-term safety, and reliability, and strengthen its seismic resistance required for modern buildings.	MIRDC	FAD	Ongoing project
3	Upgrading of MIRDC Laboratory and Administrative Building	01-Jan-18 to 31-Dec-23 Extension: 1-Jan-24 to 31-Oct-24	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.	MIRDC	FAD	Completed on Oct.31, 2024
4	Repair of Perimeter Fence of the Center	01-Jan-18 to 31-Dec-23 Extension: 1-Jan-24 to 31-Oct-24	GAA-LFP	Repair will upgrade the existing perimeter fence with deteriorated steel fences and collapsing concrete walls in view of wear and tear.	MIRDC	FAD	Completed on Oct.31, 2024

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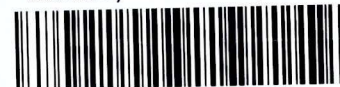
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