

XIV. MACHINE AND TOOL DESIGN/MANUFACTURE

Project Title: A) FOUNDRY
B) BENDING MACHINE
C) PIPES BENDER
D) HYDRAULIC LABORATORY
E) SOIL TESTER
F) VACUUM PUMPS FOR REFRIGERATION
G) WIND MILL

Name and Address of Principal Investigator: a) Engr. Augusto Mendoza
b) Engr. Arsenio V. Zacarias
c) Mr. Fidel Pascua
Virgen Milagrosa Educational Institutions, Inc., San Carlos City, Pangasinan

Description of the Project:

- a) Casting of Nonferrous and ferrous Metals and Alloys
- b) Manufacture of Cylindrical tanks
- c) Manufacture of chairs and steel beds
- d) Instructional and Experiments Purposes
- e) Instructional Purposes
- f) Energy Conservation and Instructional Purposes

Project Cost and Source of Funding: a) P10,000.00
b) P15,000.00
c) P 1,000.00
d) P15,000.00
e) P 5,000.00
f) P 2,500.00
g) P20,000.00
Total Cost -- P68,500.00

Cooperating Agencies: Institute of Engineering
a) Machine Shop
b) Mechanical Engineering
c) Electrical Engineering
d) Civil Engineering

Date Started: 1977

Duration or Expected Date of Completion: 1979 Except Wind Mill Installation in Progress

Date of Completion (for completed projects): 1979 and 1980

Present Status of Projects: Utilized for Instructional and Commercial Purposes

Other Relevant Information: Materials used are locally purchased and our machineries were utilized in the manufacture of above projects.

Project Title: DESIGN AND CONSTRUCTION OF A FURNACE-TYPE LUMBER DRY KILN

Name and Address of Principal Investigator: Ricardo F. Casin
Forest Products Research & Industries
Development Comm. (FORPRIDECOM),

Description of the Project: A low-cost and efficient lumber dryer with a capacity of 1000 bd. ft. was designed and constructed to help the small-and-medium scale wood industries. The dryer is of the furnace-type using wood-wastes in the form of trims, sawdust and shavings for fuel. It has two 30-in. diameter V-fan belts driven by a single 3-hp motor. The drying performance is comparable to conventional steam-heated kilns and drying cost is about 30% less. The average daily consumption of wood wastes is 0.5 cu. m. or roughly equivalent to 90 liters of Bunker oil to produce the same amount of heat.

Project Cost and Source of Funding: P 115,147
P 66,150 -- NSDB
P 48,997 -- FORPRIDECOM

Cooperating Agencies: Small-and-Medium scale wood industries

Date Started: 1977

Date of Completion (for completed projects): 1979

Present Status of Project: FORPRIDECOM at present has a cooperative project with the Ministry of Industry in extending technical assistance to the small furniture manufacturers. There is now an ongoing negotiation with a group of furniture manufacturers in Dagupan City to design and supervise the construction of a 10,000 bd. ft. kiln using our design.

Other Relevant Information: Results of studies were published entitled, "A lumber-dryer for the small-to-medium scale wood industries", The Philippine Lumberman, Jan. 1980 issue, Vol. XXVI No. 1

Project Title: DESIGN AND DEVELOPMENT OF PROTOTYPE MODELS OF MACHINES FOR USE IN COTTAGE INDUSTRIES.

Name and Address of Principal Investigator: Felino E. Cueto
National Institute of Science and
Technology, Pedro Gil, Manila

Description of the Project: The ultimate goal of this project is the mechanization of some aspects of our cottage industries activities. This is to provide cottage industries with simple machines for handy and easy operation. It involves the design and fabrication of machines to replace manual handling of raw materials.

Project Cost and Source of Funding: (This is a General Fund Project, therefore the project cost is not available)

Cooperating Agencies: None

Date Started: July, 1976

Duration or Expected Date of Completion: 4 years

Date of Completion (for completed projects): December 1980

Present Status of Project: on-going

Project Title: DEVELOPING AND IMPROVING LOCAL TECHNIQUES IN THE MANUFACTURE OF BASIC MACHINES AND ENGINEERING TOOLS NON-SUBPROJECT STUDIES ON NON-FERROUS METALS AND THEIR ALLOYS

Name and Address of Principal Investigator: Rodolfo P. Garces
National Institute of Science and Technology, Pedro Gil, Manila

Description of the Project: This project aims to design and fabricate proto-type models of basic machines, simple combustion engines, and industrial tools from locally available raw materials; and develop, adopt and improve manufacturing techniques applicable to local conditions.

Project Cost and Source of Funding: ₱285,576.77, NIST

Cooperating Agencies: None

Date Started: July 1, 1969

Duration or Expected Date of Completion: 7 years

Date of Completion (for completed projects): 1978

Present Status of Project: Suspended as of July 1976

Project Title: IMPROVING TOOLS AND DEVELOPING TECHNIQUES IN PROCESSING WOOD AND WOOD WASTES

Name and Address of Principal Investigator: Emilio B. Asiddao
National Institute of Science and Technology, Pedro Gil, Manila

Description of the Project: This project is being conducted to design and fabricate small units of wood working equipments tools, new sets of wood forms, molds and fixtures, and introduces better wood processing techniques.

Project Cost and Source of Funding: ₱75,786.11, NIST

Cooperating Agencies: None

Date Started: July 1, 1969

Duration or Expected Date of Completion: 4 years

Date of Completion (for completed projects): June 30, 1973

Present Status of Project: Suspended as of July, 1973

Project Title: INDUSTRIAL USES OF ABACA SUB-PROJECT: DESIGN AND FABRICATION OF PORTABLE ABACA WASTE DECORICATOR

Name and Address of Principal Investigator: Pedro L. Rubio
National Institute of Science and Technology, Pedro Gil, Manila

Description of the Project: The primary objective of the project is to design a portable abaca decor.dicator using light materials ; and to determine its efficiency.

Project Cost and Source of Funding: ₱82,352.96, NIST
Cooperating Agencies: None
Date Started: July 1, 1974
Duration or Expected Date of Completion: 2 years
Date of Completion (for completed projects): Jan. 1976
Present Status of Project: completed
Other Relevant Information: A joint project with the Canlubang Sugar Estate using the Portable Abaca Waste Decorticator is now in progress.

Project Title: DESIGN AND FABRICATION OF A CHARCOAL KILN

Name and Address of Principal Investigator: Edgar Mendrano
Cooperating Agencies: Forest Products Research and Industries Development Commission (FORPRIDECOM)
Date Started: June 30, 1976
Date of Completion (for completed projects): Dec. 1976

Project Title: DEVELOPMENT OF SMALL TOOLS AND LABOR-
SAVING DEVICES

Cooperating Agencies: Philippine Sugar Commission (PHILSUCOM)
Present Status of Project: on-going

Project Title: DESIGN AND CONSTRUCTION OF SMALL MACHINES FOR
PRODUCTION AND PROCESSING

Cooperating Agencies: Central Luzon State University (CLSU)

Project Title: SPRING'S AUTOMATIC SHOWER HEATER

Name and Address of Principal Investigator: Mr. Luis J. Tuburan
Don Mariano Marcos Memorial
Polytechnic State College

Description of the Project: It is an electrically operated shower heater that automatically switches on when the faucet is opened and off when the faucet is closed.

Project Cost and Source of Funding: ₱150.00-Personal
Cooperating Agencies: School's machine and electrical shops; Borja's Woodcraft and T'Arts and Sign

Date Started: November 20, 1979
Duration or Expected Date of Completion: Each part can be done in about an hour and another hour, more or less, to assemble all the parts.

Date of Completion (for completed projects): December 5, 1977 (The re-

searcher worked on the project during his free hours)

Present Status of Project: Operating for duration test starting March 15, 1980

Other Relevant Information: Material, specifically solid plastic, of diameter 4½ inches, is not available for mass production.

Project Title: DESIGN, CONSTRUCTION AND TEST OF A MULTI-PURPOSE FOOT-OPERATED SLICER

Name and Address of Principal Investigator: Marietta A. Rodriguez, et. al

Description of the Project: The machine will suit the needs of small farmers in the rural areas who are engaged in root and fruit crop production. The machine could slice tubers and other fruit crops into any desired thickness suitable for storage and drying. It also provides increased labor productivity with low investment requirement without concomitant large scale labor displacement or high operational costs.

Project Cost and Source of Funding: P547.50

Cooperating Agencies: Gregorio Araneta University Foundation

Date Started: June 1977

Date of Completion (for completed projects): March 1978

Project Title: DESIGN, CONSTRUCTION AND TEST OF A CABINET TYPE FISH DRYER-DEHYDRATOR

Name and Address of Principal Investigator: Cesar Roy Cotaco

Description of the Project: The fish dehydrator is an equipment used to reduce moisture content of the fish to insure safe storage by the use of either heated or unheated air.

Project Cost and Source of Funding: Total cost which includes labor and material is P1,367.00

Cooperating Agencies: Gregorio Araneta University Foundation

Date Started: Sept. 1978

Other Relevant Information: In the actual testing of the dehydrator the product was dried for 6 hours with temperature variation of 46° to 58°C during the first trial. Second trial, the temperature is maintained at 52°C. In these 2 trials it could be noted that the power consumption varies proportionally to the quality of the product being tested.

Project Title: INSTANT WATER COOLER

Name and Address of Principal Investigators: Christopher Ventura and Oscar V. Nero — RMMSAT, Iba, Zambales

Description of the Project: The project is made up of a bent tube of about 12 inches long. Inside the bent tube is a freon gas. At one end of the bent tube is a coil of nichrome wire connected to a male plug.

When the male plug is inserted to an outlet the nichrome wire will glow thereby increasing the pressure inside the tube and will be come cooler at the other end of the tube.

Project Cost and Sources of Funding: Cost only ₱ 15.00 and funded by the RMMSAT Sciences Club and School.

Cooperating Agency: MEC — SFP

Date Started: July 20, 1980

Expected Date of Completion: August 15, 1980

Present Status of the Project: under construction

Project Title: RUBBERIZED WATER PUMP

Name and Address of Principal Investigators: Ismael Nacpil Jr. and Cesar V. Nero
RMMSAT, Iba, Zambales

Description of the Project: The project looks like a box whose sides were made up of used interior tire of an automobile. At the base of the box were two water inlets which is made up of an ordinary check valve of a force pump. At the center of the base is an outlet which is made up of a 3/4 "water pipe fitted in it. All of the upper corner of the box were connected with coiled spring to the base, in such a way that the spring will help in the collapsing of the box. The upper portion of the box is connected to a lever by means of when the project is immersed in water, the lever is moved downward, water will be sucked inside the box through the water inlets. When the lever is set free the box will collapse due to the force of the spring. At this point the water inlet will close and the water inside the box will find its way out through the outlet.

Project Cost and Source of Funding: The project is estimated to cost about ₱ 150.00 and is being funded by the RMM-SAT Science club and the School.

Cooperating Agencies: MEC — SFP

Date Started: July 20, 1980

Expected Date of Completion: August 15, 1980

Present Status of the Project: still under further study to maximize its efficiency.

Project Title: DESIGN AND DEVELOPMENT OF A RATTAN POLE DRYER

Name and Address of Principal Investigator: Ricardo F. Casin
FORPRIDECOM, College, Laguna
3720

Description of the Project: An experimental rattan pole dryer was designed and constructed with a capacity of 500 rattan poles of 14 ft. long. The dryer is of the natural air circulation type, measuring 4½ ft wide by 6¼ ft high by 16 ft long.

Heat is supplied by a furnace with wood-waste as fuel. Comparative distribution of the temperature inside from top to bottom

and along the length was found to be fairly uniform. Drying conditions of 150^oF DB and 110^oF WB were used in test runs of rattan poles with initial MC of 115% to about 15% in 64 hours.

Project Cost and Source of Funding: ₱ 18,000 — Phil. Council for Agricultural Resources & Res. (PCARR)
₱ 6,000 — FORPRIDECOM

Cooperating Agencies: None

Date Started: 1975

Date of Completion (for completed projects): 1977

Present Status of Project: A number of inquiries were received on the details of the dryer from rattan processors through the Small Bureau Advisory Council of the Ministry of Industry.

Other Relevant Information: Results of the study were published in FORPRIDE JOURNAL, 1979, Vol. VIII Nos. (3 & 4).