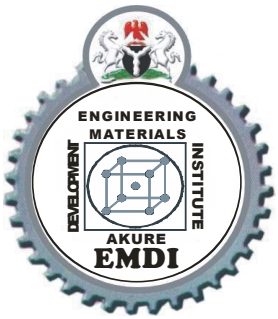
ENGINEERING MATERIALS DEVELOPMENT INSTITUTE AKURE



BROCHURE OF PRODUCTS

Preamble: Over the years the Institute's Management has worked hard to develop products in accordance with its mandate. This brochure concisely showcases the products designed and developed since inception.

The **100kg Rotary Furnace** is used for melting cast iron. It is the most flexible and universal design of equipment to recycle cast iron and aluminum scraps. They are ideal for making heat resisting and other alloyed cast iron castings. Grey, nodular or malleable cast iron can be produced with high analytical accuracy at a low investment cost.

Capacity: 100kg; power required:3 phase (440V) / 4kW/6.5kW
Dim: 5.27m x 1.6m x 3.2m
Temperature: 1500^{o}C
Cycle Time: 6 Melts /day
Price: On demand

The **300kg recuperative rotary furnace** is similar in design and operation to the Conventional Rotary Furnace. It has a recuperative system which uses the heat from the exhaust to preheat the air which drives the fuel into the heating chamber of the furnace. Through this process the air and also the fuel is preheated. This automatically improves the flash point of the oil and enhances better thermal efficiency of the furnace.

Capacity: 300kg; power required:3 phase (440V)/ 4kW/10kW
Dim.: 7.03m x 1.6m x 3.3m
Temperature: 1700^{o}C
Cycle Time: 5 Melts /day
Price: On demand

The **Salt Bath Furnace** is a furnace designed to carry out Austenitising and Austempering processes using a molten salt medium. It is used for the production of Austempered Ductile Iron.
Capacity: 1300^0C Maximum Working Temperature, 220-240v, Frequency 50 Hz.
Price: On demand

The **Muffle Furnace** is a non-melting, heat-treatment furnace used for heat treatment process such as hardening annealing, tempering, brazing, ageing etc.
Capacity: 1200^0C Maximum Temperature 1000^0 C 220-240V 50Hz.
Price: On demand

The **Industrial Blower** is a mechanical device for moving air or other gases and is a one of the major accessories of the Rotary furnace. This is used to generate air current for fuel combustion in the operation of Rotary furnaces. It can equally be used in any application that requires high flow of air current for its operation.
Backward curve Impeller speed =63.8m/s
Price: On demand

The **Water Pump Impeller** is an alloy of iron, carbon and silicon and manganese (grey cast iron). It is used as a major component of industrial water pump.

Price: On Demand

"As-Cast" Train Brake Shoe is an alloy of iron, carbon and silicon (grey cast iron). It is used as break shoes for locomotives.
Price: On Demand

The **Bull Gear** is an alloy of iron, carbon and silicon (grey cast iron). They are used as gear components for heavy duty usage such as in Cranes and heavy- duty haulage. Load Bearing Capacity of 1Ton. (Ø 400 X 53 MM).
Price: On demand

Channel Grating is an alloy of iron, carbon and silicon (grey cast iron). It is used to cover drainages giving access to vehicles. Carbon in the structure is flaky. Maximum load bearing capacity is 350KN

A) 650 X 350 X 45 (MM)- On demand

B) 800 X 400 X 100 (MM) - On demand

The **10kw Propeller Hydro Turbine** is a reaction-type hydropower turbine which operates at a relatively low head with high efficiency. It is used for power generation through the conversion of mechanical energy (of large volume of water) to electrical energy through the use of alternators. Head 5.5m. Flow Rate 220L/s.

Price: On demand

The **35KW Small Hydropower Turbine** is a crossflow impulse hydro power turbine developed through reverse engineering at EMDI Akure. It converts the energy in a flowing river at appropriate elevation into a rotational power which is later converted to electrical power through a generator. It is used to generate electricity.

Capacity: 35kW, **Flows:** 175L/s, **Head:** 31.5m.

Price: On demand

This **8-Mould Interlocking Brick Making Machine** as the name suggests has 8moulds thus capable of producing 8 bricks at a time. It is used to produce interlocking bricks for building construction.

Diesel model: 70 Bricks /hr.

Price: On demand

This **twin interlocking brick making machine** is used for producing bricks. The mould type determines the brick shape. They are used to produce interlocking bricks for building construction.
Diesel engine: 42 Bricks /hr.
Price: On demand

The **yam pounding machine** is a food processing equipment for processing pounded yam.
It pounds boiled diced yam in less than 60 seconds.
It pounds 1.2 kg of boiled yam per batch and pounds at the rate of 1.2 kg/60 seconds.
Voltage: 220-240v
Power: 2350W
Price: On demand

The **Hammer Mill** has a hopper through which raw laterite from site is fed into the milling chamber and through the mechanism of hammer milling, the laterite is grounded. This mill is useful for grinding raw laterite from the site.
Price: On demand

The **Sieving Machine** consists majorly of a wire mesh on which grounded laterite is further reduced into smaller particles by the sieving process. It is used to sieve laterite into finer particles.
Price: On demand

The **Man-hole cover** is a removable profile forming the lid over a manhole large enough for pedestrian and vehicular movement. It finds application in civil works and in telecommunication.
ASTM grey cast iron grade 20, ring diameter of 340mm, average test load of 100kN.
Price: On demand

ON-GOING RESEARCH/PROJECTS

i. Indigenous research into a small-scale plant that can produce oxygen and hydrogen gases
ii. Research into small scale plant for capturing and storage of carbon dioxide
iii. Research into the production of porcelain for electric insulation
iv. Research into corrosion studies on the effect of seawater on ships
v. Research into the recycling of plastics
vi. Research into the production of briquettes
vii. Development and production of refractory for recuperative rotary furnace using quartz sand and cement as binder.
viii. Design and production of smart control for rotary furnace.
ix. Design and production of heat treatment furnace for ashing processes.
x. Reducing the cost of production and energy demand of 100kg rotary furnace.
xi. Further research on the production of ductile iron and Austempered ductile iron, respectively
xii. Development of Nano-Structured Austempered Ductile Iron for Heavy Duty applications (Case Study: Power Hacksaw machine's Screw Block)
xiii. Development of Regression models for Durability Assessment of Concrete containing selected Pozzolans
xiv. Reverse Engineering of 5kW Smart Kinetic Turbine
xv. Design and development of Sorghum Processing Plant
xvi. Design of frictionless grinder.
xvii. Production of yam pounder