Contribution ID: **1** Type: **not specified**

Epoxy-based Resin with Black Sand: An Alternative Material for Three Phase Induction Motor Stator Core

Monday, October 20, 2025 1:00 PM (20 minutes)

Abstract: This paper presents an alternative material for a three-phase induction motor stator core using epoxy resin and black sand. The epoxy resin acts as a binder, while the black sand works as the magnetic material of the stator core. The epoxy base resin stator core has 36 slots, 62 turns per coil per phase per pole, and is wound in a concentric configuration. It uses 22AWG magnetic wire, and the coil is arranged in a 4-pole configuration. The test is conducted with a varying input voltage from 20V to 140V with an increment of 10V per test. The testing results show that the motor starts to rotate when the applied input voltage is at 90V with an average line current of 1.16A, and increasing the input voltage to 140V with an average line current is at 1.2A. The rotor speed of the motor ranges from 1750 rpm to 1850 rpm, respectively. All tests conducted are at no load condition.

Key Words: epoxy resin binder; black sand magnetic properties; black sand permeability; induction motor stator; stator core sheets

Authors: OVERSTREET, Chinet (Mindanao State University –Iligan Institute of Technology, Iligan City, Philippines); MALAYA, Newman (Mindanao State University –Iligan Institute of Technology, Iligan City, Philippines); MICULOB, Rennie (Mindanao State University –Iligan Institute of Technology, Iligan City, Philippines); GULTIA, Jeprie (Mindanao State University –Iligan Institute of Technology, Iligan City, Philippines); NAGAMORA, Jamali (Mindanao State University –Iligan Institute of Technology, Iligan City, Philippines); CUYOS, Ian Paul Anthony (Mindanao State University –Iligan Institute of Technology, Iligan City, Philippines); SALADO, Joe Mark (Mindanao State University –Iligan Institute of Technology, Iligan City, Philippines)

Presenter: MALAYA, Newman (Mindanao State University –Iligan Institute of Technology, Iligan City, Philippines)

Session Classification: Oral Presentations

Track Classification: Completed Projects: Natural Sciences, Mathematics, Engineering and Technology