ABSTRAK

Motor induksi memiliki peran vital dalam industri di Indonesia, berkat konstruksinya yang sederhana, harga yang relatif murah, dan kemampuannya menjaga kontinuitas produksi. Namun, motor ini sering menghadapi masalah seperti beban lebih, gangguan hubung singkat, dan overheating, yang dapat merusak motor serta mengganggu operasional industri. Penelitian ini bertujuan menganalisis efektivitas sistem proteksi pada motor induksi tiga fasa dan mengembangkan strategi proteksi yang lebih optimal. Metode yang digunakan meliputi observasi, wawancara, dan pengumpulan data melalui dokumentasi serta tinjauan pustaka, yang dianalisis dengan membandingkan teori dan standar industri. Hasilnya menunjukkan bahwa meskipun peralatan proteksi seperti fuse, MICCB, TIOR, CT, dan RITD digunakan, kerap kali mereka tidak berfungsi optimal karena pemilihan tipe dan rating yang kurang sesuai dengan kapasitas nominal motor. Disarankan agar tipe dan rating peralatan proteksi disesuaikan dengan kapasitas motor, serta dilakukan pemeriksaan, pembersihan, dan kalibrasi ulang secara teratur untuk menjaga efektivitas proteksi. Dengan penerapan sistem proteksi yang tepat dan pemeliharaan yang baik, motor induksi tiga fasa diharapkan dapat beroperasi optimal dan mendukung kelancaran produksi dalam industri.

Kata kunci: Motor Induksi, Sistem Proteksi, Beban Lebih, Fuse, MICCB, TIOR, CT, RITD, Pemeliharaan

ABSTRACT

Induction motors play a vital role in Indonesian industry due to their simple construction, relatively low cost, and ability to maintain production continuity. However, these motors often face issues such as overload, short-circuit faults, and overheating, which can damage the motors and disrupt industrial operations. This research aims to analyze the effectiveness of protection systems in three-phase induction motors and develop more optimal protection strategies. The methods used include observation, interviews, and data collection through documentation and literature reviews, which are analyzed by comparing theories and industry standards. The results indicate that although protection devices such as fuses, MICCBs, TIORs, CTs, and RITDs are used, they often fail to function optimally due to the selection of types and ratings that are not well-suited to the motor's nominal capacity. It is recommended that the type and rating of protection devices be adjusted to the motor's capacity, and regular inspections, cleaning, and recalibration be performed to maintain protection effectiveness. With the proper implementation of protection systems and good maintenance, three-phase induction motors are expected to operate optimally and support production continuity in the industry.

***Keywords**: Induction Motor, Protection System, Overload, Fuse, MICCB, TIOR, CT, RITD, Maintenance*