

# IET Electric Power Applications Call for Papers

## SPECIAL ISSUE ON: Advances in Fault Diagnostics and Post-Fault Operation of Electrical Drives

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Modern electrical drives cover applications differing in power range, operational demands, complexity, as well as in reliability and safety requirements. Following the need for a fast and reliable assessment of the health of the drive, different diagnostic approaches emerged in the last two decades. Nowadays, these methods are capable of diagnosing a variety of possible faults in all components of the electrical drive. Electrical machines are susceptible to different types of fault, which mostly depend on their internal structure: from mechanical faults (bearings, gearbox), to electrical (insulation faults), electromechanical (rotor faults), magnetic faults (demagnetization of permanent magnets), etc. On the other hand, faults in converter-supplied drives could be caused by power electronics components and/or sensors' failure. In addition to fault diagnostics, significant advancements were also made in approaches to post-fault operation and fault tolerance, where a considerable part of new researches is focused on new converters' topologies and multiphase drives. These approaches were mostly verified on laboratory hardware (dedicated hardware, custom machines ...), thus somewhat neglecting the issues related to practical implementation. Similarly, only a limited number of comprehensive solutions that cover multiple faults has been presented.

The goal of this special issue is to present the current tendencies in fault diagnostics and post-fault operation of various electric drive types. Special emphasis is given to cost-effective solutions running on standard hardware and common topologies, design measures that alleviate fault severity and fault diagnostic aggregated to post-fault solutions.

### Potential topics include, but are not limited to:

#### Diagnostic methods:

- Advanced diagnostic approaches
- Diagnostics of multiple-faults
- Detection and diagnostic methods robust to false positives/negatives
- Fault diagnosis in-time domain with parametric and non-parametric estimators
- Fault diagnosis in frequency domain
- Optimized fault threshold selection
- Early detection of incipient faults and fault isolation

#### Induction and PM machines:

- Short circuits, rotor faults
- Design and manufacturing technologies for torque decrease at active short circuit in PM machines
- Prevention of PM demagnetization

#### Application-specific machines:

- Wind generators, multiphase machines, traction drives, linear drives, etc.

#### Fault-tolerant converters for drives

#### Post-fault operation:

- Synthesis of methods for detection, diagnostics and post-fault operation.
- Cost-effective solutions to problems related to post-fault operation and to preventing fault propagation
- Disturbance observers for real-time compensation of perturbations
- Control techniques for post-fault operation of variable-speed three-phase and multiphase motor drives and generators

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<https://www.iet-review.rivervalleytechnologies.com/journal/epa>

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#### Submission Deadline:

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