

Abstract

This paper presents a fault detection and isolation system for additive and multiplicative faults for current and voltage measurements of a controlled wind energy conversion system (WECS). The method is based on an observer scheme, comprised of a time-varying Kalman filter and a maximum-shift strategy, to generate new residuals capable of detecting all fault types especially multiplicative ones with low gains. The detection system has been experimentally validated on a WECS driven by a permanent magnet synchronous generator, and experimental results have proved its effectiveness.