

## Peer Review

# Review of: "On Process Awareness in Detecting Multi-stage Cyberattacks in Smart Grids"

Yousef Farhaoui<sup>1</sup>

1. Université Moulay Ismail, Meknès, Morocco

This paper explores the importance of process awareness in improving intrusion detection systems (IDS) for Smart Grids, which face rising cybersecurity threats due to the integration of ICT into power systems. Using a co-simulation environment that incorporates IT, OT, and ET layers, the study models multi-stage cyberattacks and assesses machine learning-based IDS strategies. Results indicate that process-aware IDS significantly outperform IT-only IDS, particularly in detecting threats tied to operational processes and distinguishing them from routine IT activities. The research highlights the critical role of advanced IDS benchmarks and the use of digital twin datasets in creating more robust cybersecurity frameworks for Smart Grids. This work provides a promising foundation for enhancing resilience in critical infrastructure systems.

## Declarations

**Potential competing interests:** No potential competing interests to declare.