

## Mini-Symposium on:

### Innovations in Performance and Reliability for Energy-Intensive Applications

Ensuring optimal performance and reliability is crucial in energy-intensive industries, including power generation, manufacturing, transportation, fluid machinery, and refrigeration. In these fields, machine failures are costly and cause substantial operational disruptions, safety risks, and efficiency losses. As industries seek to overcome these challenges, they increasingly turn to advanced technologies to enhance machine performance and improve reliability.

This mini-symposium will explore strategies for optimizing machine and system performance to achieve maximum process efficiency. By adopting these innovative methods, industries can reduce energy consumption and operational costs while boosting system stability and supporting sustainability. Minimizing waste and enhancing reliability are further benefits that contribute to overall operational resilience.

Attendees will gain valuable insights into the practical applications of reliability and performance optimization, seeing firsthand how these approaches can be applied to address the specific challenges of energy-intensive sectors. The session is designed to foster collaboration between researchers and industry professionals, enabling a rich exchange of knowledge and expertise that drives innovation and strengthens reliability in energy-dependent operations.

#### ❖ Mini-Symposium Developers:

- Dr. Jongrak Choi, Korea Electronics Technology Institute (Korea)
- Dr. Sang Hyuk Lee, Korea Institute of Machinery & Materials (Korea)



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#### ❖ Mini-Symposium Chair:

- Dr. Jongrak Choi and Dr. Sang Hyuk Lee

#### ❖ Paper Lists:

- **Design of High Efficiency Transformer Considering Non-Linear Material Property**, Myung-Hwan Yoon, Jae-Kwang Lee, Jeong-Jong Lee, Ki-Doek Lee (Korea Electronics Technology Institute).
- **Development of Low-Noise Toroidal Propeller Design Technology for an Air Vehicle**, Juwook Lee, Jongrak Choi (Korea Electronics Technology Institute).
- **Enhancing Operational Performance and Reliability of Vertical Multistage Pumps for Water Supply Booster Stations**, Sang Hyuk Lee, Kyung Ho Sun (Korea Institute of Machinery & Materials), Jongrak Choi, Joo Han Kim (Korea Electronics Technology Institute), In-Sik Yoon (Dooch Co., Ltd.).
- **Development of High-Precision Shaft Vibration Measurement Technology for Enhancing Reliability of Anomaly Detection in Compressors of Air Refrigerant Cooling Systems**, Gyunchul Hur, Sang Hyuk Lee (Korea Institute of Machinery & Materials), Hyunki Shin, Jongjae Cho (Korea Institute of Energy Research).
- **Review on a MVR (Mechanical Vapor Re-compression) Application for a Vapor Generation in Industrial Process**, Jeong Sic Seo, Min Jun Kim, Ha Neol Kim (Korea Refrigeration & Air-conditioning Assessment Center), In Kwan Kim (World E&C Co., Ltd.).
- **Fouling Management for Industrial Waste Heat Recovery**, Kyoungmin Koo (Korea Textile Machinery Convergence Research Institute).
- **Design and Thermal Comfort Analysis of a Radiant Cooling System for Vehicles**, Suet Man Wong, Dongchan Lee (University of Seoul).
- **Overall Ice Maker Performance Analysis Experiment through Condensation Temperature Drop for Increase COP and Drop-in Test using Low-GWP(R-454C) Refrigerant**, Junseok Oh, Yongseok Jeon (Ajou University).