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## **On-line Parameter Estimator for Large Scale Refrigerators Submitted to Variables Heat Loads.**

In this paper, we present a method to estimate key parameters for large refrigerators, like heat transfer coefficients. Such a method could be particularly useful in the case where cryoplants are submitted to large pulsed thermal loads, expected to take place in the cryogenic cooling systems of future fusion reactors such as the International Thermonuclear Experimental Reactor (ITER) or the Japan Torus-60 Super Advanced Fusion Experiment (JT-60SA). In such cases, heat exchangers are often unbalanced, and their heat transfer coefficients are strongly modified. Such a method can be used to update an advanced control scheme in real-time, or to precisely estimate the heat load. The method will be illustrated using experimental data available on the 400W@1.8K helium test facility at CEA-Grenoble. Some parameters will be considered as unknown and they will be retrieved using the algorithm. This work is partially supported through the French National Research Agency (ANR-13-SEED-0005).

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