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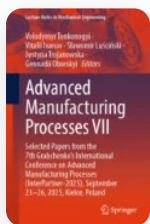
# Application Design for Remote Control of Refrigeration Equipment in an IIoT Environment

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**Advanced Manufacturing Processes VII**  
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## Abstract

Despite the availability of modern refrigeration systems, many industrial enterprises still lack integrated solutions for automatic monitoring, fault prediction, and energy consumption optimization. This leads to overspending of resources, product losses, and reduced efficiency of production processes, especially in areas with increased requirements for temperature control (food industry, pharmaceuticals, logistics). The implementation of the Industrial Internet of Things helps optimize production processes, increase equipment efficiency, and reduce maintenance costs. The paper considers an industrial refrigeration equipment monitoring system aimed at food, pharmaceutical, and logistics enterprises. The system provides continuous data collection on temperature, energy consumption, and equipment status using sensors and power meters. It supports integration with cloud platforms and peripheral computing for rapid information processing. This allows for the timely detection of deviations, prediction of malfunctions, and minimization of the risk of product loss due to emergencies. The system is considered for use in production complexes with controlled conditions, refrigerated warehouses, and temperature-controlled transport systems. The use of wireless communication technologies and adaptive data storage mechanisms ensures its reliability even in the event of communication failures. The test results confirmed the effectiveness of the proposed solution, which allows enterprises to reduce operating costs, improve resource management, and increase the energy efficiency of production processes. Therefore, the use of industrial Internet technologies for monitoring refrigeration equipment ensures increased energy efficiency, reduced operating costs, and detection of deviations in system operation.

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