

# Reducing Energy Inefficiencies in Schools

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Lynchburg Elementary School Saves 36% on energy costs and extends the life of equipment by up to 70%



Whitepaper

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**Educational Institutions**

# INTRODUCTION

As schools look for ways to reduce costs and improve sustainability, one area that often goes overlooked is the management of refrigeration systems. Not only are there direct costs of the energy used by the machines, but there are also indirect costs of labor – verifying the temperature of each refrigerator regularly, as well as the cost of lost food (or vaccines) from the failure of the refrigeration system.

Onformant installed a thermostatic sensor system in the refrigerators and freezers at Lynchburg Elementary School. Prior to this installation, Onformant conducted baseline tests to measure the compressor starts and stops and energy used by the system to provide a clear picture of its impact on the overall machine performance.

With the Onformant system, Lynchburg Elementary School has been able to achieve significant energy savings and reduce the expenses associated with managing the refrigeration systems. In this white paper, we will explain the technical details of how this was achieved and the ways the school was able to become more efficient as a result.

## Background

Conventional refrigeration systems use compressors to cool the refrigerated space and consume a significant amount of energy while also being expensive and inconvenient to replace.

Once the refrigerated space has reached the lower set temperature, typically as measured by an air based thermostat, the compressor turns off. As a result, the compressor frequently starts and stops to maintain the desired temperature within the set range. This constant starting and stopping of the compressor increases energy consumption causing the compressor to wear out more quickly, which can lead to costly repairs or replacement.



*Pre-Install Metrics*



*Post-Install Metrics*

## Solution

To address these problems, we have developed a special thermostat system for school refrigerators. This system uses advanced algorithms and materials to monitor and control the temperature in the refrigerated space, reducing the frequency of compressor starting and stopping.

The system utilizes a temperature sensor that mimics the characteristics of stored food, measures the temperature, and sends the data to the control system. By measuring the temperature of the food, and not the air, the system reduces the rapid temperature changes in the refrigerated space and ultimately the energy consumed.



## Benefits

Installing this new system in the Lynchburg Elementary School's walk-in freezer and refrigerator had several benefits. The most obvious is the reduction in energy consumption and costs. By reducing the frequency of the compressor starting and stopping, the school saved a significant amount of energy. We were also able to eliminate the need for the maintenance staff to visit the school during holidays and weekends to verify the temperature of the food and vaccine storage.

Another benefit is the extended lifespan of the compressor. By reducing the number of times the compressor starts and stops, the system reduces wear and tear which can lead to fewer repairs and replacements, and save the school money in the long run.

Finally, the thermostat system can improve the overall temperature control and stability of the refrigerated space. By reducing temperature fluctuations, the system can help to preserve the quality and safety of the food and other items stored there.

## Conclusion

Installing a special thermostat system in a school refrigerator can significantly reduce the frequency of the compressor starting and stopping, resulting in energy savings and an extended lifespan for the compressor. This system can also improve temperature control and stability in the refrigerated space, helping to preserve the quality and safety of the food and other items stored there.

We hope this white paper has provided valuable information about the benefits and technical details of implementing this Onformant thermostat system in school refrigeration. We would be happy to answer any further questions and provide more information on this solution.

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