

IceCOLD[®]

CASE STUDY

Test Results

IceCOLD® Performance

Client: DREAMS CINEMA. Ice Palace Madrid

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Summary Execution:

To validate the results of the performance of IceCOLD® technology, has conducted a test run in an air conditioning unit located in Room 8 of the Ice Palace Cinema in Madrid. The test has results in a reduction of Amp / Hr 36.8%, but with the difference gauging in the room before and after data collection, savings of 27.33%. **This results in a direct electricity saving 27.33%** and thus an equivalent emission reduction CO₂. This result is consistent with the average savings rate of 20% IceCOLD® is getting in the last nine years, as can be seen, views required operating conditions during the test, results are exemplary.

In addition to the convincing and sustained energy savings produced, add some implementation considerations strategic:

I. IceCOLD® catalysts which produce these results are "Dynamic" in nature. In other words, the savings initially introducing IceCOLD® in the system are performed to extend its life and as a result there is no need revert to the units. Additionally, since the return on investment in this case is 14.2 months, is Return on Investment (ROI) of over 92% annualized for each year subsequent operation for the lifetime of the equipment. See financial considerations at the end the report.

II. The "savings mechanism" of energy savings lies in IceCOLD® increasing the system's efficiency by 20%+ where it runs 20% less (on average), obtaining a result of operation beyond pre-installation results. As such, the TMEM (mean time between maintenance) and any costs of repair parts of the system is 20% less. These small savings that derived from lengthening the lifetime of the system are not included in the financial considerations outlined in this proposal.

Description of the test:

As stated above, the objective of this study was verified by testing the reality of the benefits provided by IceCOLD®. This test at the selected location, represents one challenge in terms of food refrigeration scenario, taking into the characteristics of the installation and the different factors combined.

System Description:

The unit tested in this case is:
LENNOX machine with two hermetic compressors Brand Maneurop MTZ-125.
units were treated with IceCOLD® and are monitored throughout the complete test.

Test Methodology and Objective:

Methodology:

The protocol used for the test, can be summarized as:

I. Pre-installation: two data loggers were installed to capture KWH and return and supply air during the pre-installation of one week, at intervals of 90 seconds.

II. IceCOLD® was introduced and units kept in operation during one week, allowing IceCOLD® to fully react. During the reaction period, the data loggers were inoperative.

III. Post-installation: Then restart of the Data Loggers that monitored the performance of the system for another week. This latter weeks completed dataset of the post-installation.

Conclusion:

LENNOX team shows data improvement of 36.8%, although that data in making subsequent to installing in IceCOLD® unit had an increased capacity of 26%, analyzed the data improvement. These energy use reductions fit with the historical results of our media performances with IceCOLD®.

Financial Considerations:

Installing IceCOLD® provides a significant impact on DREAMS CINEMA operational efficiency and in this account results. They must take into account the following considerations:

Be measured prior consumption of compressors team 1 and 2 53.87 Amp / h, considering a unit work 5.5 hours per day, 296.3 Amp / h / day for the 30 days of the month and the twelve months per year, considering a cost of 0.161 € / kWh

(1) can be considered a annual expenditure of € 17,172- In subsequent measurement, data were 42.89 Amp / h. For 5.5 hours daily work, 235.84 Amp / h / day for 30 days of the month and twelve months year, 13,668-€

The improvement achieved a savings of €3502.80 / year.

Investment in IceCOLD® is a one time expense.

This results in a payback period of 14.2 months.

(1) The cost of 0.161, - € / kWh is to apply an average cost per kw / h of 0.13 €, plus 4.864% of Energy Tax and 18% VAT.

$0.13 \text{ € / kWh} \times 1.04864 \times 1.18 = \text{€ } 0.123795 \text{ / kWh} = 0.161 \text{ € / kWh}$

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