



The First Energy Group

ENERGY EXPERT

ENERGY EXPERT REPORT

January, 2006

ENERGY EXPERT REPORT

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FOR

Square Chairs Inc.

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SQUARE CHAIRS INC. ENERGY EXPERT REPORT

SECTION 1

INTRODUCTION



SQUARE CHAIRS INC. ENERGY EXPERT REPORT

SECTION 1 - INTRODUCTION

Special Note

We would like to make special note of how helpful the staff and management were in providing insight into the subtleties of the operation and the availability of various documents and pieces of information. Specifically, we would like to thank **John Smith** for taking time from his busy schedule to walk us through the facility and to explain the process and equipment. Mr. Smith also ensured that all required documentation, utility bills and equipment descriptions were provided on a timely basis. His professional support has made our job possible.

A. Purpose

The purpose of this report is to specifically identify opportunities where energy can be used more efficiently to promote client's business goals. The financial feasibility of the identified opportunities will be analyzed in sufficient accuracy to permit an informed decision to be made on whether to move forward with more detailed engineering.

B. General Facility Description

Square Chairs Inc. is a leading processor of geometrical seating. Square Chairs Inc. is an operating division of GeoSeats LLC. Square Chairs Inc.'s U.S. headquarters, located in anywhere, New Jersey, is an eight acre complex. It is comprised of administrative offices, technical center and manufacturing facility.

Square Chairs Inc.'s roots trace back to 1940 when Square Brothers built a plant to build chairs. Originally known as the Chair Company, in 1981 it was renamed as Square Chairs Inc., Inc.

Various seating apparatuses are designed, built and stored on site.

Most of the manufacturing and storage facilities are heated and ventilated but, in general, not air-conditioned. The office spaces and laboratories are air-conditioned.

The largest energy consumer is the steam boiler plant. Steam is utilized around the clock by the processes. During cold weather, steam is also utilized to heat all the office and manufacturing spaces and to heat-trace the process and water piping.

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C. Special Emphasis, Concerns, or Limitations

- **Disruption** - A key concern in designing and installing any equipment or systems in this facility is the requirement to ensure no disruption to the facility or any of the processes.
- **Reliability & Durability** - The critical nature of a chemical manufacturing facility insists on reliability and durability. Therefore, long term solutions with solid life cycle costing are required.
- **Operating Cost** - A major driver of this report is to reduce operating costs and take advantage of the savings and incentives to subsidize replacement of aging or inefficient equipment and improvement to the processes.
- **Noise** - Noise level concerns both inside the facility and outside have not been found to be a concern and will not impact any potential energy conservation measures.
- **Structural** - At this point we did not identify any concerns or findings that would impact the capability of the existing structure to support the equipment proposed.

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SECTION 2

EXECUTIVE SUMMARY



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SECTION 2 – EXECUTIVE SUMMARY

This facility has several options which should be considered in an effort to reduce energy costs and to improve its overall competitive position.

The major Energy Conservation Measures (ECMs) we recommend for this facility are summarized in **table 2.1**. If all the available projects reported herein are implemented, **total utility costs will be reduced by approximately \$176,300 annually.**

Table 2.1 Summary of Available Projects

Available ECMs	Description	Estimated Cost	Approximate Annual Savings	Simple Payback Period
ECM 1	Installation of gas heat for buildings: P-1 (40 Ave A), P-2, P-3, P-4, P-5, P-6, P-6A, 1-A (34 Ave A), 2-A, 3-A, 4-A, 7-A	\$117,000	\$57,000	2.0 Years
ECM 2	Installation of a dedicated steam boiler for building 41 (Wax Building)	\$82,000	\$55,000	1.5 Years
ECM 3	Installation of a high efficiency gas-fired domestic water heater to replace the steam to hot water tank on the second floor of 34 Ave A (for locker room)	\$3,000	\$1,100	2.7 Years
ECM 4	Installation of a chiller economizer system for the 120 ton chiller (2- 60 ton compressors)	\$30,000	\$13,000	2.3 Years
ECM 5	Installation of a Variable Frequency Drive (VFD) for the 125 HP cooling water pumps.	\$33,000	\$22,000	1.5 Years
ECM 6	Installation of a Variable Frequency Drive (VFD) for the 25 HP cooling tower fan.	\$5,600	\$5,700	1 Year
ECM 7	Installation of a Variable Frequency Drive (VFD) for the 75 HP boiler induction (ID) fan.	\$19,500	\$20,000	1 Year
ECM 8	Injection of Frigaid into the 120-ton chiller refrigerant circuit.	\$7,500	\$2,500	3 Years
TOTAL		\$297,600	\$176,300	1.7 Years

