

CASE STUDY : Compressed Air Energy Efficiency Improvement for Rubber Glove Manufacturing Sector

PROGRAM AIM

Reduce restriction of air flow and high pressure drop in distribution pipeline system

Elimination of quick air demand surge

Optimise air compressors loading trend

Air compressors run pattern to correspond to production operation

Upgrading of air supply system at critical end-users

Improve and maintain stable supply air pressure to end users

SUMMARY OF RESULTS

Overall savings achieved
797,474 kWh/year

Percentage Savings
15 %

Simple Payback
11 months

FINANCING

The project was financed by Infolliance (third party financing) under a shared savings arrangement with the client

EXECUTION

Audit, Baseline setting to full project commissioning
Dec 04 to March 05

Savings commencement
April 2005

INFOLLIANCE Demonstrates Efficient Project Management Skills in the Full Execution of Energy Efficiency Program



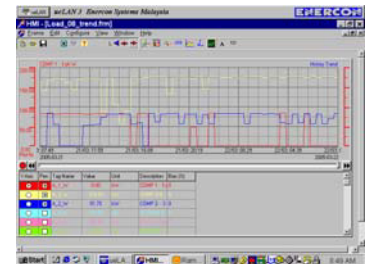
SUMMARY

A preliminary energy study conducted by Infolliance at **Ansell Kedah Sdn Bhd**, an established glove manufacturer, illustrate that there is significant scope to reduce the present electricity cost from the implementation of the compressed air system retrofits.

An Investment Grade Audit for the compressed air system was undertaken to assess the current condition and level of achievable electricity cost savings, provide the engineering design and specification for retrofits, methods for installation, testing and commissioning, firm-up actual project capital investment and define the energy-use monitoring & verification method.

Several cost saving measures grouped under two heads : **1) Compressed Air Generation Equipment Optimisation** and **2) Distribution-side plant air demand improvement** were carried out.

The program was successfully implemented by Infolliance using a **Third Party Financing (TPF) Scheme** and achieved **cost savings of 15% for ANSELL KEDAH**. **Specific Energy Consumption (SEC)** of the system was improved from **9.71 kW/m³.min FAD** to **7.46 kW/m³.min FAD**



HIGHLIGHTS

The intent is to reduce energy usage and improve the overall quality of compressed air delivered to both glove production plants at the site. The following main components are implemented:

Installation of a Centralised Energy Monitoring System to measure the baseline energy consumption of the air

compressors and post-implementation energy cost savings verification.

Modification, re-routing and upgrading of existing compressed air system at plant room and downstream production areas

Application of sequence control and fine tuning

existing air compressor controls

Infolliance undertook the overall project management as well as the procurement, installation, testing and commissioning under an "open book" concept.

PROGRAM EXECUTION

The program was initiated in December 2004 and completed in March 2005.

The activities undertaken by **Infolliance** are:

- ▶ Investment Grade Energy Audit
- ▶ Project Design, Engineering, Specification & Planning
- ▶ Installation of a Centralized Energy Monitoring System for Energy-use Baseline establishment & Post improvement Verification activities
- ▶ Establishment of Energy Use baseline
- ▶ Selection for procurement and installation of hardware & material
- ▶ Retrofit activities for compressed air system & full scale commissioning

MONITORING & VERIFICATION OF SAVINGS

Energy-use Baseline & Savings Verification were established using

INFOLLIANCE INNOVATIVE ENERGY MANAGEMENT **STANDARD ENERGY SAVINGS PERFORMANCE**

VERIFICATION PROTOCOL and verified in consultation with client.

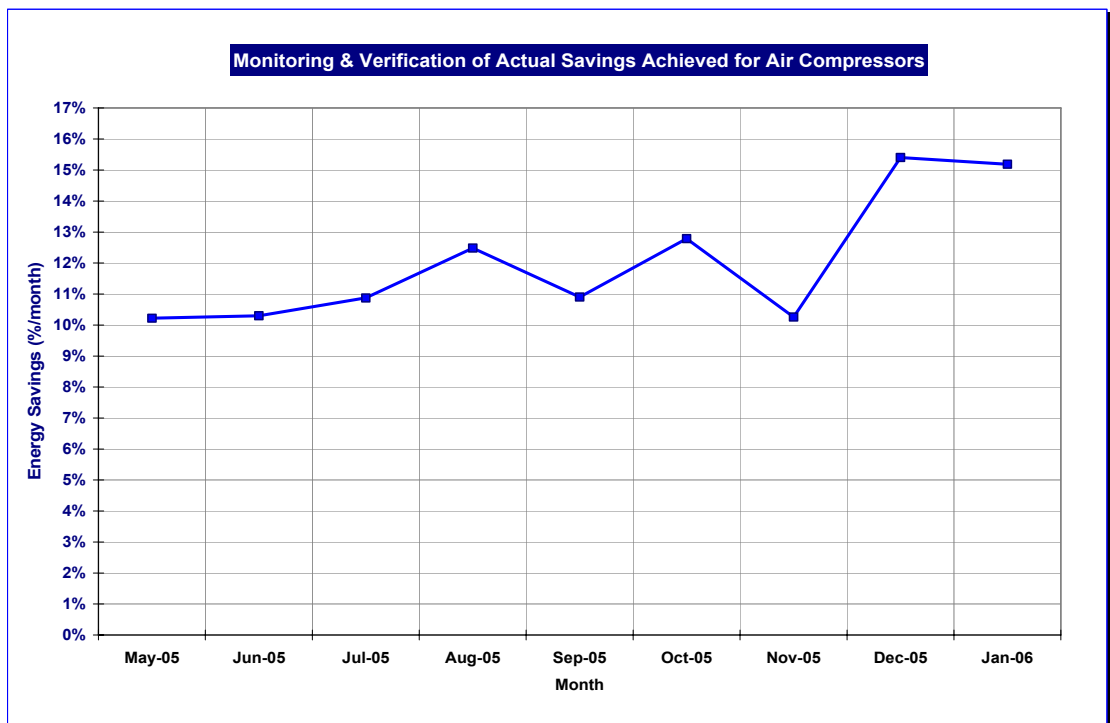
Energy Use Baseline & Savings Verification Tools:

Digital Energy & power meters were installed permanently at the compressors station. The collected data is transmitted to a central Energy Management System on real time basis.

Software based analysis tool was used to process the data and compute in both graphical and tabular format. Reports on the measured data as well as calculated energy consumption parameters (both real time and archived) were obtained through web based on-line viewing.

RESULTS : After full scale project commissioning

Continuous fine-tuning activities were pursued during the Monitoring & Verification stage to improve the energy savings level from month to month and ensure that savings target are met. Actual savings are verified using the installed software based centralized Energy Management System (EMS)



FOR FURTHER INFORMATION
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