



ENERGY SYSTEMS OPTIMISATION (ESO)

FELTEX AUTOMOTIVE

Year 1 - 2013

BACKGROUND

Feltex Automotive, headquartered in Durban, consists of seven business units that supply products directly and indirectly to South African Original Equipment Manufacturers (OEMs).

The Feltex Automotive Trim plant, located in Rosslyn Pretoria, is a leading supplier of textile-based automotive acoustic and trim components. It produces technical felts in needled and airlay constructions and non-woven carpets (both structured and conventional) in a broad range of weights, widths and specifications, for mouldable applications. From its factories direct to customers, Feltex Trim supplies main floor carpets, passenger compartment insulation, trunk packages, engine compartment insulation, parcel shelves and exterior wheel arch liners.



THE ISSUE AND MAIN FINDINGS

In order to transform operational processes, reduce energy consumption and costs, and ensure long-term environmental sustainability, Feltex Trim joined the IEE Project in 2012.

During a walk-through to inspect plant layout and operations, IEE consultants identified and recorded potential low-cost and no-cost interventions. The intent was not to identify retrofit opportunities, but rather to improve on production throughput.

Key findings:

No capital investment and just an in-house cost estimated at ZAR 30 000 in less than one year (2012-13) realised an annual saving of ZAR 287 451. Energy savings of 309 087 kWh with a concomitant GHG reduction of 295 796 kg of CO₂.

IEE Project capacity building programme - In addition to the support of the consultants, the Feltex Trim Rosslyn maintenance manager attended an EnMS expert level training course.

ENERGY CONSERVATION OPPORTUNITIES IDENTIFIED

One of the processes that were focussed on was the process to shape carpets under heat in the Platten Heater. The process requires both heat and pressure. It was found that equipment was not optimally utilised, with roughly 50% of the heating surface out of contact with the product. It was suggested that moulds be re-cast to get closer to the 100% target. As a consequence, production could be doubled without applying additional heat. The resulting spatial target achievement also halved production time, reducing electricity consumption by 50%.

In a separate process involving electricity to heat products, waste heat was rerouted to pre-heat products before reaching the oven, thereby reducing the 75°C oven time from 90 to 45 seconds. Previously, air in the oven escaped each time its doors were opened. A canopy was constructed to capture the lost air and use it for pre-heating products. This intervention halved oven time and consequently electricity consumption by about 45%.

Various other energy conservation opportunities were identified at Feltex Trim, Rosslyn that led to significant electricity reduction. This case study highlights only the two opportunities described above.

IMPLEMENTED SAVINGS MEASURES

2012 - 2013

- Staff energy awareness interventions: erecting posters displaying drying oven energy consumption.
- Equipment and software was installed to monitor drying tunnel energy consumption.
- Permanent tracks were installed in the drying ovens to ensure no trolley movement allowing hot air to escape. The installation also resulted in a reduction of drying time, from 24 hours to around 19 hours.
- Flaps were also installed to restrict air flow through the pans of fruit being dried, avoiding the loss of hot air in unutilised areas.
- Staff behavioural changes: to ensure that the drying tunnels were being optimised, staff was trained to add the maximum amounts of pans per session, reducing kWh usage per pan and optimising production.
- The total amount of energy consumed by the ovens was reduced by about 20%.
- Automating the four cold store doors and retrofitting remote controls to forklifts ensured less wasteful temperature loss due to doors left open indiscriminately during packing over produce for transport to end-user.

Highlights of ESO interventions

System	Intervention	Investment ZAR	Savings ZAR	Payback Period	Energy saving (kwh)	GHG Emission Reduction (Kg CO2/year)
Platten Heater	Optimal usage of heated areas in the equipment	15,000	287,451	< 1 yr	309,087	295,796
Heating Oven	Waste heat recovery to preheat products	15,000				

PROCESS CHALLENGES AND LESSONS LEARNED

Feltex Trim Rosslyn demonstrated that substantial energy savings could be achieved without major capital investment or retrofitting. By just challenging the status quo of operations and pro-active action towards optimal operation, a substantial impact was achieved on both production throughput and electricity consumption.

THE FUTURE

The company is continuing to identify, document and implement energy-saving opportunities in the plant. Feltex Trim is also in the process of formalising energy awareness training for all plant employees across all departments. **A separate case study has been developed for the savings realised in 2013 at the plant.**



Enquiries



For more information about the training workshops and participation opportunities:
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