



ENERGY SYSTEMS OPTIMISATION in an OEM

Tenneco - Ride Performance Pty (LTD) & Tenneco - Clean Air Pty (LTD)

*Overall plant efficiency improvements
September 2014*

BACKGROUND

Tenneco Automotive is an international automotive supplier with more than 90 production facilities worldwide. Two of these are located close to the automotive hub in Port Elizabeth.

Tenneco - Ride Performance Pty (LTD) produces shock absorbers and Tenneco - Clean Air Pty (LTD) produces catalytic converters and exhaust assemblies for both the local and international markets. Tenneco has a combined total of 780 employees who all contribute to the energy consumption. Annual production of each plant is around 2.2 million units per annum.

Tenneco South Africa became aware of the IEE Project at a two-day Energy Management Systems (EnMS) training session. Following a decision to join the full EnMS expert course, Tenneco was selected as the host plant to showcase the implementation of ISO 50001 with support from the IEE Project.

Key findings:

The two plants completed more than 15 projects of varying sizes over three years. R3,100,000 was invested with a payback period of 1.55 years. Monetary savings amounted to R2 million, energy savings amounted to 2,540,000 kWh, and GHG emission were reduced by 2,428.08 tonnes of CO₂.

IMPLEMENTATION OF AN ENERGY MANAGEMENT SYSTEM

Tenneco has set its sights on ISO 50001 from the day the standard was released. Progress towards ISO 50001 was a great learning experience since no other organisation has implemented the standard before.

The EnMS training allowed the Tenneco team to develop an energy management system aligned with Tenneco's needs. This was a challenging task, as while assistance was available to implement an energy management system, adapting the EnMS to ISO 50001 proved more difficult.

HIGHLIGHTS OF ESO INTERVENTIONS

The following table shows energy saving interventions implemented with commensurate costs and savings.

Intervention (All project groups have been combined)	Capital Cost ZAR	Savings ZAR	Payback Yrs	Energy saving
Compressed air systems Compressed air optimisation	R 1, 023,265.30	R 425,595	2.4	766,305 kWh
Lighting initiatives Factory, Offices, Sensors, Daylight Harvesting	R 1,076,695.40	R 780,131.49	1.38	926,064 kWh
Paint shop burner submersion tube	R 35,000.00	R 16,284.00	2.14	15,366 kWh
Automatic metering. Electricity, LPG, Shielding gas weight	R 149,011.00	-	-	Better energy management.
New Chrome Planting oven	R 750,000.00	R 634,508.00	1.18	829,444 kWh
Power Factor correction at Tenneco – Emission Control. To be done at Tenneco - Ride Control	R 69,079.00	R 142,776.00	0.48	127 kVA
Procedures – Shutdown, SEU training	-	-	-	Better energy management.
TOTAL	R 3,103,050.70	R 1,999,294.49		2,537,179 kWh

CONCLUSION

Future work will include power factor correction (PFC) as this was left until later in the programme to reduce the required size and cost of the required PFC equipment. Paint shop modifications will only be made to coincide with the new paint shop design that is planned for 2015.

The company believes the implementation of the EnMS would have been easier to understand if the ISO 50001 standard was considered from the start. To ensure sustainability of the system, all new equipment will comply with the internal energy efficiency regulations. Tenneco has found that the company culture has benefited from the IEE Project in that more team members are aware of and actively engaged in energy savings initiatives.



Enquiries



For more information about the training workshops and participation opportunities:
www.iee-sa.co.za • Tel.: 012 841 2768 (Pretoria) 021 658 3983 (Cape Town) or 031 242 2365 (Durban)

For more information about partnership opportunities: www.unido.org • Tel.: 012 394 1567 (Pretoria)