



### Steam and Compressed Air Systems Optimisation

Gastro Foods (Agro-processing)

2013

#### BACKGROUND

Gastro Foods, a family business that first opened its doors in 1995, manufactures meat and related products for the catering and hospitality industry in South Africa. It employs 70 people and has an annual turnover of R 90 million. The size of the factory in Parow Industria is 2 200m<sup>2</sup> (with an additional 2 000m<sup>2</sup> under construction).

Feeling the pressure from the steady increase in utility costs, Gastro Foods realised that it needed to save on electricity, but did not know how to do it. Energy efficiency had also not yet been considered as part of facility maintenance or procurement. Electricity is the primary energy source, with an annual cost of R2.1 million.

#### KEY FINDINGS

**In 2013, Gastro Foods saved R129 752 as a result of an investment of R237 500. In the same period the company saved 133 809 kWh and also reduced GHG emissions by 128 tonnes of CO<sub>2</sub>. The total pay-back period was 1,8 years**

#### IMPLEMENTATION

An Industrial Energy Efficiency (IEE) Project energy assessment was conducted between 4 and 6 June 2012. The methodology included the compiling of detailed steam- and electrical-energy balances and noting areas for increased optimisation.

The approach included:

- Walk-through and survey of the company
- Analyses of energy consumption and costs
- Compilation of a detailed balance of electricity users, steam generation and distribution systems.
- Comparison of energy-consumption performance against known benchmarks.
- Identification of energy-management opportunities
- Report for action and implementation

The company's maintenance engineer attended training in steams systems and energy management.

#### IMPLEMENTATION CHALLENGES

- Changing from mercury vapour to compact fluorescent lamps was challenging and not suitable in all areas.
- The T5 lighting retrofit was also not viewed as suitable for all areas.
- Additional information was requested before further air-compressor optimisation could be done.

- Improvement of efficiency of cold rooms has been difficult to achieve. Alarms or an automatic closing mechanism will be considered for doors.

### SUMMARY OF INTERVENTIONS DURING 2013

System	Intervention	Investment (R)	Savings (R)	Estimated Payback period (years)	Energy saving (KWh)	GHG emission reduction (Kg CO <sub>2</sub> /year)
Steam system	Insulating steam pipes	2 000	4 475	0,45	4 714	4 514
Steam system	Repair steam links	Maintenance	15 047	Immediate	15 513	14 846
Steam system	Insulate feed-water tank	2 000	2 882	0,7	2 910	2 785
Steam system	Pre-heat boiler-feed water	220 000	78 015	2,8	80 428	76 970
Compressed-air system	Compressed air pressure reduction	Maintenance	3 495	Immediate	3 604	3 449
Electrical	Replace HID lamps with CFL	1 500	21 667	0,07	22 337	21 377
Electrical	Install efficient smoker-door seals	12 000	4 171	2,9	4 300	4 115

### THE FUTURE

Gastro Foods are in the process of building a new erecting a new cold storage facility next to its current premises and newly acquired knowledge and skills will be used when making decisions about energy news.

### LESSONS LEARNT

- An investments in new equipment can pay for itself when energy costs are reduced.
- Energy efficiency should be considered when buying new equipment.
- It is possible to expand the process production capacity without investing in significant infrastructure upgrades.
- Effective sub-metering is essential for determining process efficiencies.
- You can save energy by being power and energy conscious.

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