Companies connection to energy efficiency

The enterprise is certified at **ISO 9001:2000** from the European organism of certification TUV CERT and is member of Hellenic Association of EPS Producers (EPS Hellas).Additionally the enterprise is certified with the following certifications:

✓ Certificates of Conformity according to the European CE marking $C\epsilon$ - Application of the **EN 13163:2001** for EPS products and CE marking.

✓ Certificate of Appropriateness from the General Chemical State laboratory – **European Regulation (EC) No 1935/2004 and Article 26 of Code for Food and Beverage**: Certificate of Appropriateness for food storage and transportation from the General Chemical State laboratory, according to the above mentioned legislation.

Steam system

The enterprise was founded in 1980. Its main activity is the production of Expanded Polystyrene Products for the Insulation, Construction, Decoration of buildings and Packaging. The raw material is produced by the polymerization of styrene and the addition of pentane (5%). EPS producers use steam to expand EPS. In this expansion process pentane acts as the expanding gas. The expanded raw material has 50 times bigger volume than before and has the form of beads. Their structure is just EPS foam, which consists of closed cells containing air. The volume of the final product is 98% air and this is the reason why EPS has excellent thermal insulation properties. It does not contain CFCs or HCFCs.

Steam boiler information

Size: Steam Boiler 1: 2,400,000 kcal/h , Steam Boiler 2: 2,400,000 kcal/h
Nominal steam capacity: Steam Boiler 1: 4,000 kg/h @ 10 bar, Steam Boiler 2: 4,000 kg/h at 10 bar
Boiler's operation: Steam Boiler 1: 4,000 hours/year, Steam Boiler 2: 2,000 hours/year
Kind of fuel: Steam Boiler 1: Low Sulphur Heavy Oil, Steam Boiler 2: Low Sulphur Heavy Oil

Steam system problems identified

✓ The excess air of both steam boiler 1 (45,42%) and, particularly, steam boiler 2 (94,08%) is considered to be excessive and results in heat losses due to the heat transfer to the excess ambient air.

✓ Although the majority of the steam distribution pipes are insulated, there are still some parts that are not insulated

✓ There are numerous un-insulated surfaces in the steam distribution network of the plant (i.e. steam boiler surfaces, bends, tees, flanges and valves).

Proposed energy saving measure(s), investments, and expected results (in figures)

• Insulate un-insulated steam distribution lines: Savings: 38,700kWh/year => Simple payback < 6 months, Cost savings: 1,350€, Cost of measure: 400 €.

• Insulate un-insulated hot surfaces (steam boiler, hydraulic valves, flanges etc.) Savings 700,846kWh/year => Simple payback = 1-2 years, Cost savings: 27.460€, Cost of measure: 25.000-50.000 €.

• Reduce excess air in steam boilers 1 and 2: Zero to low-cost measure with immediate payback.

• Use economizer for waste heat recovery: Savings: 352,907 kWh/year=> Simple payback < 6,5 months, Cost of measure: 100,000 €, Annual fuel savings (€):15,843€

• Waste heat recovery of steam condensate: Savings 90,000 kWh/year=> Simple payback = 5-10 years, Cost: 15,000-30,000€, Annual fuel savings: 3,200€.

• Energy consumption monitoring system.

Greece

Insulation - Expanded Polystyrene Products

Production of insulation materials

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Total (estimated) Investment

~€ 180.000

Total (Estimated) Savings

1,18 GWh/yr

Non Energy Benefits

Improve steam quality

Reduction of maintenance needs.

Prediction and repair of

malfunction of the system

Implemented proposed energy saving measure(s), investments and results achieved (in figures)

The proposed measures are not yet implemented.

Achieved and/or expected Non Energy Benefits (NEBs) as result of implemented and/or proposed measures and investments involved

Expected NEBS as a result of proposed measures:
- ✓ Improve steam quality
- ✓ Reduction of maintenance needs.
- ✓ Prediction and repair of malfunction of the system
- ✓ Facilitation of the personnel to control and supervise the system