

Companies connection to energy efficiency

The enterprise has been granted the following certifications:

- Quality Management System certificate EL0T EN (ISO 9001:2008)

Steam system

The main activity of the industrial plant is the production of different types of rice. The enterprise's plant mainly processes rice which is a seasonal agricultural product. Its production plant is located near the industrial zone of Thessaloniki in the Prefecture of Central Macedonia. The enterprise uses steam for drying the cropped rice and for "cooking" it during the process of production the parboiled type product. The installed steam boiler generates steam at 9 bars with an average rate of 2,5tons/h. The process is designed to use steam at 3 bars, local throttling valves located immediately upstream of the processes achieve the necessary pressure reduction. Recently they have increase the process pressure up to 5 bars in order to cope with increased production needs. Rice is dried into drums using hot air that is heated by steam to air heat exchanger. Parboiled rice is produced through a specific cooking process that involves the use of live steam as well as heated vessels by condensing steam.

Steam boiler information

Boiler's Size:

Steam Boiler : 6,180MWth,

Nominal steam capacity: Steam Boiler : 8,000 kg/h @10 bar,

Boiler's operation: Steam Boiler: ≈ 6000 hours/year

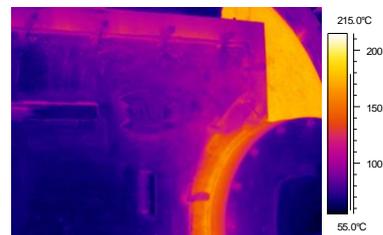
Kind of fuel: Biomass (rice husks)

Steam system problems identified

- ✓ The condensate return network suffers a lot of damages due to ice formation from the exceptionally temperatures occurred in Thessaloniki
- ✓ The plant uses a simply condensate vessel that were the condensate returns are mixed with the make up water. The proposal is to replace this vessel with a new one equipped with a deaeration system.
- ✓ The excess needs for heat can be satisfied by the existing boiler since it is already oversized but the rest of equipment is working by using higher pressure steam, from 3 to 5 bars, therefore they are using more thermal energy. This practice results to greater strain of different components, like pipework, flanges, valves and steam traps, and increases the possibilities of leaks and rapture.
- ✓ The majority of the steam pipes checked are insulated but some areas of the pipe network are un-insulated.
- ✓ Thermography results show that a lot of the hot surfaces (steam boilers, economizers, hydraulic valves, flanges, economizers etc.) are un-insulated

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

- ✓ Insulate un-insulated steam distribution lines: Energy savings in fuel consumption: 61.150 kWh/years => Simple payback < 6 months,
- ✓ Insulate un-insulated hot surfaces (steam boiler, , hydraulic valves, flanges etc.): Energy savings in fuel consumption: 99.540 kWh /year => Simple payback < 2 years.
- ✓ Replacement of steam condensate tank : ~675.037kWh/year



Greece

Production of the parboiled rice

Total (estimated) Investment

~€ 59.500

Total (Estimated) Savings

0,736 GWh/yr

STEAM AUDIT – Greece, nr. 9

FACTSHEET

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:

- ✓ Reduction in maintenance needs.
- ✓ Good Quality of steam
- ✓ Less CO₂ or other GHG emissions
- ✓ Reduced water consumption
- ✓ Reduction in maintenance needs.
- ✓ Reduction of corrosion problems.