

Norske Skog, Turning Water into Money



The modified filter house with a built-in Munters PreCooler.

Background

The Norske Skog GmbH in Bruck a.d. Mur in Austria runs a paper mill. They generate part of their power and heat demand through a Frame 6 gas turbine with an ISO output of 39 MW. The machine is operated on base load throughout the year.

Problem

Each summer the company runs in to a power shortage and needs to purchase electricity from the net. This is caused by the decreased output of the gasturbine at the higher outdoor temperatures.

Solution

Design

After a study it was decided to install a PreCooler from Munters. Because of the existing design of the filterhouse, part of it had to be extended to integrate the PreCooler. The work included the relocation of the anti-icing system.

Installation

Munters took on a turn key installation job and completed the work in 12 days during an inspection stop of the gas turbine. The work included the modification of the existing filter house, the supply and return piping, structural steel work and the integration of the Munters PreCooler.

Case Study

Result

Based on hourly weather data and in-depth knowledge about the turbines reaction to different outdoor temperatures Munters made an analysis in their Koolgas program.

It shows month by month the expected power recovered. In this specific installation it meant a pay-back period of only a couple of months on the whole PreCooler installation.

Koolgas also shows that the Munters PreCooler will add about 20 m³ of water to the airflow per day, during the warmest period of the year.

Benefits

- More than 3 MW increased output at peak temperatures, increasing the efficiency by 1.9 % (relative).
- No need to purchase external electricity.
- Inlet air temperature of the gas turbine is kept well below 22 °C
- even at ambient temperatures of up to 38 °C.
- The cooler was installed turnkey within 2 months and in time for the summer season.
- A pay-back period of less than one summer.

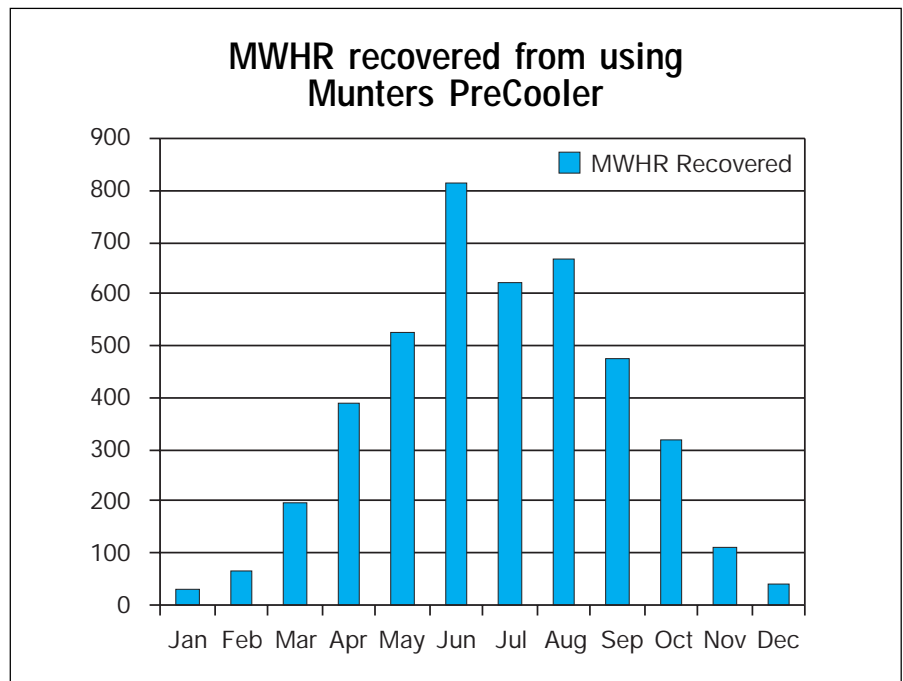


Fig 1. The Koolgas calculation shows an annual recovery of over 4,000 MWHR by the use of a Munters PreCooler.



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