Deliverable Report

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Project acronym: STEAM UP

Project title: Steam and Management Under Pressure

Funding Scheme: Horizon 2020

Date of latest version of Annex I against which the assessment will be made:

Deliverable Number: **WP7- D7.4**

Deliverable Title: **Case Study on Steam Efficiency**

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Description of the Deliverable:

Case Study on Steam Efficiency

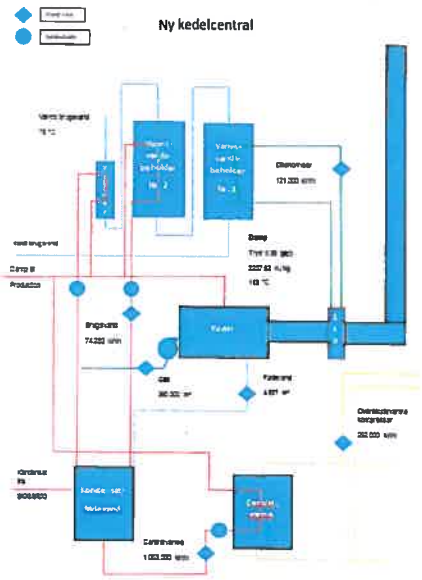
Summary:

Enclosed is one (1) Case Study on Steam Efficiency at Europe's leading bread manufacturer Hatting Bakery in Horsens, Denmark.

FACTSHEET

Possible savings opportunities

Hatting Bakery was founded in 1947 in the city of Hatting near Horsens. The bakery has over time evolved from baking rusks, cake bottoms and similar product to be Europe's leading bread manufacturer. In 1980, the bakery starts to bake bread, which is directly frozen after baking, so it stay fresh for the consumers. Hatting is owned by Lantmännen Unibake and having about 6,000 employees in 21 countries.



As part of the Steam-Up audit, the steam installation was gone through, including boilers etc. The company has several boilers, but only two of them are steam boilers. In this Steam-Up audit, the main focus where on the steam boilers and steam plant, as the remaining steam installation is in good condition and no improved measures where found.

On the production lines that use steam, the annual production is about 10,500 tons of bread a year (bread rolls, artisan, etc.).

There is performed an energy mapping of the entire steam-, boiler- and heating system. The mapping made it visible how the steam is distributed into free steam to the production, and how much steam there is being used to heat up water and for heating buildings. The mapping also helped visualize how much energy there were added to the hot water, from the economizer, and how much energy there were added to the building heating system, from heat recovery and from the air compressors. See Fig.

Much of the steam (57 %) are used to heat up the building, where the water temperature in the distribution system has to be a maximum of 75 °C. This is compared to the 35 % of the steam, which is directly used in the production.

Why was there made a review?
The mapping were conducted to test the audit method of Steam-Up. Hatting responded well to the opportunity to review and provided assistance with data and access to the boiler and steam system.
The analysis showed that there is a total loss of 26 % of the entered quantity of natural gas. This loss is both in the form of flue gas and radiation heat losses.

What can be changed?
It is generally a bad idea to heat water for cleaning and building heating with steam, unless there are special reasons for it. There should instead, be used a low temperature solution, e.g. with a condensing boiler.

The solution
There is the possibility, that there may be another solution to maintain a high humidity in the prooving cabinets, where free steam is used. The Group is currently investigating whether this is a possibility. If it is possible to substitute the steam to the prooving cabinets, the entire steam production can be discontinued and there can instead be installed e.g. condensing boilers for water- and building heating.

NEB
If there is a good solution to maintain the humidity in the prooving cabinets, without the use of steam, there will in addition to operating savings of heating loss, also be achieved savings of:

- Reduced amount of chemicals for water treatment.
- No need for an employee to monitor the boilers.
- Reduced boiler maintenance.

Economy
The project is still in the clarification phase, but with an expected savings of 1,192 MWh and with a payback period of no more than 3 years, there can potential be invested approximately 1.1 mil. Kr. without taking NEB savings into account.

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