

RECP Best Practice Catalogue

Sesame salting and washing optimization
Developed within the framework
of MED TEST II



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



The SwitchMed Programme is
funded by the European Union

Best Practice - Sesame salting and washing optimization

SECTOR:	Food & Beverage
SUBSECTOR:	Bakery and farinaceous products
PRODUCTS	Sesame cakes
CATEGORY	Process control or modification
APPLICABILITY	Process

COMPANY NAME	---
COMPANY SIZE	Small

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Description of the problem (Base scenario):

Production of salted sesame requires the addition of salt. The salt is added to the sesame right before the washing unit and therefore ; the salting unit is placed above the feeder for the sesame washing unit. With this unit the washing water is salted. Most of the salt is lost with the rinsing water and leaves the rinsing process with the wastewater. The waste water is disposed immediately without being recycled since it has high and unstable content of salt.

Description of the solution

Proposed measure is in adding the salt to the washed sesame after the washing-process. This will reduce the quantity of salt used and also the salt content in the washing water. This results in salt-free washing water, which can- be circulated for longer period of time without the need for rinsing by fresh water.

To achieve proper salting with the salt being added after washing the shells and all fine particles must be taken off before the washing process accordingly; an effective sieving process on the line shall be installed as an essential step and this is also necessary to prevent the washer nozzles from their blockage. The pressure outlet of the circulating pump can be used to supply the high pressure water for pre-cleaning of the equipment.



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Economic Benefits

Approx. 23 kg/ day of salt can be saved (95% of used salt in this process); 1.8 Euro/ day; 360 Euro/year (200 working days per year are assumed) + 35 Euro of water (cost of the water that was needed to prepare the saline solution)= 395 Euro/year.

Assuming 17 m³ are used for a full day production; 12 m³/day used during continuous washing (during operation 1.7 m³/h are used based on the conducted measurements, with a daily working time of 7 hours) while the other 5 m³ are the base filling of the washer. These 12 m³ could be saved (70% of used water in this process). So, 2,400 m³ of water could be saved yearly which saves 7,080 Euro/year.

By using high pressure water for pre-cleaning of the equipment; 0.3 m³ per operating day, assuming 1 hour cleaning and a capacity of 5 l/min of the cleaning pump; 177 Euro/year can be saved by using the water of the washing process before being disposed instead of fresh water for the pre-cleaning.

Saving= 395 + 7,080 + 177 ≈ €7,652/year.

Environmental Benefits

2,479 m³ of water (70% of used water in this process) and 4.6 tons of raw materials (95% of used salt in this process).

Health and safety impact

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Capital investments & financial indicators	<p>Pump and pipe with holes, locally made.</p> <p>Sieve and relocating the pressure pump. Sieve has to be a rotating sieve with continuous off-scraping of peels and remnants. There are very big systems available for complete treatment; this one only has to be relatively small.</p> <p>Investment= €9,270 Payback period= 1.2 years</p>
Suppliers	Imported from technology providers
Other aspects	<p>Still there is water involved that has to be dried off later on. Best solution would be dry salting, but for that a proper feeding device would be necessary. The dry salting units are not cheap like the liquid pumping solution.</p> <p>The risk of bacterial contamination is low, as the bacteria is eliminated during the roasting process.</p>
Implementation	Company is in an expansion phase and transfer to another geographical area, so this measure is planned to be implemented there.