

Water reuse in the dairy sector

9 March 2021

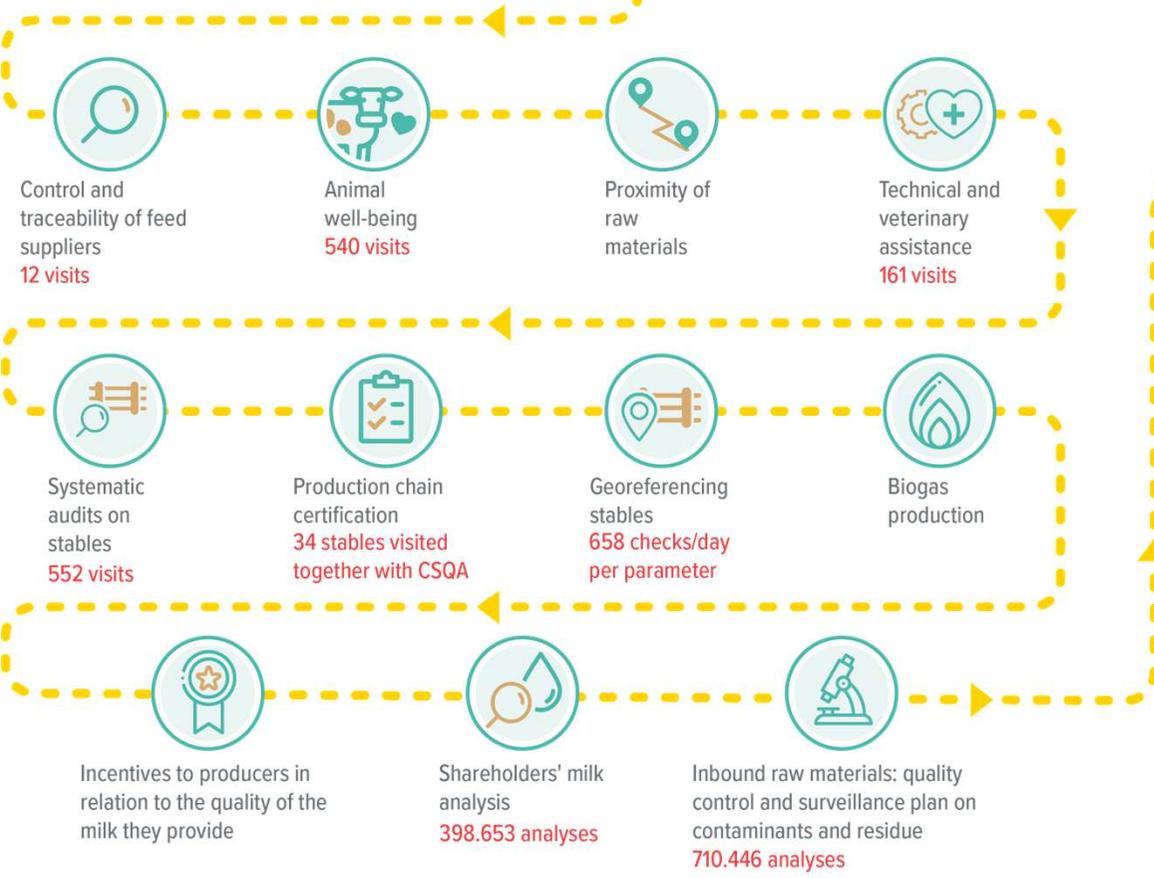


A unique production chain in Italy

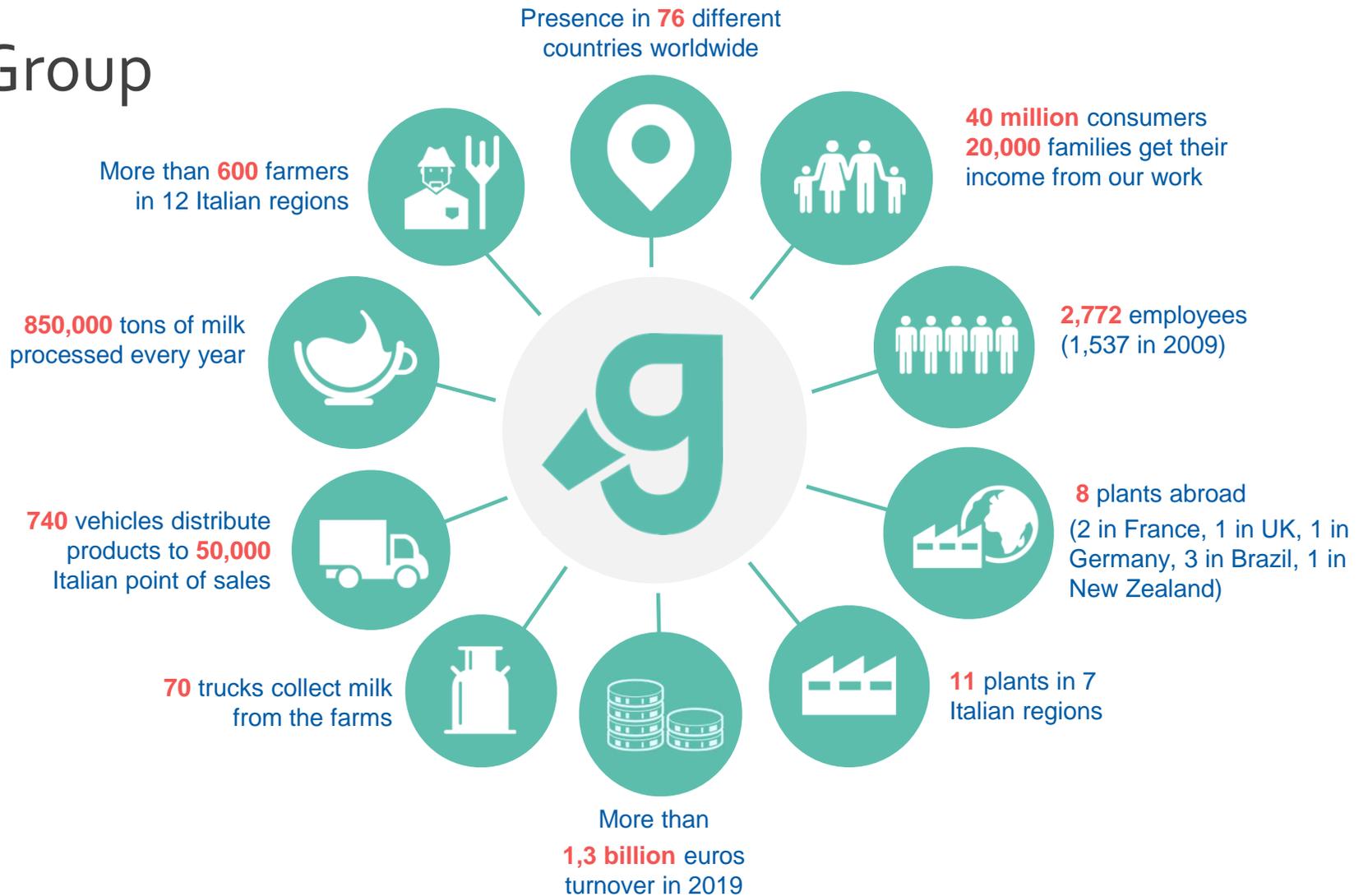
GRANLATTE Stalle



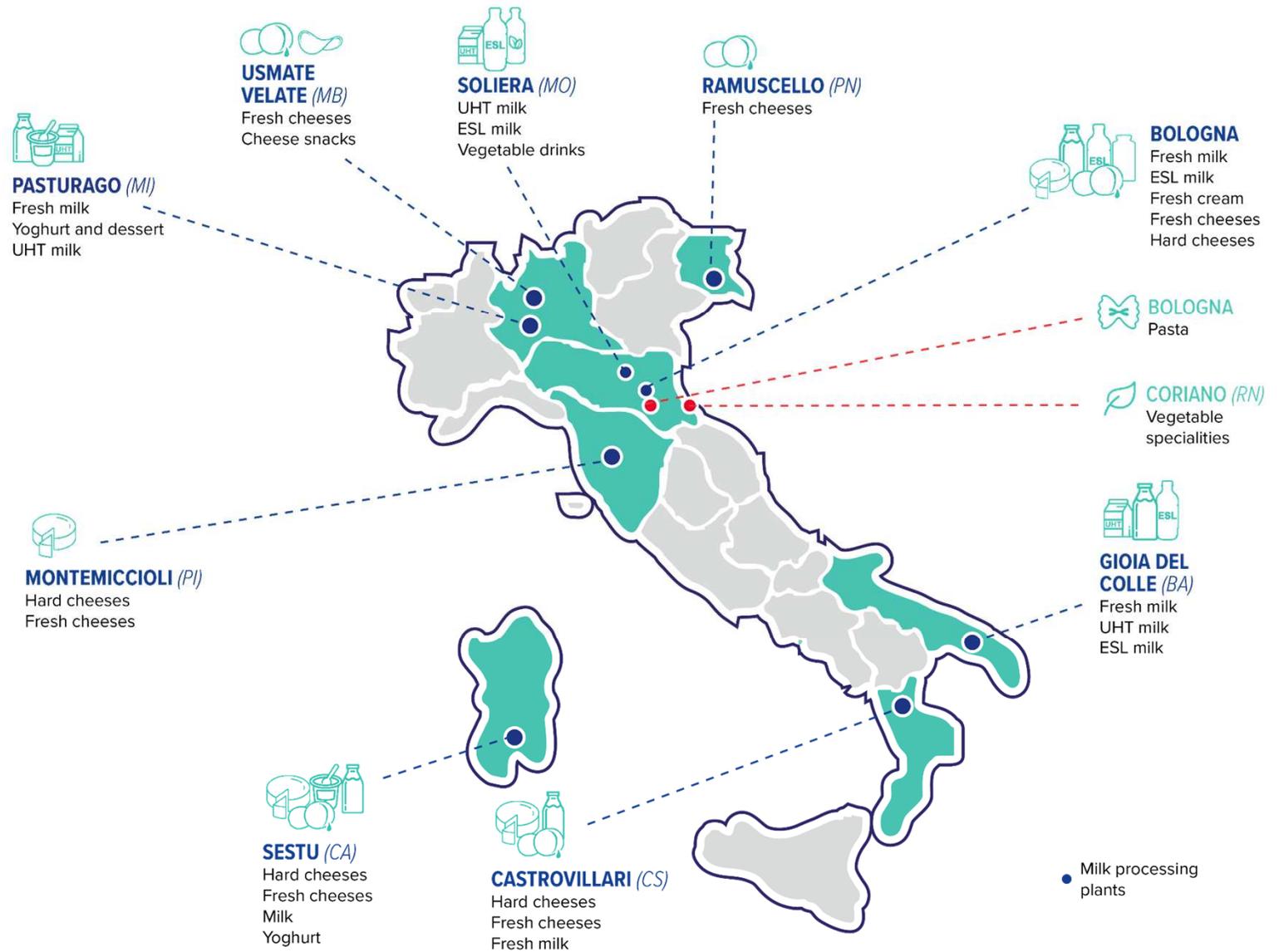
GRANAROLO Stabilimenti e distribuzione



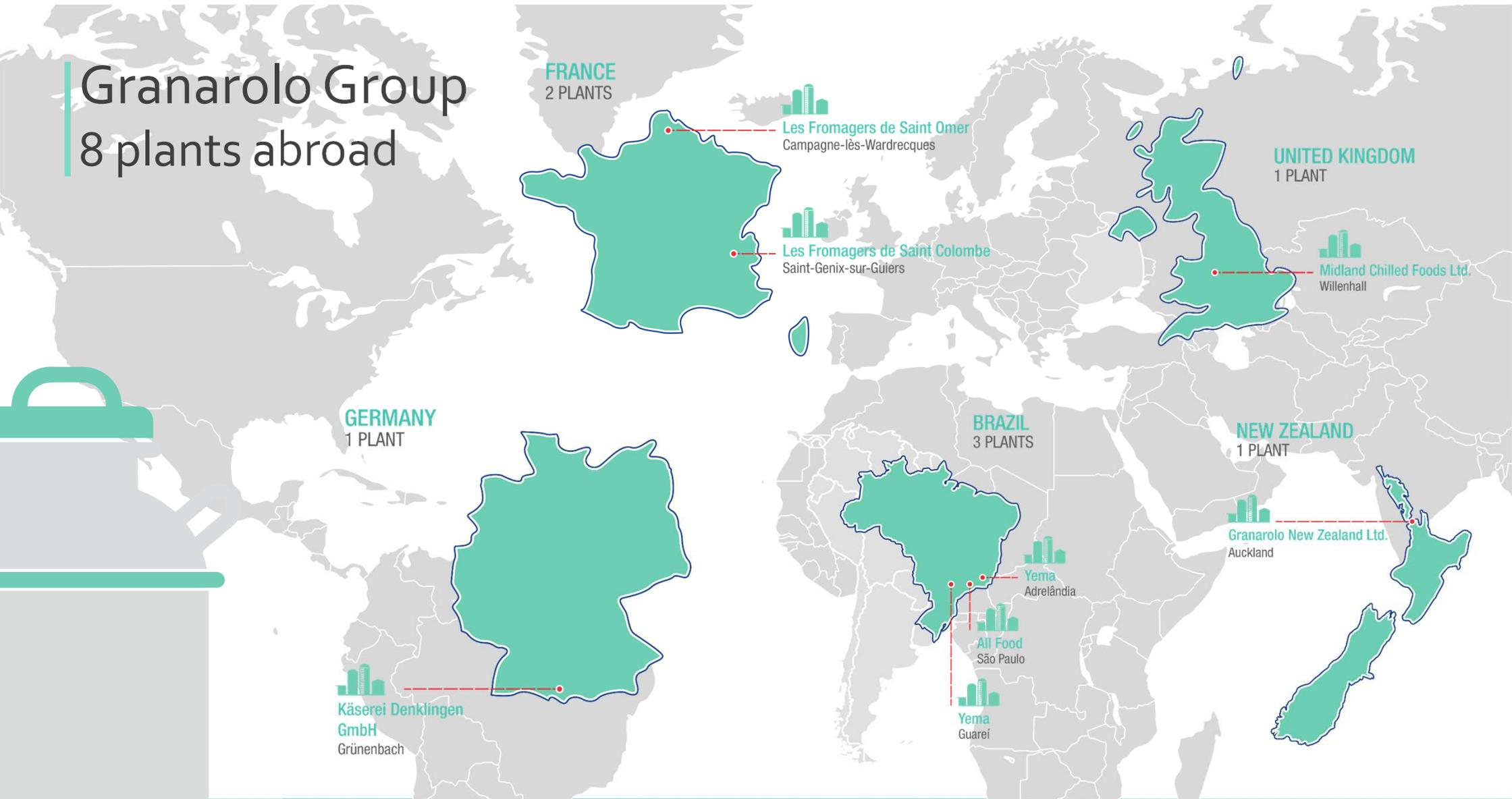
Granarolo Group Overview



Granarolo Group 11 plants in Italy



Granarolo Group 8 plants abroad



REUSE OF WASTEWATERS: today

Thanks to the plant of wastewater treatment, water coming from the sedimentation of the purifier is treated through sand filtration (to remove most of the suspended solids) and subsequent ultrafiltration to appropriately filter the water sent to final reverse osmosis. Part of this water is sent to the thermal power plant and the rest is mixed with water coming from the ultrafiltration in order to obtain a suitable mix to supply the cooling towers. Osmosis and ultrafiltration concentrate will then be sent to the purification plant.

Goal: reduction of volume of water collection from underground groundwater -> 10% reduction compared to the factory's total water needs

We need to manage our water resources more efficiently !!

Treated wastewater is an effective alternative water supply. By boosting supplies of good quality water, in addition to water savings, it can help address water scarcity. Reusing water after appropriate treatment extends its life cycle, thereby preserving water resources.



A CIRCULAR APPROACH: tomorrow

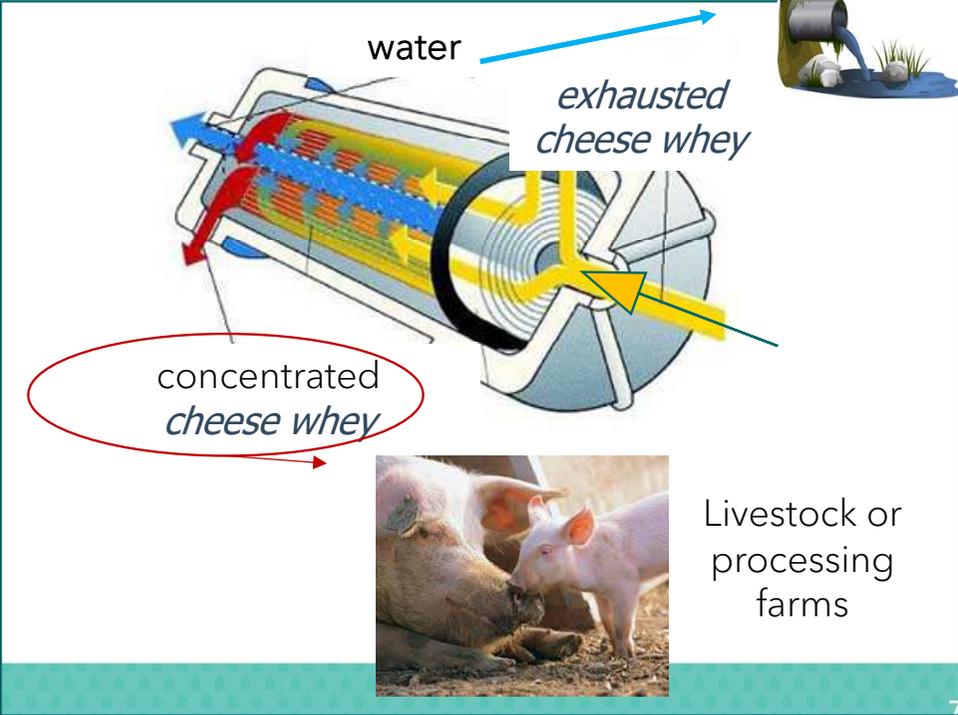
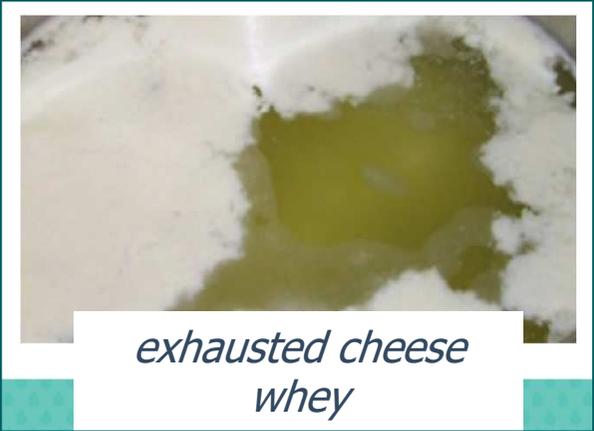
From milk to ricotta cheese, from "Ricotta" to exhausted cheese whey from exhausted cheese whey to water! Pure water is returned from a waste product of production.

Actually, the *e. cheese whey* produced is concentrated to be sold as a by-product to livestock farms for direct animal feed or processing industries. The *e. cheese whey* concentration process is carried out thanks to a reverse osmosis plant that generates permeate and retentate as products.

After the permeate instead of being sent to the water treatment plant, undergoes a further osmotic treatment that determines the production of crystalline water, which will be allocated to the cooling systems of the refrigeration plant.



By-product



Goals of the project

Two macro project objectives:

- reduction of water losses and consumption and optimisation of the costs of water supply and purification of waste water with improvement of the efficiency of the evaporative towers for the production of the refrigerators necessary for the plant and reduction of critical production in the summer period;
- reduction of the risks of overfishing associated with the capacity to emulate wells and the new BAT (Best Available Technologies) that require a reduction in water consumption to 2.5 m³/ton of raw materials. Currently our factory is at 5.1 m³/ton.



Tangential filtration system

The waters subjected to the filtration treatment come from 8 hardening tanks, from the transport of mozzarella in input and output to the tanks themselves.

The waters may contain fine, protein residues, fat residues. An automatic system for feeding and withdrawing from the tanks and from the transport is foreseen will feed the filtration system and that after the treatment will be sent to new to the tanks themselves and will be appropriately distributed.

An MF or UF cross-flow filtration treatment plant such as to guarantee the correct continuous treatment of firming water and mozzarella transport

The quantity of water treated daily is estimated at 2.000 m³, to be considered a recovery of 70%.

