



The global cheese-making industry processes approximately one quarter of total raw milk production to create a variety of commercial cheeses, and cheese processing can be very energy-intensive. European cheese making, comprised mainly by SMEs is a centuries-old tradition that is an integral part of EU gastroculture.

Ripening refers to the final, and in many cases the most important, step of cheese making—when the cheese is brought to its **optimal maturity of flavour, texture and aroma**. Once the cheese has been made it is stored in a maturing room to ripen for several days, weeks or months before the cheese goes to market. In order to effectively control the cheese ripening process and to obtain high-quality products, ripening takes place in large industrial ripening rooms in which environmental conditions such as temperature and relative humidity are controlled. These rooms need an important air circulation to homogenize the conditions of cheese ripening and the quality of the ripened cheeses. This is achieved by applying forced ventilation in the ripening rooms, which results in high energy consumption.

Strategies for reducing costs associated with cheese ripening process were studied in the context of the previous FP6 TRUEFOOD project, in which the implementation of sequential ventilation in pilot ripening rooms resulted in significant energy savings without any detrimental effect on the final cheese quality. While the cheese quality was preserved, a significant reduction of electric power consumption was achieved.

SMARTRIPE project was built from previous knowledge acquired in the TRUEFOOD with the aim to further develop and demonstrate an advanced control system based on novel measurement cells and improved ripening room software control that is capable of implementing a sequential ventilation by applying advances in the field sensor technology, smart systems and wireless technology to create a new ripening room monitoring concept that will enable energy savings during cheese ripening while equipping cheese makers with appropriate tools and knowledge to improve the ripening process.

As the ripening conditions vary with the type of cheese, it is crucial to control climatic conditions in the ripening rooms to meet the specific requirements of individual cheese makers. Improvement of the ripening process often require adaptations of the ripening room based on empirical studies performed directly by scientists or engineers in close collaboration with cheese makers, which therefore remain confidential.

Some companies in the air-conditioning and refrigeration industry offer solutions to cheese makers involving hardware and software solutions for optimum air temperature and humidity control. However, the services provided are mainly focused on optimizing the efficiency of new ripening rooms as it is difficult to optimize operation conditions in the older ripening rooms in which the ripening factors are not controlled (or poorly) and air flow pattern is completely out of control (empirical conditions). Therefore, it is currently difficult for small and medium cheese makers to change the functioning conditions of their existing ripening rooms and to evaluate new strategies of ripening rooms monitoring.

The SMARTRIPE project aimed to provide the first commercial technology allowing accurate control and supervision of ripening rooms that can be used to apply new monitoring strategies that help cheese makers to optimize their ripening process at a cost effective way, hence building competitive advantage.

**For more information:**

<http://SMARTRIPE.eu/>