

For more than 200 years, the Société des Caves et des Producteurs Réunis de Roquefort (United Producers and Maturers of Roquefort Cheese Company) – known simply as the “Company” – has collected sheep’s milk, turned it into cheese and matured it before packaging the cheese and delivering it throughout the world. During the last 20 years, production has diversified and although Roquefort cheese is still produced in Roquefort, as required by the AOC label (Appellation d’Origine Contrôlée), the Company also produces Feta cheese in Lozère, Pérail cheese in Aveyron, Broccio cheese in Corsica and Ossau Iraty cheese in the Pyrenees.

Differential weighing guides the maturation of Roquefort cheese

The R&D unit comprises the Quality Control Laboratory and research and development staff who work on improving the quality of existing products and developing new products. Since the production process involves the use of raw milk, the unit carries out various bacteriological, physical and chemical controls, from the incoming milk up to the ready-for-sale cheeses. The purpose of these controls is firstly to ensure the absence of pathogens and secondly to ensure AOC production requirements have been complied with.

Around 100 milk solid assays carried out every day...

As Géraldine Pons, the manager of the Physical/Chemical analysis unit explains, Roquefort has to comply with certain parameters. The Company produces three types of Roquefort, each with a different taste and texture: Baragnaudes, Templier and Abeille. In order to obtain these different characteristics, three strains of *Penicillium roqueforti* are used among the hundred or so strains cultured and studied on the site.

Different analyses are carried out on the sheep’s milk:

- An assay of the milk fat and protein matter to determine the materials balance
- Nitrogenous matter, calcium, pH, etc – all parameters that help to guide the cheese maker during production.

These parameters change over the lactation period and sheep do not produce milk throughout the year. The milk contains 60 g/l of milkfat and 45 g/l of protein mat-

ter in November, compared to 85 g/l of milkfat and 65 g/l of protein matter in August. The cheese maker therefore has to adapt the technology to his raw material in order to obtain a product of constant quality. In order to verify the parameters required by the Roquefort AOC label (milk solids ≥ 55 g per 100 g of cheese and a milk fat to total milk solids ratio $\geq 52\%$) and those of the different sheep’s milk products, the laboratory carries out around 100 milk solid assays every day. This represents a considerable handling time. The cheese sample has to be weighed, homogenised in a capsule with sand before leaving it in an oven for three hours. After being left to cool in a desiccator for 45 minutes, the sample is weighed for the first time, and then returned to the oven for one and a half hours. The dish is then removed and, after cooling, the sample is weighed a second time. The difference between the final and penultimate weighings must be less than 1 milligram. For each sample, the tare, the humid sample and the samples when they are removed each time from the oven must be weighed: when 120 samples are tested in one day, that means 480 measurements have to be taken manually in front of the balance display.

... with two AX balances equipped with the differential weighing application

Bruno Constantin, Supplies Manager, contacted METTLER TOLEDO to try out their new generation of balances. After studying the requirements and budget, he purchased two AX balances equipped with the differential weighing application.



The technician now identifies, on each balance, the sample number and name and each balance then records the weight of each capsule and the weight of the humid sample. When the last weighing is carried out, only the capsule number has to be indicated to the AX and it automatically calculates the humidity level: “Before, we might inverse the figures, or forget to note down the capsule number or the weights. We then lost a whole day’s work and we had to start again from zero the next day, not to mention the delays this caused in passing on the results. The new balance avoids errors in recording figures .”

Why use two AX balances? “After having worked for one year with a single AX, we found that all of the technicians wanted to use the AX (time savings, elimination of calculations, reliability of results). Since the number of analyses required prevented us doing everything on a single balance,

the purchase of a second AX soon justified itself.” In addition, the two AX balances are connected to a computer which records the data, ensuring all results are fully traceable. The technicians can work on either AX, and the whole team is delighted with how easy they are to use.

Being cautious, Géraldine Pons asked us on the day we demonstrated the equipment what would happen if there was a power cut. After weighing out 90 samples, the METTLER TOLEDO sales engineer cut off the power to the balance for several minutes. When he connected it back up “all of the results were in fact still stored in the balance!”

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The automatic door opening facilitates handling of the capsules of cheese

