The Solarec Company is owned by the Belgian dairy cooperatives LDA (Laiterie Des Ardennes). The plant – located in South Belgium – is equipped to process 1 billion litres of milk per year. The modern facility combines focus of quality and efficiency to supply a complete range of dairy products – from milk powder to butter. The total production capacity of whole and skim milk powder at the two production lines is around 75,000 tonnes. Additionally, Solarec produces approximately 30,000 tonnes of butter per year at their modern butter production line.

Solarec has invested in two PerkinElmer DA 7300 In-line NIR systems for its skim milk powder and whole milk powder production lines. The objective was to optimize production and to achieve a more consistent product. In production line number 1, the DA 7300 is installed at a milk powder separator and continuously measures moisture, protein, fat and lactose content. The milk powder is pneumatically transported from the spray tower to the separator. The DA 7300 In-line NIR system measures a steady flow of milk powder as it is transported. In production line 2, the DA 7300 is installed immediately after a spray dryer. The same parameters are measured here.

The economic benefits of using the DA 7300 In-line devices are very large. For example, in production line number 1 Solarec were able to increase the average moisture content by 0.2% without exceeding specifications. With an annual production of 30,000 tons this amounts to an extra production of 60 tons of milk powder, a profit of more than EUR 180,000 per year. The investment in the DA 7300 thus paid for itself in just a few months. Additional savings were made from reduced drying costs.
Another payback aspect is the significant reduction of the amount of rejected product during a production change between skimmed milk powder and full milk powder. After a change in production, the product used to be rejected during the first 30 minutes to make sure the product was within specifications. With the DA 7300 In-line system it is now possible to monitor the key parameters in real-time and as soon as the product is within specifications it is fed into the silo. On average, only the first ten minutes of the milk powder production are now rejected after a production change. With a production capacity of 6 t/hour an additional production time of 20 minutes is equivalent to an additional production of about 2 tons of milk powder when switching product. This usually happens once a week, and the additional production per year is about 100 tons which means an added profit of approximately EUR 300,000 per year.

Additionally situations where fat or protein is outside specifications are immediately recognized and the amount of wastage can be minimized. The DA 7300 In-line NIR sensors have given Solarec much better knowledge of their production process, more stable and efficient drying processes and a more homogeneous milk powder production with constant and high quality.