

High Level of Complexity – Solved Successfully

Automation of a dairy for the Lithuanian agricultural cooperative 'Pienas LT' was particularly challenging for ProLeiT AG and its project partners due to the large number of technical and collaborative interfaces.

The greater the number of interfaces in a process automation system, the higher the level of complexity. That may sound like a platitude, but it can result in quite a lot of unexpected requirements in a real-world application. This relates not just to technical issues but also, in particular, to communication with the respective product partners. The project in the Lithuanian city of Kaunas, which ProLeiT AG was commissioned to implement by the German plant manufacturer Pentair Südmo, is an excellent example in this context.



New build of the Pienas dairy in Kaunas

The task facing Pentair and ProLeiT was to construct a complete dairy plant for the agricultural cooperative 'Pienas LT'; ProLeiT was chosen by the general contractor Pentair to install the process automation system. The client's time schedule for implementing the entire project was quite ambitious; with plant construction starting in mid-2015 and finishing by the end of 2016. Due to the project plan adjustments deadlines were moving. "From a manpower perspective, we were actually not too sad about the delay," explains ProLeiT project manager Thorsten Luber. "The whole project was on an extremely tight schedule: This could have led to bottlenecks in the long-term."

To exclude these from the outset, the process automation company recruited two members of staff from its Ukrainian subsidiary, TOB ProLeiT Automation, for the project in Lithuania. A good decision in every way, says Luber: "In fact, the two technicians provided us with valuable,

professional help throughout the entire project period."

After the water treatment system had been planned and installed and the 'wet section' of the system largely completed, ProLeiT was able to start work on automating the first and larger production section of the dairy in mid-2016 using the in-house process control system Plant iT. In this case, the – standardised – input stage was the two-fold milk delivery section, which is used to transport raw milk from trucks to the three 300,000-litre tanks. From there, the milk – both as skimmed milk or a cream product – is fed in parallel through a milk and a cream pasteurisation unit.

After the pasteurisation unit, the various end products are separated according to the manufacturing process. While the final stage of cream production is completed by storage in the three available tanks (from where it can be directly picked up after loading and delivered to the customer), the manufacturing process for skimmed milk is much more complex. After intermediate storage in the four skimmed milk tanks, the milk is transported to the filtration section where it is processed for the four different end-product variants of soluble milk powder according to the specifications of 'Pienas LT'.



The new filtration plant

INFO



Publication:	P&A
Publisher:	publish-industry Verlag GmbH
Issue:	04/2018
Author:	Thorsten Luber

From ProLeiT's perspective, the transition point from pasteurisation to filtration and the further processing of milk in the four different filter stages was the first challenging interface. In this case, the contract for work on the complete filtration plant, including automation, was given to a Swiss company. Thorsten Luber: "As a software for the process control technology, Plant iT allows you to also integrate complex interfaces as part of the implementation process. As a

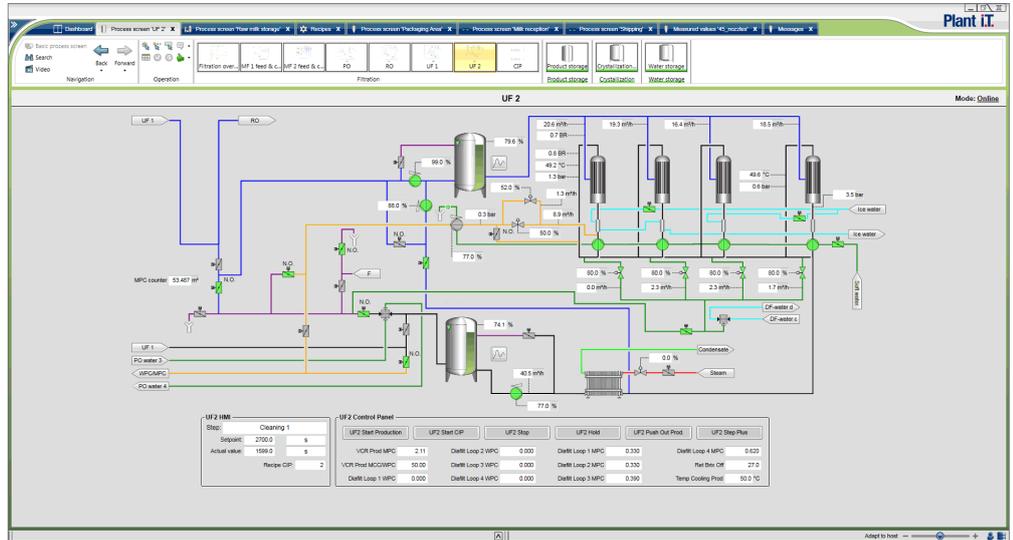
application profile

Pienas LT

rule, the operator wants to track the process – especially when various automation solutions are interlinked within a plant – via one front end. Another big challenge is to present a total overview that also incorporates all the various hardware and software systems.”

Once filtration had been completed, milk storage in the five available product tanks represented the transition from the wet to the dry section. It is from here that the pasteurised and filtered milk is further treated in three different ways according to the target end product. In two of these, milk is dried into milk powder using evaporation systems; in the other, the milk is transported straight to the product tank in a drying tower. The two evaporators, provided by a Swiss company, also had to be connected to an additional interface at the existing process control system. The same requirements that apply to filtration also apply here: An automation system set up at an individual plant had to be integrated into the existing overall control system to ensure key information is available to the operator.

From the two evaporators, the soluble milk powder is finally transported for final drying to two drying towers – one of them through further storage in a crystallisation tank – and thus back into the existing control system Plant iT. Luber: “Crystallisation tank, drying tower and finally storage of the powder in the silo plant were then totally back in our area of responsibility. Connection to the overall system up to the transition point of the bagging process was just as seamless and quick.”



Filtration plant process image– one of two ultrafiltration plants

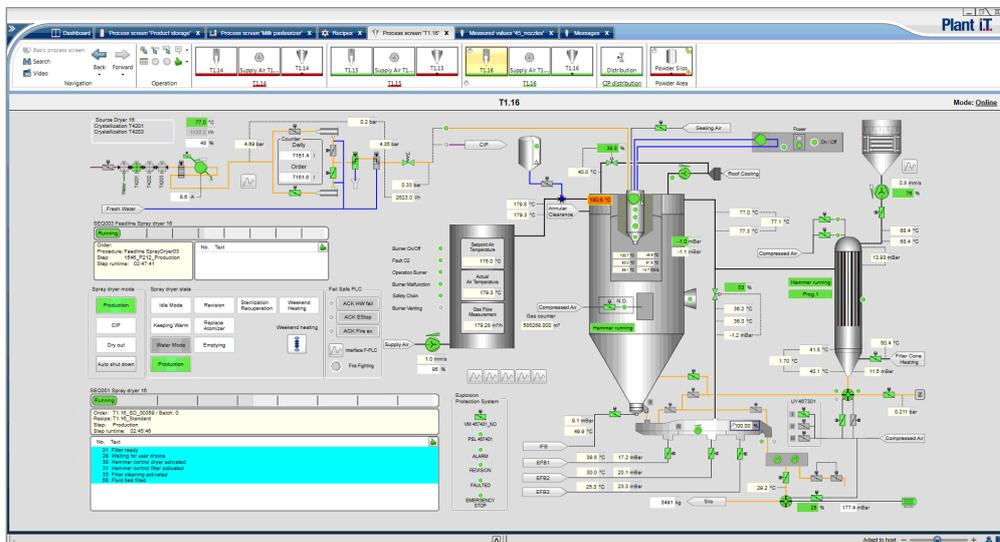
According to Luber, operating a certain number of interfaces for projects of this size is quite normal; and this also applies to incorporating further trades. In Kaunas, this involved the actual dairy plant as well as the integration of six further auxiliary plants, including those for water treatment and steam and refrigeration generation:

“Quite unusual, however, was the high number of individuals involved in the project,” explains the ProLeiT project manager: “As they are, in the widest sense of the word, also interfaces that need to be integrated.” As part of the ‘Pienas LT’ project, these ‘communication interfaces’ went far beyond the norm. “The entire level of com-

plexity was massive. In addition to the technical interfaces, there were many different contacts – the clients and cooperation partners – that had to be considered as part of the automation process. Six companies in total were involved in this project with varying responsibilities and degrees of influence.”

The plant was automated successfully and put into full scale operation in March 2017. Thorsten Luber draws a positive conclusion and emphasises the learning potential of the project: “A real challenge and – in terms of the cooperation with our project partners – a learning process from which we can definitely profit in the future!”

Mr. Vytautas Stunzenas, plant project leader at ‘Pienas LT’, is also satisfied with the project process: “We appreciate the Proleit AG staff agility in such a complex project.”



Process image of the dry section – one of three drying towers