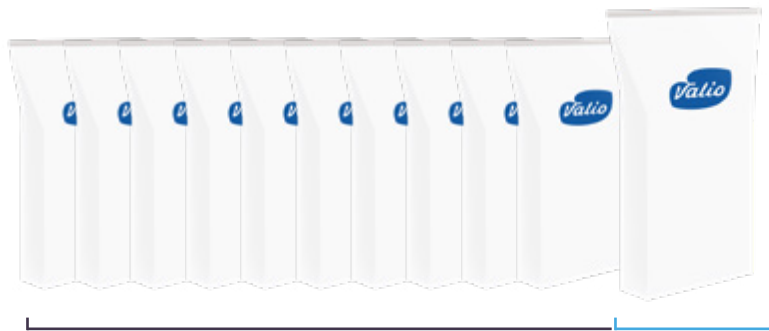


NAPCON CONTROLLER MAXIMIZES WHEY POWDER PRODUCTION

Valio Oy is the largest producer of dairy products in Finland. At Valio's dairy complex in Lapinlahti, eastern Finland, demineralized whey powder is produced in large quantities. The moisture content of the final product is adjusted by a spray dryer. This is an energy-intensive and demanding process because excessive water content makes the powder sticky. This causes disturbances and might even result in shutdowns. Excessively dry whey powder generates dust, which has a negative effect on product properties and uses excess energy.

By controlling the spray dryer capacity and hot air streams in an optimal way using MPC (model predictive control) at a 30-second interval, it is possible to keep the moisture content of the final product very close to its target value in all process conditions and under multiple dynamically changing process constraints. This leads to a significant increase of production without any increase of total energy used for heating the drying air. Moreover, the risk for shutdowns due to bag filter clogging is also significantly reduced.



10 % MORE WITH NAPCON



VALIO WHEY POWDER PROJECT IN A NUTSHELL

GOAL:

To increase the capacity of the spray dryer with no increase in energy consumption

NESTE ENGINEERING SOLUTIONS DELIVERY INCLUDED:

- Spray dryer optimization with NAPCON Controller
- NAPCON Controller (MPC software package)
 - Real-time process optimization
 - OPC-UA connection between NAPCON and Valio's process control system
 - Recipes for all product grades
- Full engineering and implementation services
- Client training

PROJECT BENEFITS:

- More than **10% increase** in whey powder production with every product grade
- No increased energy consumption leading to **improved energy efficiency**
- Decreased variations in whey powder moisture content
- Closer to target end specification, no off-spec production

NAPCON DELIVERY PROJECT HIGHLIGHTS:

- Fast track from project initiation to start of MPC: **only three months**
- No process or control system shutdowns due to installation and commissioning of NAPCON
- Remote Support connection between Client's process and NAPCON

"The average capacity of the spray dryer increased by 10% with no increase in energy consumption."

Aleksi Ylitalo, Process Expert, powder technology at Valio

NAPCON CONTROLLER MAXIMIZES MILK POWDER PRODUCTION

Due to the excellent results in Lapinlahti, Valio decided to also napconize their milk powder production line in Seinäjoki, concentrating on the evaporator and spray dryer. With NAPCON Controller, Valio can predict milk powder moisture content and optimize its humidity in real time, keeping the composition of the final product very close to its target value. Furthermore, energy consumption is minimized: NAPCON Controller matches energy usage to the desired product specifications.

In a milk powder production line evaporators are used to remove excess water before the concentrate enters the spray dryer. By controlling both of the drying stages simultaneously with NAPCON, even more savings can be gained, and it is possible to ensure that both units are continuously run in an optimal way. This type of system has already been implemented at the Valio Seinäjoki plant.

“The results from the first optimization project made us so convinced of NAPCON expertise and superiority to carry out high-end production optimization projects that it was easy to partner up again”, Antero Ylitalo, Production Manager for Valio, says.

VALIO MILK POWDER PROJECT IN A NUTSHELL

GOAL:

To increase the capacity of the spray dryer and evaporator with no increase in energy consumption

NESTE ENGINEERING SOLUTIONS DELIVERY INCLUDED:

- Spray dryer and evaporator optimization with NAPCON Controller
- NAPCON Controller (MPC software package)
 - Realtime process optimization
 - OPC-UA connection between NAPCON and Valio's process control system
 - Recipes for all product grades
- Full engineering and implementation services
- Client training

PROJECT BENEFITS:

- More than **8% increase** in milk powder production with every product grade
- No increased energy consumption leading to **improved energy efficiency**
- Decreased variations in milk powder moisture content
- Closer to target end specification

NAPCON DELIVERY PROJECT HIGHLIGHTS:

- Fast track from project initiation to start of MPC: **only five months**
- No process or control system shutdowns due to installation and commissioning of NAPCON
- Remote Support connection between Client's process and NAPCON



8 % MORE
WITH
NAPCON

“With the help of NAPCON Controller, we managed to boost our production by more than 8 % without any expensive hardware investments or increase in energy consumption.”

Vesa Strand, Production Manager, Valio