

Daavision & PENKO - *The Perfect Solution!*

A process automation case study for animal feed additives

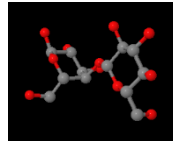
Daavision is a Dutch manufacturing company specializing in the production of additives on the basis of organic acids for animal feed. One of their objectives is to combat mortality in young animals and to reduce the amount of antibiotics in livestock simply by providing better nutrients.

For this effort Daavision was nominated for the **Accenture Innovation Award 2013**.





Sweeteners Culture	Fructose		Lactose		Molasses		Control	
	24h	48h	24h	48h	24h	48h	24h	48h
Lactobacillus platarum	5.83 ±	3.82 ±	5.81 ±	3.92 ±	5.82 ±	3.79 ±	5.86 ±	3.94 ±
	0.09	0.03	0.09	0.06	0.06	0.03	0.07	0.12
Bifidobacterium Bifidum No. 1,791	6 ±	5.1 ±	6.03 ±	5.01 ±	6.03 ±	4.55 ±	6.09 ±	5.06 ±
	0.04	0.14	0.08	0.22	0.07	0.09	0.07	0.05



Dosing, mixing or blending of solids and fluids for the food processing industry with stringent regulations, requires tracking and tractability of all components as well as highly accurate measurements. The most accurate way to measure any raw material, is by weight. Weight is always chemically correct and independent of temperature, pressure, air injection or foaming. A kilogram of a component will always remain a kilogram, while volume, for example, can change under certain conditions.

The ratio between components will always be correct if the unit of weight is applied to the dosing process.

Dosing by weight means...

- eliminating margin of error
- guaranteed accuracy of any blend
- comparable dosing between wet and dry ingredients

Daavision has chosen to dose directly into a mixing container which is set up on a weighing device.



The weight is transmitted by a transducer or load cell which sends an electrical impulse to a PENKO 1020 or FLEX controller. Here the signal is translated to a digital output, showing the weight.

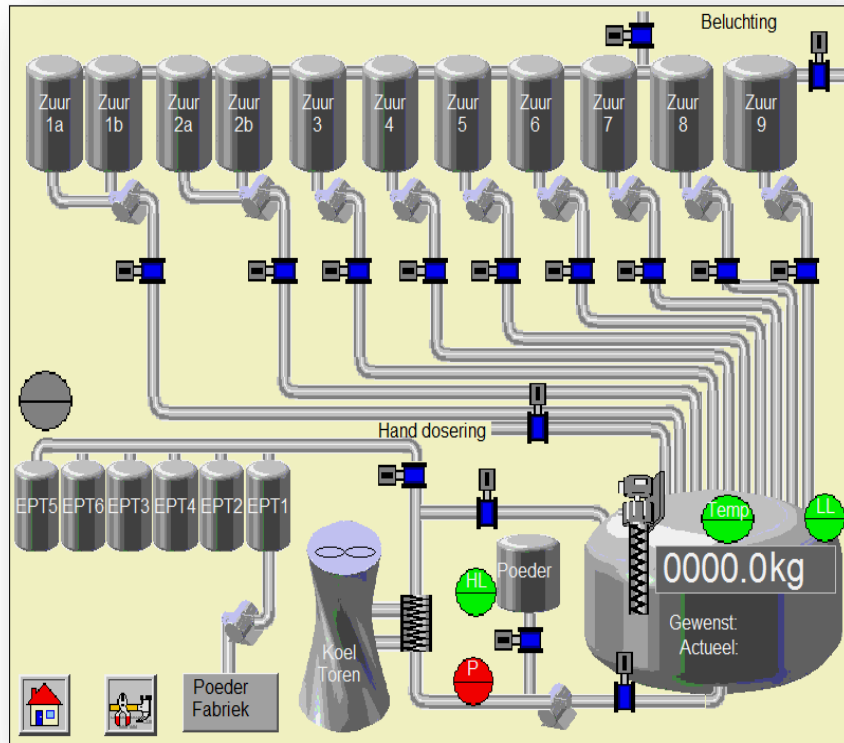
The PENKO controller is programmed to calculate the net content.



THE WET & COMBINATION PHASE

There are 3 wet process variants

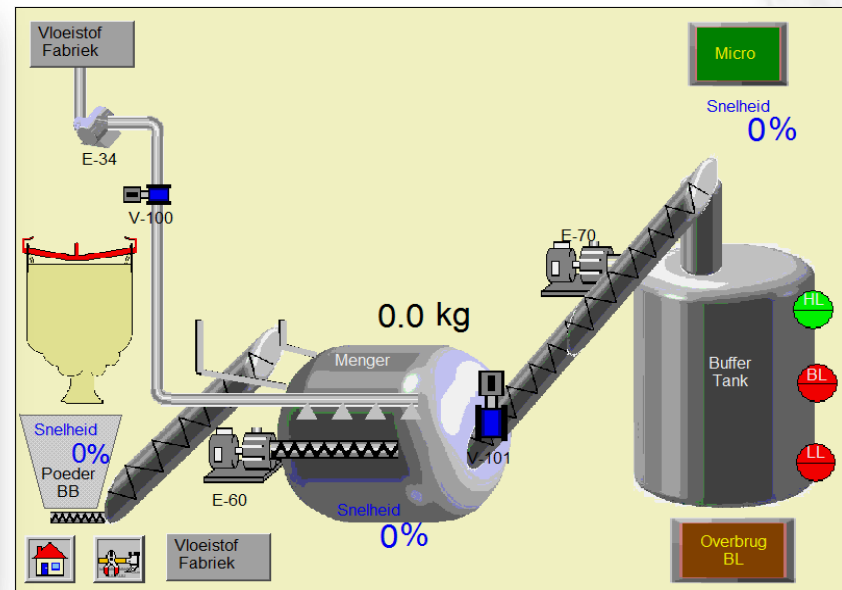
1. simplest form of blending combines 2 or more acids
2. acid and powder mixtures or components are combined
 - powders are added in such small amounts that they are hand dosed a few gram at a time
 - acids are dosed by kilogram
3. acids combined with ammonium-hydroxide NH_3 requires a cooling phase
 - ammonia has a low boiling point of 33°C (-28°F) which requires temperature monitoring within tolerance levels



3 PHASES OF SEMI-COMBINED PROCESSES

Wet : fluids + fluids
 Dry : fluids + solids
 Combination : fluids + solids + Amino Acid

The mixture is pumped into an interim container for storage until further processing.

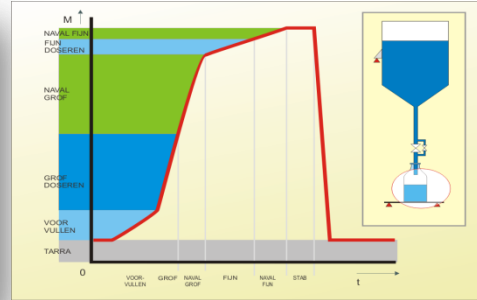


THE DRY PHASE

An acid blend is sprayed over a carrier (typically a grain powder). Both components are dosed on weight into a rotating mixer. The rotating mixer is set up on weight transducers or load cells. After completion, the product is transported by screw conveyor to an interim hopper with volume sensors for storage.

All processes are controlled by PENKO's pc-based BCS (batch control system), including reading and executing almost 1000 recipes as well as allowing for data storage and retrieve.

FILLING/PACKAGING PROCESS



Gross/fine filling is based on weight and done directly from the storage hoppers into 225kg drums, 50kg bags or 10 – 25kg tins.



Key criteria for filling are high speed measuring, accurate dosing, and the flexibility of the system so it can be adapted, expanded, and changed with minimum effort.

Systems in place at Daavision are the SMART Controller generation.

The Perfect Solution!

“Ever since we started building our factory, PENKO has been the partner who not only provided all the weighing equipment, but also the software that forms the heart of our production. During the 8 years of cooperation, PENKO has advised and aided us in expanding, innovating and professionalizing our facility. With the custom-made software PENKO developed for us, we are not only able to run our factory according our own desires, but also in accordance with a number of environmental and quality related laws and legislation.”

Ejal Heijman – Daavision B.V.



PENKO IN ACTION

WHEN WEIGHING COUNTS

