



# Alfa Laval system makes operating costs evaporate

More capacity and big savings in Colombia

Case story

At Industrias del Maiz Corn Products Andina's Cali plant in Colombia, blue-collar workers, managers and engineers alike agree on the importance of the Alfa Laval evaporation system. They say that it's one of the most significant technological – and cost-saving – developments at the plant.

## Meets all the requirements

Javier Navarro, Engineering and Maintenance Manager at the plant, says that the state-of-the-art Alfa Laval technology is important to their current process of increasing capacity: "In terms of design quality, reliability, maintenance and safety – the technology we've employed from Alfa Laval meets our specifications in every way."

## Important savings

The process that converts corn to products such as corn syrup and modified starches starts with corn that is allowed to macerate for 48 hours in tanks containing sulphur diluted in water. The water is subsequently extracted, creating the so-called corn steep liquor (CSL), which is the effluent of the plant. CSL



The AlfaVap evaporation system uses about 40 to 50% less energy than the evaporators and condensers used previously.

contains valuable components such as proteins and carbohydrates, but in low concentrations.

It's at the next stage that Alfa Laval has revolutionized the process with its triple-effect evaporation and condensation system. The corn steep liquor passes through the AlfaVap evaporator, which removes most of the water. In this way, it reduces the volume and leaves a more concentrated liquid, typically 50% solids or more.

The new AlfaCond 600 plate condenser plays an important role: It condenses the vapours from the evaporator at such deep vacuum that the entire evaporation system operates at very gentle

temperatures. This prevents fouling and increases uptime dramatically.

Alfa Laval high-speed centrifuges are also used to separate solids that are suspended in liquid in other process stages at the Cali plant.

## The key benefit: lower operating costs

Navarro says that the installation of the Alfa Laval equipment has brought significant savings on operating costs. The AlfaVap evaporation system uses about 40 to 50% less energy than the evaporators and condensers used previously.

"We reckon the pay-back period is only about two years for this equipment, but there are also other benefits for the

## Fast Facts

### The customer:

#### Industrias del Maiz

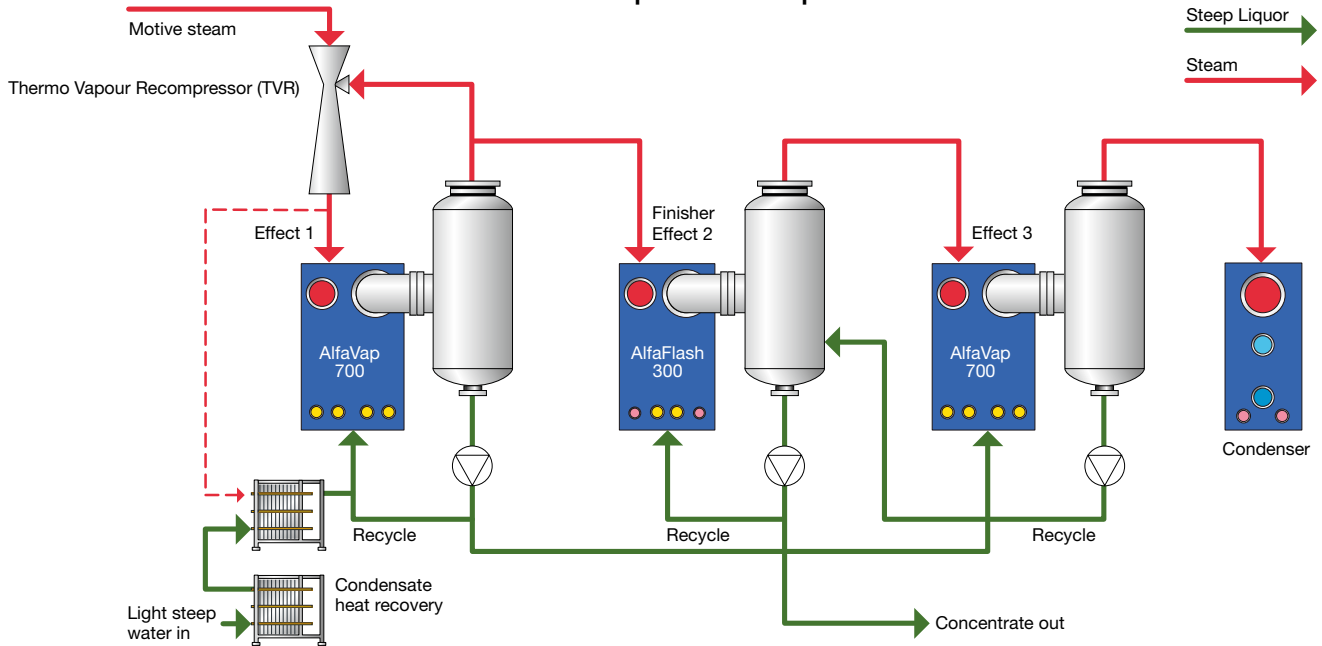
- The premier supplier of corn-refined products in Colombia
- A wholly-owned affiliate of Corn Products International, one of the world's largest producers of corn-derived products

### Industrias del Maiz Corn Products

#### Andina's Cali plant

- The largest in the Andean region of South America
- Converts corn and manioc into almost 850 tonnes daily of a range of sweeteners, starches and oils for everyday products

## Corn Steep Liquor Evaporator with Thermo Vapour Recompressor



“The installation of the Alfa Laval equipment has brought significant savings on operating costs,” says Javier Navarro, Engineering and Maintenance Manager at the plant in Cali.

company,” Navarro says. “In terms of industrial safety, the traditional evaporators operate at 150 psig steam pressure and that carries risks. With the new system, the temperature is lower by about 20 degrees.”

Plus, the new equipment needs only about a third of the space of the older system. And it was easy to install because it’s assembled by stacking together a series of parallel plates that slide on rails. This also means the capacity of each unit can be easily expanded.

“In terms of maintenance, it’s also much quicker,” says Luis Aranda, senior project

engineer at the plant in Cali. We clean this new system only half as often as the old tubular system, and the cleaning requires much less time and chemicals.”

### Positive effect on local economy

The benefits of the Alfa Laval evaporators and condensers reach beyond the Cali plant and into the community around it.

Reducing energy consumption has allowed Industrias del Maiz to contribute to environmental conservation in Colombia. The cost savings have also allowed them to invest in their domestic



“Our uptime has increased significantly,” says Luis Aranda, senior project engineer at the plant in Cali.

supply of raw materials, and (directly or indirectly) create 6000 jobs that benefit the economy and the population in nearby areas.

“Given the potential benefits that it has,” Navarro says, “I would recommend that in the future it (Alfa Laval evaporators and condensers) be considered as an alternative technology that can provide major benefits over the traditional methods.”

### The challenge

Need state-of-the-art evaporation system to help increase capacity at the Cali plant

### The Benefits

- AlfaVap and AlfaCond units use about 40 to 50% less energy than previous units
- Requires only about a third of the space used by the old system
- Energy savings allow the company to contribute to local economy with supply of jobs and raw materials

### About the Solution

The triple-effect evaporation and condensation system includes AlfaVap and AlfaCond. AlfaCond, the world’s first tailor-made plate condenser, was developed specifically for condensing vapours under low pressure or vacuum conditions in evaporation and distillation systems. It has a large vapour inlet collection and two small condensate outlets.

### How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at [www.alfalaval.com](http://www.alfalaval.com).