



Plate technology boosts capacity at sugar refinery

PT Angels Products, Serang, Indonesia

Case story

Indonesia's largest sugar refinery, PT Angels Products, boosted its capacity by installing a sugar evaporation system utilising plate technology from Alfa Laval. It includes three AlfaVap plate evaporators and an AlfaCond condenser. Operation Director James R. Isman says: "I have good experience of Alfa Laval and we now have the most efficient, up-to-date evaporators on the market. We are the first sugar refinery in Indonesia to invest in this technology, and others are following."

Located in Serang on the western side of Java, PT Angels Products imports raw sugar which is refined to produce different grades. The process consists of dissolving the raw sugar in hot water, various purification steps, evaporation of the water, crystallisation and drying. The plant has an output of 1,100 tons of refined sugar per day.

Boosting plant capacity

To increase plant capacity, in 2005 PT Angels installed a complete sugar evaporation system from Alfa Laval between the purification and the crystallisation stages of the process. The system comprises two plate heat exchangers as preheaters, three AlfaVap 600 plate evaporators, an AlfaCond 600 con-



AlfaVap 600 plate evaporator in the sugar evaporation system installed by Alfa Laval at PT Angels Products.

AlfaVap evaporator

The AlfaVap is tailor-made for evaporation, and it is particularly efficient at high concentration and high viscosities.

Features and benefits

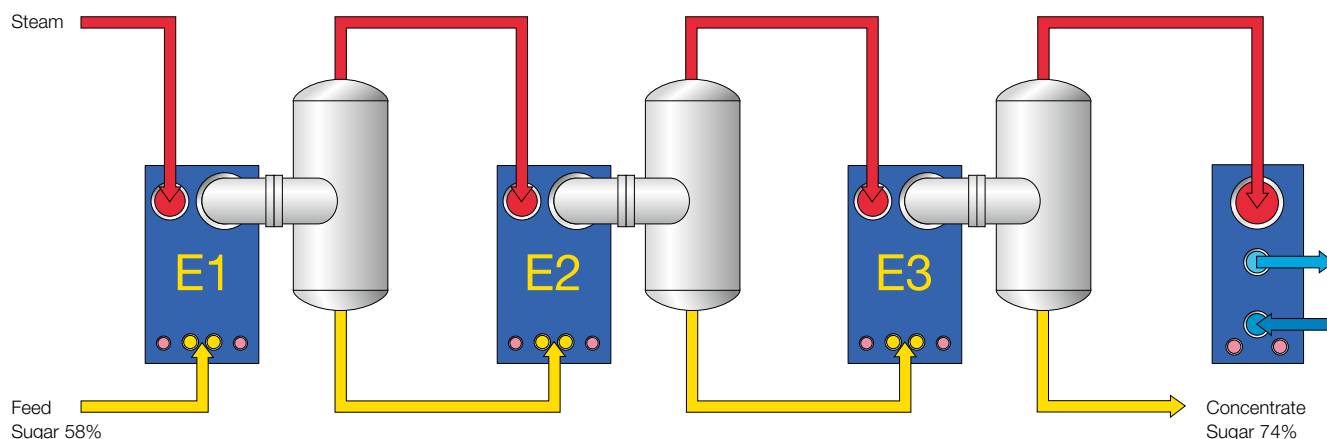
- Compact – low installation cost
- High turbulence – less fouling
- Easy to clean and maintain
- Easy to expand capacity – just add plates

denser, and an additional preheater for the vacuum pans. Separation vessels, pumps, valves, piping, instrumentation, a control system and engineering were included in the scope of supply.

PT Angels Process Manager Mulyawan Hartanto: "The evaporators raise the

sugar concentration from 58% to 74% and the temperature is increased from 70°C to 80°C, which reduces the load on the vacuum pans used in the crystallisation process. Evaporation is handled much more efficiently in an evaporator than in a vacuum pan."

AlfaVap and AlfaCond in Multi Effect Evaporation (MEE) systems



Efficient operation

Mulyawan Hartanto explains that the new system reduced steam consumption in the process by about 25%. “The residence time in the vacuum pans is shorter as well, from three to two hours. The AlfaVap evaporators work efficiently, and it has not been necessary to open them.”

PT Angels is also satisfied with the AlfaCond surface condenser and plans to install five additional AlfaCond units to replace barometric condensers at five vacuum pans. This will further improve the efficiency of the plant since the hot



AlfaCond 600 surface condenser (bottom right) at PT Angels Products.

condensate will be used for melting the raw sugar, thus saving heating of the process water and reducing the melting time.



PT Angels Operation Director, James R. Isman.

Mulyawan Hartanto: “We have been working closely with Alfa Laval in Indonesia and they are always quick to respond to our needs.”

Choice of three technologies

According to Factory Manager Mohammad Sahli, when PT Angels reviewed the options available for handling the evaporation process there were three technologies to choose from, Robert evaporators, falling film evaporators and plate evaporators.

“Robert evaporators are known for their lack of efficiency and they are too large to fit in the plant. Some people argued in favour of the older falling film technology, but plate evaporators require less space, they are lighter, more flexible and easier to maintain. Operation is fully automatic – it takes just one operator to monitor the process.”

PT Angels will continue to invest in Alfa Laval plate technology. Mohammad

Sahli: “There is another capacity increase investment under discussion. If it goes ahead we will choose Alfa Laval again.”

Two more Indonesian sugar refineries have since invested in Alfa Laval plate evaporator systems.



Left to right: Mulyawan Hartanto and Mohammad Sahli from PT Angels, Dwi Siaga from PT Alfa Laval Indonesia.

AlfaCond condenser

The AlfaCond is the first plate condenser in the world specifically designed for low-pressure vapour condensation in all types of industries.

Features and benefits

- Compact – low installation cost
- High turbulence – less fouling on cooling water side
- Easy to clean chemically or mechanically
- Easy to expand capacity – just add plates

Worth noting:

Due to their low investment cost barometric (direct) condensers are often used in the sugar industry. In AlfaCond, an indirect condenser, the condensate and the cooling water never mix, thus eliminating a source of pollution. AlfaCond is a highly cost-efficient alternative to shell and tube technology in these cases.

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.