



## Tackle effluent from your palm oil mill effectively

POMEvap combines the big benefits of Alfa Laval evaporation and separation



# Growing challenges

**Palm oil millers are under considerable commercial pressure.**

**Not only are they faced with soaring worldwide demand while having to curb expenditure and roll back costs to remain competitive. They also have to comply with increasingly stringent environmental protection regulations.**

## **The effluent problem**

For most palm oil milling operations, there are big practical problems associated with dealing with palm oil mill effluent (POME), which has a very high organic content.

Reducing the biochemical oxygen demand (BOD) parameters in any effluent discharged into nature is crucial in order to minimize environmental impacts and to ensure compliance with all relevant legislation.

Many milling operations have invested heavily to tackle this challenge. Many others consider current solutions not reliable enough and simply not worth the investment.

Traditional methods, such as ponding, are short-term solutions that will fill up and overflow – thus requiring even more space-devouring ponds. And they don't resolve the methane issue.

## **The methane menace**

Dealing with effluent isn't the only big practical challenge facing companies whose business is processing palm oil.

In recent years, many countries have made it mandatory to install biogas trapping or methane avoidance facilities in palm oil mills, because releasing methane to the atmosphere contributes to global warming.

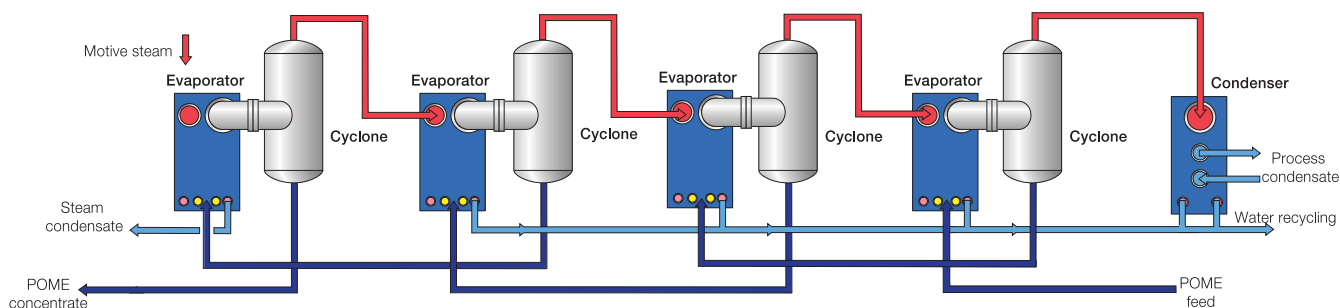
The Malaysian Palm Oil Board, for example, has now made such capabilities a condition for any new mill construction or for allowing existing mills to expand their output.





# The Alfa Laval POMEvap solution

Alfa Laval POMEvap station consisting of four-effect evaporator, condenser and cooling tower



## The POMEvap combination

To help provide operators of palm oil mills with an effective, environmentally sustainable solution to their effluent processing and methane avoidance challenges, Alfa Laval palm oil processing and evaporation experts have developed the POMEvap evaporation solution to deal with the palm oil mill effluent (POME) effectively, economically and responsibly.

The POMEvap evaporation solution combines multiple Alfa Laval specialist technologies, centred around high-efficiency plate heat exchangers to evaporate and condense the waste water into a liquid distillate and a solid concentrate.

### Liquid distillate

The clear, colourless distillate from the evaporation system features a very low BOD of 300–500 ppm – a reduction of about 98% compared with untreated palm oil mill effluent.

Depending on local environmental regulations, this process distillate can be discharged directly via agricultural irrigation, or after either an aeration process or being polished down to any specific BOD effluent standard currently applicable.



A POMEvap setup enables you to do away with land-guzzling traditional anaerobic and aerobic processes, and to achieve big savings by no longer needing to build the expensive ponding systems needed for this. Nor is there any need to invest in expensive specialist equipment for methane capture or desludging, or to pay for costly polymer supplies.

### Solid concentrate

The solid concentrate from the POMEvap evaporator normally contains about 50% dry matter.

After additional processing, this potentially valuable concentrate can be sold as animal feed, compost or fertilizer, or in a range of dried/palletized forms. Such commercially attractive by-products all provide the mill with additional revenue.

### Typical analysis results from palm oil mill

#### Save on space

Using POMEvap technology means you no longer need to allocate large areas of land to traditional anaerobic and/or aerobic ponding systems.

You can bring the palm oil effluent handling indoors, under more protected and carefully controlled conditions, for greater effectiveness as well as greater safety.

The POMEvap system only needs a space about 30m long, 12m wide and 10m high. The compact design also means transport, erection and installation costs are all much lower than with conventional shell-and-tube evaporators.

# POMEvap payoffs

## POMEvap provides multiple benefits

- Cost-effective, sustainable way to deal with palm oil effluent
- Makes it easy to comply with increasingly stringent environmental requirements
- Does away with traditional anaerobic processes and land-guzzling ponds
- Easy to install even in relatively small spaces
- Easy to adapt and scale up to changing operating requirements
- Does away with need for expensive methane capture installations
- Rapid return on investment, aided by new revenue opportunities

### Methane avoidance

Methane avoidance or capturing is mandatory in certain countries. POMEvap is categorised as an environmentally responsible methane avoidance system, and therefore gives you an excellent alternative to traditional methane capturing facilities or expensive biogas plants to protect the environment.

The system enables you to completely do away with traditional anaerobic processes that produce methane. POMEvap is a much cheaper way to ensure compliance with current and future methane avoidance requirements. Your palm oil milling operations can therefore completely avoid the huge investments normally required to build biogas facilities.

### Oil recovery revenues

POMEvap also brings you excellent opportunities for recovering additional palm oil. The system is able to concentrate the effluent from sludge pits by 200–300% so that the built-in decanter centrifuge can recover the free oil.

The quality of the oil recovered at this stage is particularly good because it is sourced before reaching the cooling pond. This oil recovery system generates additional income that normally helps earn back any POMEvap investment within 3–5 years.

### Stoppages no – uptime yes

Fouling is the main risk normally associated with heat exchangers and fibrous liquids. However, the special design of the Alfa Laval heat exchangers make the POMEvap system highly resistant to any fouling or stoppages.

The gaps between the corrugated heat transfer plates are wider and the contact points are fewer, making sure the fibres and particles flow through more easily. The combination of special corrugated plate patterns and high wall shear prevents any fouling, and helps keep your process uptime to the maximum.

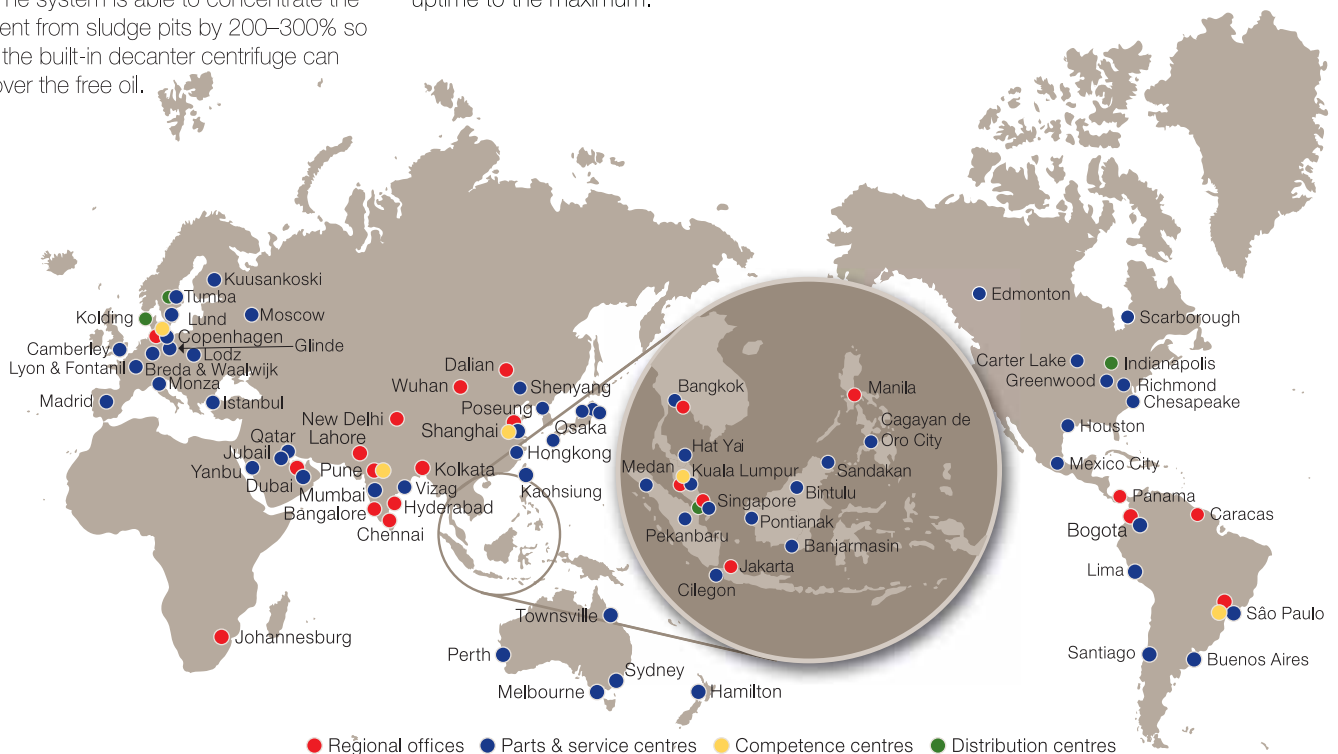
### Easy to operate and maintain

It's also easy for your employees to operate, service and maintain all the elements in a POMEvap setup. Everything is kept straightforward, sturdy and reliable – ideal for everyone, but particularly important if your milling operation is in a remote area.

### Practical help – close at hand

Alfa Laval has more than 50 years' practical experience and expertise helping customers improve palm oil treatment processes and tackle the challenges that palm oil producers face.

Our unique combination of global reach and local presence means we can maximize the uptime, performance and operating efficiency of your Alfa Laval equipment throughout its service life.



Wherever you are, Alfa Laval's palm oil competence centres, sales offices and service centres are never far away.



# Rethinking palm oil processing

## **Big challenges need new answers**

Palm oil mill operating costs are constantly on the increase. So, too, is worldwide legislative pressure focused on limiting greenhouse emissions. That's why many operators want to progress to financially viable and environmentally responsible alternatives to traditional processing setups. Other industries using similar processing technologies already use advanced evaporation technology to help tackle their effluent problems. This makes good sense from both sustainability and business perspectives, by yielding additional revenue as well as helping ensure a cleaner environment. The Alfa Laval POMEvap system now brings these big technical and commercial opportunities to palm oil processors, too.



### **Alfa Laval in brief**

Alfa Laval is a leading global provider of specialized products and engineered solutions.

Our equipment, systems and services are dedicated to helping customers optimize the performance of their processes. Time and time again.

We help our customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuffs, starch and pharmaceuticals.

Our worldwide organization works closely with customers in almost 100 countries to help them stay ahead.

### **How to contact Alfa Laval**

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

