

ASIA PALM OIL



PALM OIL INDUSTRY AND TECHNOLOGY NEWS

Malaysia Expects to Benefit from Use of Drones in Palm Oil Industry within 3 Years

Traceability Essential to Ensuring Sustainable Palm Oil Production at Scale

A Year of Two Halves for Palm Oil Sector



📍 YKL Group of Companies, Malaysia



Cover Story

Solidaridad:

Leading the Charge to Sustainability and Climate Change in Indonesia

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Happy New Year 2022! It has been almost two years since the pandemic started and we have seen lots of events going on around the world. From the return of inflation to extreme climate events, most countries have faced major turmoil from the impact of the pandemic.

On 24th November 2021, the SARS-CoV-2 Omicron variant was first reported in South Africa. The variant was deemed strange as it contains 45 mutations which some of it are resistant to vaccines. Omicron which has been identified in more than 110 countries has surged faster than any other variants and caused a rise in the new cases.

Due to unusual weather and other factors, Malaysia was faced with severe flash floods that affected several states in December last year. The death toll recorded was up to 54. The worst flood has also seen various NGOs, volunteers, citizens, and even immigrants come together to help those who were affected. Malaysian United Democratic Alliance (MUDA) which was just officially registered managed to collect RM1 million for flood victims in less than 100 hours. As of now, MUDA's donation drive has exceeded RM2 million for the flood relief mission in states affected.


Though some areas affected by the flood have subsided together with ongoing help from the volunteers, the damages in terms of houses, households, and cars suffered by the victims are large in numbers. Let's donate to trustable NGOs such as Mercy Malaysia and Kembara Kitchen to help flood victims to rebuild their lives.




Susan Tricia
Editor

On behalf of the editorial team, thank you for your continuous support in Asia Palm Oil Magazine. Stay in touch with us on www.asia-palmoil.com and follow us on Facebook and LinkedIn for more updates. In this tough time, let's remember those who have helped us. Stay safe and don't forget to get your booster shot.

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CONTENTS

MAGAZINE



> ORGANIZATION NEWS

- 8 - Private Sector Best Placed to Resolve Labour Issues, Says MPOC
- 11 - Willy Shee Replaces Lew Syn Pau as Lead Independent Director at Golden Agri-Resources

> INDUSTRY NEWS

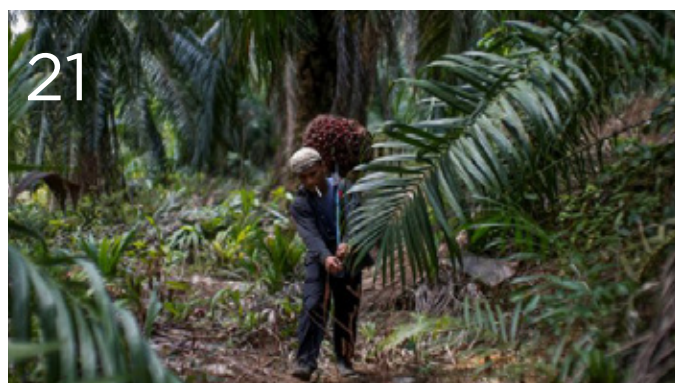
- 12 - Intelligent' Cutters for Trees to Ease Malaysia Palm Oil Labor Crunch
- 14 - Malaysia Expects to Benefit from Use of Drones in Palm Oil Industry within 3 Years
- 16 - Ministry Teams Up With Palm Oil Think Tank to Present Thorough Case to EU
- 18 - A year of two halves for palm oil sector
- 22 - Sabah Has No Plans to Reduce Tax on Crude Palm Oil, Says Hajiji
- 23 - Palm Oil Production Expected to Return In Earnest Next Year: OCBC
- 24 - Sarawak Palm Oil ESG's Ratings Is Medium, Credentials Appear to Be Relatively Good, Says Maybank IB

> INTERNATIONAL NEWS

- 26 - Four Countries Set To Join CPOPC as Full Members in May, Says Exec Director
- 38 - Fresh Calls for Oil Palm Moratorium Renewal Mount after Jobs Law Ruling

> PLANTERS CORNER

- 30 - Oil Palm Plantations: Malaysia Awaits Consideration from Source Countries for Foreign Workers



32



> GREEN SOLUTIONS

32 - Traceability Essential to Ensuring Sustainable Palm Oil Production at Scale

> REFINERY NEWS

- 34 - Indonesia's Trade Minister Urged to Maintain Cooking Oil Price Stability
- 36 - MPOB Develops Environmentally Friendly Palm-Based Polyol
- 38 - Union Govt Cuts Import Duty on Refined Palm Oil till March 2022

> TECHNOLOGY AND PRODUCT NEWS

- 40 - Surfactant-Based Technology Takes Environmental/Industrial Cleanup to Another Level
- 44 - A Limitless Future
- 48 - Recover More Oil, Generate Higher Revenue
- 52 - JJ-Lurgi Steps into the Future with the Power of Augmented Reality

> SPECIAL INSIGHT

56 - Promoting Malaysian Palm Oil to the World

> IN THE HOT SEAT

62 - Selontra: Rodent Control & BASF's Effort in Minimalizing Environmental Impact

63



65

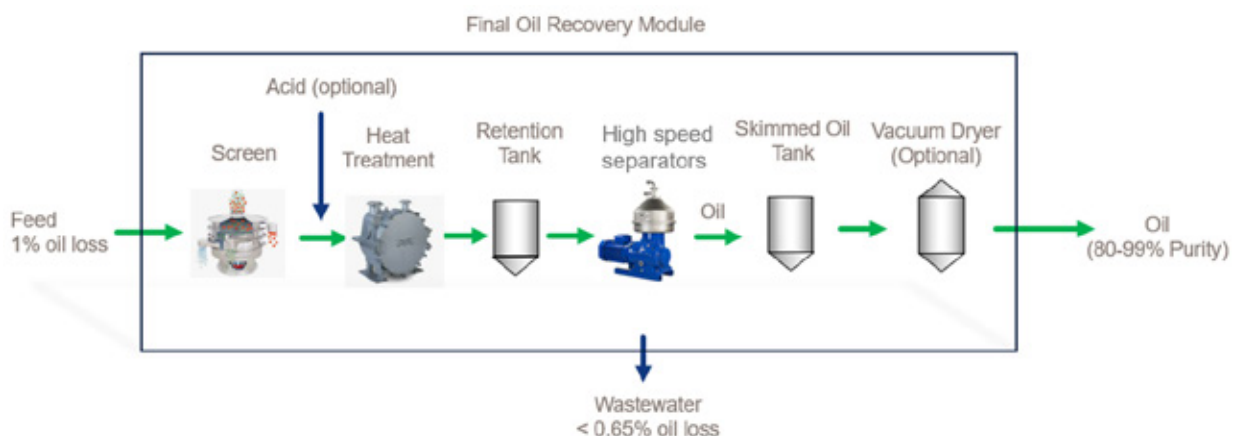


> COVER STORY

68 - Solidaridad: Leading the Charge to Sustainability and Climate Change in Indonesia

Recover More Oil, Generate Higher Revenue

Improve profitability in your palm oil mill with Alfa Laval's latest technology



Oil loss in the effluent is one of the challenges that most palm oil mills are facing. The average oil loss is typically high between 0.8% and 1.5%. This creates an oil recovery opportunity to improve the revenue of the miller particularly when crude palm oil is currently at a record high level.

Other challenges include the low quality and value of recovered sludge oil from the pond, the lack of a final oil recovery mechanism in the market to prevent oil spillage, and the fluctuation of the efficiency of oil recovery in the final de-oiling tank.

Alfa Laval's latest technology – Final Oil Recovery Module – is every palm oil mill's answer to recovering more oil from their mills and increasing profitability. This system uses heat transfer and separation technology to improve your yield and

profitability by reducing the total oil loss in your palm oil mill from an average of 1.0% to 0.5-0.6%.

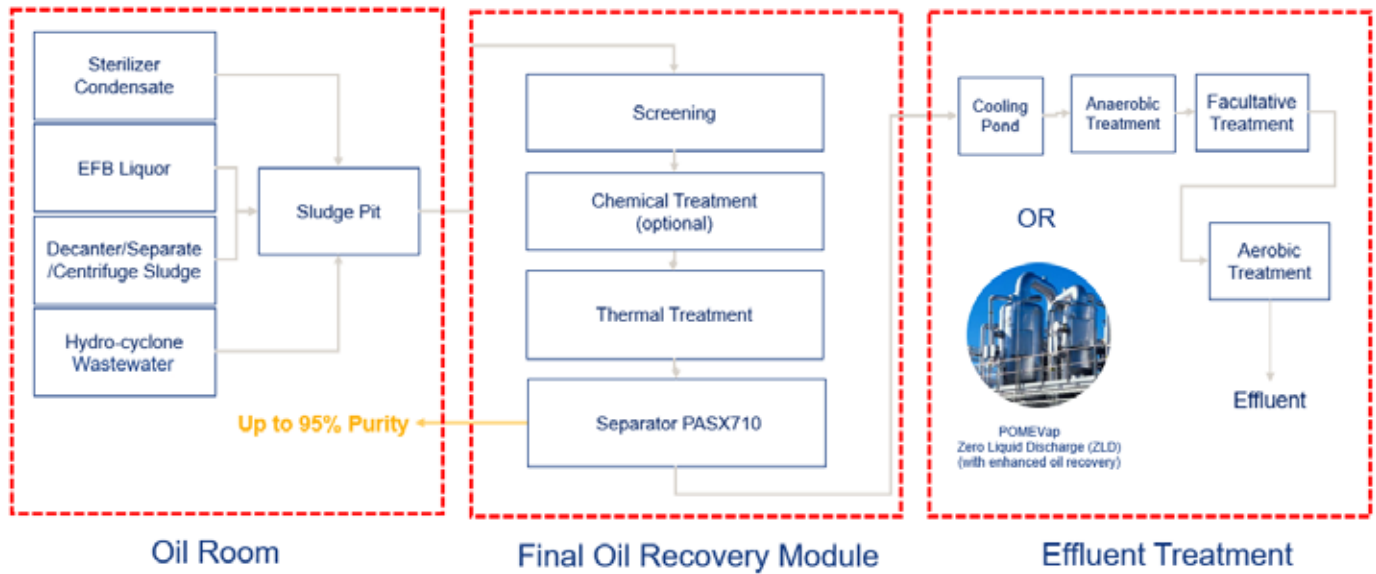
Potential of oil recovery in palm oil mills

Table 1 above shows the total oil loss from a palm oil mill, which is 1.77% (on FFB). There are four areas where oil recovery is possible, namely 'Oil absorbed on the surface of EFB' (0.45%), 'Condensate from sterilization' (0.10%), 'Sludge from separator' (0.45%), and 'Oil spillages from leaking pipes or washing from tanks' (0.10%). When we add all these together, we are looking at possibly up to 1.0% (on FFB) of potential oil recovery!

Key technologies that enable efficient oil recovery

To recover oil, this system uses heat treatment to heat the sludge to enhance the breaking of the emulsion and the high G-force will effectively recover small droplets of oil.

The complete process of the Final Oil Recovery Module



The block diagram above shows the process in a typical oil mill, where the block on the left is an oil room that houses the sterilizer condensate, EFB liquor, decanter/separator/sludge centrifuge, hydro-cyclone wastewater, and a sludge pit. From here, the wastewater will normally go straight into a cooling pond in the right block. Alfa Laval's Final Oil Recovery Module is an additional process that will be set up between these two blocks.

The diagram below shows the setup of a Final Oil Recovery Module. The feed, which is typically 1% oil loss will enter a vibrating screen, where it will be cleaned to ensure there are no impurities that block the equipment downstream. After that, it will be heated up to 90 degrees via an Alfa Laval heat exchanger to achieve a good separation and recovery, as well as to break up the emulsion.

After screening and heating, the sludge will go into a retention tank, which acts as a buffer for the separator, followed by the high-speed separator, which will separate or recover the oil from the sludge and wastewater and improve oil recovery from 1.0% oil loss to around 0.5 – 0.65%. The recovered oil will then be stored in a Skimmed Oil Tank and can be further treated with a Vacuum Dryer (optional). In the end, we will have oil with a purity of up to 99%.

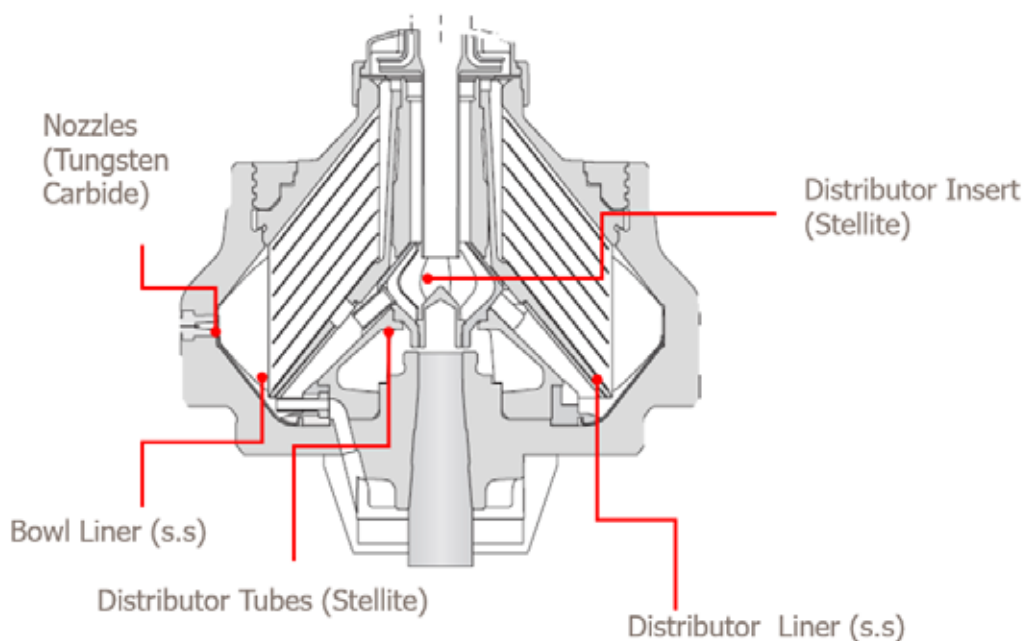
The recovered oil will then go back to the mill. The discharged wastewater, which is cleaner now, will go into a cooling pond, followed by anaerobic treatment, and other palm oil mill effluent treatments, namely facultative treatment and aerobic treatment. You can also choose to do an evaporator – POMEVap, which will further enhance a mill's footprint by going for Zero Liquid Discharge.

Table 1 Estimation of oil losses in palm oil mills

| Source | Oil loss (% on FFB) |
|---------------------------------------------|---------------------|
| Fruit trapped in empty fruit bunches (EFB) | 0.02 |
| Unstripped bunches (USB) | 0.05 |
| Oil absorbed on the surface of EFB | 0.45 |
| Condensate from sterilisation | 0.10 |
| Nut surface after pressing | 0.05 |
| Pressed fibre after pressing | 0.55 |
| Sludge from separator | 0.45 |
| General oil spillages or washing from tanks | 0.10 |
| Total oil losses | 1.77 |

Total Oil Recovery Potential
= ~ 1.0% to fresh fruit bunches (FFB)

• Source: International Journal of Biomass & Renewables, 9(1) : 10 - 24, 2020



Efficient oil separation with specially designed SX710+

The SX710+ is our specially designed upgraded separator to enable better oil recovery. It has a higher G-force to improve the circling velocity of the oil to recover it, and a variable-frequency drive (VFD) to run the separator to reduce power consumption. In addition, it also has a vibration monitoring system to keep the machine in good working condition and to be more long-lasting.

The SX710+ is designed to include wear and tear protection to handle erosion. Its distributor insert and distributor tubes are made from a very hard wear-resistant material called stellite, while the distributor liner is made from a thick chrome stainless steel, measuring about 5 mm, which is strong and durable.

The bowl liner is also made from chrome stainless steel to increase its wear protection. And finally, its nozzles, where sludge is discharged, are made from tungsten carbide, to enhance its durability and the performance of the machine.

The separator can be set up in a skid unit and a containerized execution so that it's easy to install and move around. There will be typically two containers – one container with the separator and another with the tanks, such as the heat tank, along with the control panel inside the skid, which will control the operations of the system.

The skid will also consist of the control system, which controls the separators, including the BFD and all the pumps. Our skid is modularised into three set-ups – ALFORM-45 (45m³/hour), ALFORM-30 (30m³/hour), and ALFORM-15 (15m³/hour).

Improve performance and boost profitability

After carrying out a few trials of this system in a mill in Sabah, we have successfully recovered oil loss down to 0.48% (on the sample) with a respective improved oil extraction rate (OER) of 0.31%.

An average OER improvement of 0.3% would translate to a 3.6 tonne of additional CPO per day for a 60-tonne FFB per hour mill. If we assume that the mill operates 20 hours per day and the price of oil is USD850 per tonne, this system will typically help the mill to recover up to USD918,000 per year! This amount is more than enough to pay for the investment in the ALFORM module. And based on this calculation, the payback is typically 1-2 years, including maintenance cost.

In brief, this system is simple and efficient, and it's plug and play, which means it has a small footprint, and is easy to move around and maintain. It can recover oil at high purity, and its oil recovery is quantifiable, with a flowmeter to measure the amount of oil that has been recovered every day. It also offers a fast payback of less than a year, with a maximum of one year. And last but not least, this Final Oil Recovery Module will act as a final gatekeeper to prevent any oil from going down to the effluent pond.

You can visit our websites, email or call us today to find out more!

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Balancing food safety, economy and performance

Innovative solutions to reduce 3-MCPDE and GE from palm oil processes

Alfa Laval's innovative solutions to mitigate 3-MCPDE and GE help palm oil producers to adapt to changing needs and future regulations - while ensuring operating reliability, flexibility and maximum uptime. Making the world better, every day. It's all about Advancing better™.

Advancing better. With Alfa Laval.

