

ASIA PALMOIL



PALM OIL INDUSTRY AND TECHNOLOGY NEWS

AI Technology Can Be Game Changer for Palm Oil Industry

India to Get Technical Help from Malaysia to Increase Its Palm Oil Plantation Footprints

MPOB, UPSI seal MoA to Share Expertise in The Study of Lipase Enzyme Expression and Characterization from Palm Trees



Image Source: MORI, Jyen Herr Enterprise Co., Ltd.

Cover Story

Ensuring the Sustainability of Oil Yield through HAUS' Decanter Centrifuge

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It's the second issue of 2022! For the past few months we have seen few events happening around the world, with most significant one, the Russia's war against Ukraine. The war has menacing global grain production and the supply of edible oils. This has caused basic commodities price to skyrocket.

Indonesia faces an increase in cooking oil price over the past few months and has required companies to sell 30% of their planned export volume of palm oil products. This is to ensure local supply under a domestic market obligation (DMO). The global food crisis sparked by the Russia's invasion of Ukraine has caused Indonesia to tighten curbs on palm oil exports.

This war has also caused the Black Sea Asian and European refiners raised their palm oil purchases to replace sunoil and has also lifted palm oil to irrational price level. Most of the additional demand for palm oil is fulfilled by Malaysia and the stocks are depleting fast because of the surge in demand.

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Susan Tricia
Editor

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Ensuring the Sustainability of Oil Yield through HAUS' Decanter Centrifuge

Alfa Laval Boosts Refining Technology with Innovative Solutions



Daniel Ng

Daniel Ng is Alfa Laval Malaysia Director of Business Development, and he has been with Alfa Laval since 1994. He has accumulated vast industry experience in food and water applications as well as engineering and general management. He started his career in the edible oil industry and has worked closely in this field for almost three decades. He has deep involvement in the development of various edible oil processes including coming up with many innovative solutions for the edible oil industry. His wide application knowledge and strong process know-how enable him to bring valuable insights to the industry.



Alfa Laval CPO washing plant that is space-saving and can be easily mobilized

Overcome challenges facing the palm oil industry with Alfa Laval’s integrated oil complex concept.

When it comes to providing innovative and sustainable solutions in the areas of heat transfer, separation, and fluid handling, Alfa Laval needs no introduction. Founded in 1883 in Sweden, Alfa Laval is a leading global provider of many first-rate products and solutions. Today, it continues to help various key industries around the world to enhance their productivity, sustainability, and competitiveness.

Alfa Laval expanded into the Southeast Asian market in 1969 with the establishment of its first office in Kuala Lumpur. Throughout its 53-year history in this region, Alfa Laval has accomplished many milestones and achievements through its wide range of heat transfer, separation, and flow equipment, in the food industry including edible oil refining technology.

Edible oil producers globally rely on Alfa Laval’s know-how to remove impurities and optimize refining processes, which not only help increase quality and maximize yield but also ensure food safety. We speak to Alfa Laval Malaysia Director of Business Development, Daniel Ng, to find out more about Alfa Laval’s refining technology and its innovative solutions for mills and refineries.

1. What is the history behind Alfa Laval’s refining technology?

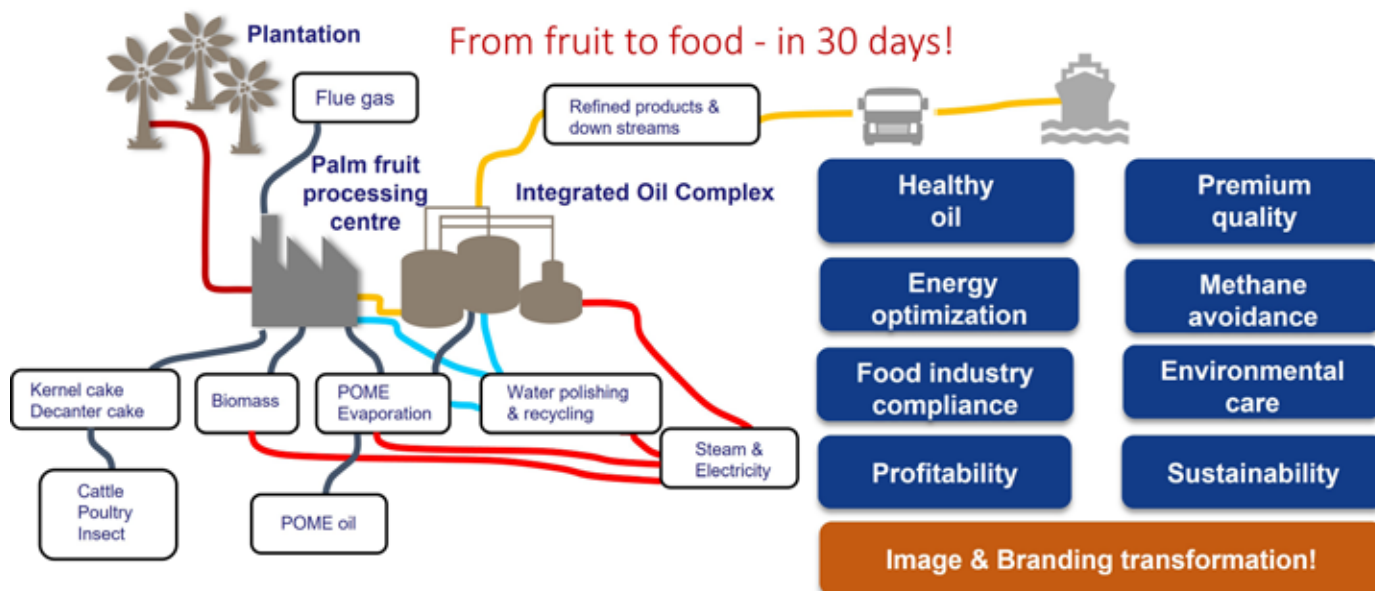
In the early years of the palm oil refining industry, Alfa Laval was strong in chemical refining and wet fractionation (Lipofrac) processes with high-speed separation technology,

which provided consistent chemically refined oil quality. Manufacturers such as Lam Soon, United Plantations, Keck Seng, Southern Group, and Muslim Mas were among the early adopters of the technology. In the 70s and 80s, most refiners were also using the tray deodorising technique, which was high in steam and energy consumption.

Alfa Laval was the first to establish the packed column technology for palm oil physical refining in the mid-80s. And almost at the same time, membrane filter press dry fractionation with higher olein yield was also introduced to the industry to replace vacuum drum filters. As the yield began to match the wet fractionation, more refiners started to adopt the dry fractionation process as the norm leading to the decline in wet fractionation.



Alfa Laval CPO washing solutions also have a proven track record of chloride removal



Achieving 1:1:1 – Model through integrated palm oil complex

2. How does Alfa Laval help palm oil mills and refineries in improving their whole process chain?

Throughout the years, Alfa Laval has put in place various separators and decanters with higher capacity and better efficiency; and coupled with our process knowledge in milling, more oil can be recovered from the whole process, including oil recovery from many side streams to be used for technical applications such as renewable biofuels. Many projects in South East Asian countries have adopted our innovative solutions.

Nowadays, refineries have higher expectations in terms of oil quality and the need to reduce the heat-induced process contaminants which are considered carcinogenic. Alfa Laval provides new solutions like PalmFlex refining technology that reduces these process contaminants like 3-MCPDE and glycidyl esters (GE) in a one-step refining process, to the levels that are suitable for the global export market.

Alfa Laval also helps millers to recover oil from many side streams with separators and decanters. The collected low-grade oils together with used cooking oils are pretreated for use as feedstock for hydrotreated vegetable oil (also known as renewable diesel).

3. In your opinion, what are some of the challenges that the palm oil refinery industry is facing currently?

In the 80s, refinery capacity began to increase to the point where crude palm oil would need multiple oil mills to supply to a single refinery. While mills have grown substantially from a production capacity of 20 tonnes of FFB/hr to 120 tonnes of FFB/hr, refineries have grown exponentially from a mere 100

tonnes per day to 5000 tonnes per day, leading to what we called the 20:1 entanglement, which means on average, 20 mills are required to supply to 1 refinery.

In recent years, the palm oil industry is facing various challenges, particularly the complexity that comes with the 20:1 entanglement, due to the stringent demand for sustainability, traceability, and healthier and higher quality oil. Millers and refiners are often unable to agree on how to collectively overcome these challenges. Other major issues include the 3-MCPDE and GE process contaminants, which need to be reduced to an acceptable level adopted by the EU regulation. And recently, there is further demand by some international buyers to reduce mineral oil hydrocarbons and persistent organic pollutants to their prescribed levels. At the same time, consumers are also demanding food manufacturers to source from sustainable and traceable supply chains only.

From the environmental aspect, the Department of Environment (DOE), Malaysia has imposed stringent legislation and enforcement regarding methane, wastewater, and flue gas discharges. And on top of that, both mills and refineries also have to ensure compliance with legislation such as the RSPO (Roundtable on Sustainable Palm Oil), MSPO (Malaysian Sustainable Palm Oil), DOSH (Department of Occupational Safety and Health), and DOE (Department of Environment) requirements.

4. How these challenges can be addressed or mitigated?

To overcome these challenges, a few global food manufacturers have started to implement the 1:1:1 model in their supply chain, such as the example made by US confectionery and food



Alfa Laval POMEvap is compact, versatile and has a small footprint compared to the conventional ponding system

product giant Mars (in a press announcement in October 2020). The model simplifies their supply chain with full traceability by having oil palm grown on one plantation, and the oil processed by one mill and one refinery before reaching the food manufacturer.

Alfa Laval has carried out an in-depth study on the implication of the 20:1 entanglement and the 1:1:1 model toward the future direction of the palm oil industry, and we have come up with an innovative integrated oil complex concept. This is the concept that we want to introduce to the palm oil industry.

Although this is not an entirely new concept, it provides newly adopted innovative solutions that are different from those implemented in the 70s. This concept focuses on nine key areas, namely healthy oil, premium quality, energy optimization, methane avoidance, environmental care, food industry compliance, profitability, sustainability, and image and branding transformation. By that, it is possible to achieve the path from fruit to food within 3 days again!



Alfa Laval POMEvap is compact, versatile and has a small footprint compared to the conventional ponding system

5. As we are moving towards the endemic phase of the pandemic, what is Alfa Laval's plan in this region post-COVID-19?

I think the pandemic doesn't affect the food industry too much compared to other industries as food is one of the necessities. I believe once normality returns to the market and consumer demand pick up, investments will return as we can see right now. For Alfa Laval, we will continue to pursue our innovations. Our Research and Development will come up with many more innovative solutions to meet the demand and expectations of both the palm oil and food industries.

It is no doubt that palm oil is very important in feeding the world due to its highest productivity per land utilization unmatched by any other type. In the coming years or so, the palm oil industry must transform to become among the most environmental-friendly, sustainable, healthy, and responsible industries respected by consumers throughout the world. It is the duty of the industry player and all stakeholders to work towards this vision and by that transform its image and branding as a responsible global industry.

To find out more about Alfa Laval's innovative solutions, visit our website, email, or call us today!

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