

Trong Palm Oil Mill Shares CPO Washing Trial Experience to Remove 3-MCPDE



En. Mahathair, mill manager of Trong Palm Oil Mill with Alfa Laval CPO Washing Plant. The system is installed in the oil room where the purifier is.

Since 3-Monochloropropane-1, 2-diol esters or in short 3-MCPDE came into the limelight as a food safety concern several years ago, the industry has been trying to address it via different methods.

One means of mitigation is to control the precursor – chloride, which is present in crude palm oil (CPO). CPO washing with high-speed separators has proven to be an effective way to reduce chloride and this has been performed in various trials at several local palm oil mills under the Malaysian Palm Oil Board (MPOB) initiative.

As part of its commitment to sustainability, Boustead Plantations Berhad, an established upstream oil palm plantation company in Malaysia has participated in the industrial trial with MPOB using Alfa Laval CPO washing technology to find out just how effectively can chloride be removed using the system. MPOB's benchmark was for participating mills to remove at least 80% of total chloride, a level where the corresponding 3-MCPDE level can reasonably meet EU food safety standards.

MPOB is in the process of proposing a total chloride of 2ppm as a guideline for the local milling industry. Based on prior research conducted, the 2ppm total chloride is expected to correspond to a post-refining 3-MCPDE value of less than 2.5ppm, a limit stated in the EU latest draft regulation on 3-MCPDE for CPO.

During the 25th MPOB Transfer of Technology seminar which recently took place on the 9th July 2019, Trong Palm Oil Mill mill manager, En Mahathair bin Daud shared his experience in tackling issues with 3-MCPDE.

The Alfa Laval CPO Washing Plant has been up and running in Trong Palm Oil Mill (60T FFB/hr) since end of August 2018. The overall result showed that the average reading of feed oil chloride level from the pure oil tank was 7.392ppm, and after emerging from the washing line, the average total chloride level read at 1.252ppm. This is a successful reduction of 83.06%, 3.06% higher than the targeted 80% originally set out by MPOB.



Boustead Plantations Berhad owns, co-owns or leases a total of 41 oil palm plantation estates and 10 palm oil mills in Malaysia. The company also operates a total of 10 palm oil mills.

Trial Period	Feed Oil from Pure Oil Tank	Outlet Oil after CPO Washing Line	Chloride Reduction
Various trials from Aug 2018 – July 2019	7.392ppm total chloride (average)	1.252ppm total chloride (average)	83.06%

Table 1: Results showing the average chloride levels in oil before and after the Alfa Laval CPO Washing plant.

When asked whether the Alfa Laval CPO Washing Plant met MPOB's requirement, En Mahathair shares, "Based on our trial experience, the result of 80% chloride reduction was achievable but it also depends on the quality of CPO feed to meet the requirement of less than 2ppm. To meet the target, we need to ensure that the chloride in feed CPO is below 10ppm." He adds, "Chloride needs to be removed as much as possible in order to secure food safety for the mass. The presence of 3-MCPDE in palm oil could become a bigger headache for the industry if it is not addressed effectively."

Currently Alfa Laval is actively working with many other palm oil millers from Sarawak, Peninsula Northern, Central and Southern regions to help the industry establish a realistic total chloride reduction level.

The results obtained country-wide would be a helpful representative of how the industry average will look like, but most importantly, data has shown that total chloride reduction through CPO washing to meet stringent food safety standards is highly achievable.

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Alfa Laval is a 136-year old company from Sweden, specialized in the areas of heat transfer, separation, and fluid handling. This year, Alfa Laval Malaysia celebrates 50 years of palm oil innovation in Malaysia as they have for the last five decades provided the technologies, experience and engineering capabilities that enable players in the palm and vegetable oil industry to operate their key processes at maximum efficiency with best product yield, and minimum environmental impact.