

Palm Oil Industrial Waste – Moving Toward Zero Waste Discharge

PROJECT MANAGEMENT TECHNICAL DIVISION

reported by



Ir. Dr Nor Azhar bin Mohd Arif

The Project Management Technical Division (PMTD) of The Institution of Engineers Malaysia (IEM) organised a talk on “Palm Oil Industrial Waste – Moving Toward Zero Waste Discharge” on 14 January, 2017, at Wisma IEM, Petaling Jaya.

The session was chaired by Dr Teow Yeit Haan and the speaker was Ir. Dr Nor Azhar Mohd Arif. Both are committee members of PMTD. A total of 42 participants attended the talk.

First, Dr Azhar Arif described the current areas of focus in the palm oil industry towards achieving Zero Waste Discharge: Eliminating black smoke emission, the carbon capture technology, the waste resources, the wastewater treatment and the wastewater recycle and reuse technologies.

He said it was important for the public to be aware of the problems that the industry had caused to the environment and of the efforts that the relevant parties were taking to tackle the issue.

The common impacts on the environment are emission of Green House Gases (GHG), the smell and visual disturbances, pollution of river water and the huge carbon footprint for the wastewater treatment process. He said that industrial competitors, especially those in western countries, were using these issues to criticise palm oil industry practices and to treat palm oil products as sub-standard products despite scientifically proven benefits and advantages.

Dr Azhar then focused on the available technologies for Palm Oil Mill Effluent (POME) treatment in the efforts to achieve Zero Waste Discharge. He talked about the pre-treatment system, where excess oil in the effluent is recovered in an oil and water separator tank, followed by the equalisation and dosing tanks. Then the POME is sent to digesters instead of ponding systems for biological treatment and this significantly reduces the carbon footprint. Through necessary components and systems, the digesters are designed to capture GHG, specifically methane and process it into biogas which is further processed and converted into electricity by means of a bio-gas engine. The electricity produced is used to power up the POME treatment plant and any



Dr Teow chairing the session



Dr Azhar delivering his talk



The environmental issues resulted from the Palm Oil industries in Malaysia must be seriously minimized and Zero Waste Discharge is the way to go

excess can be channelled to the oil mill. Sludge from the biological process can be returned to the plantation for use as fertiliser.

At this point, the remaining wastewater already meets the BOD₂₀ standard, which is the regulatory requirement for discharge. The water can be further treated using membrane separation technique into boiler grade water for reuse at the mill.

In addition, the Hydraulic Retention Time (HRT) of the whole treatment process takes only about 2 weeks while the HRT of conventional ponding systems typically requires 3-4 months, depending on the capacity of the mill.

Dr Azhar concluded his talk by highlighting the following:

1. Advantages of the treatment system compared to conventional techniques.
2. Options of partial and complete solution for Zero Waste Discharge using the presented technologies.
3. Several project references.

He then answered several questions from the floor before Dr Teow presented him with a token of appreciation. ■