

## Those Little Dirty Things Called Dust

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Dust, isn't it an irritation to everybody? We all know the feeling of dust below the collar, or between our teeth, not to mention the red eyes, sneezing and coughing. Yes, our bodies do not like dust, hence, the various responses. During commissioning of a dust collector in a palm oil mill, the mill manager complained to the project manager: "Your system not working lah!, last time, it went up the chimney, now its all over the place!" We always joke about this incident, because the purpose of the dust collector is to take out the dust, and it was doing exactly that - very efficiently. However, there was a lesson in it for us: air pollution management only ends when the collected dust is contained and manageable.

Nettling as it may be, the dust is part and parcel of any palm oil mill. It comes from the boiler fuel and even though the amount of ash per calorific value is higher than typical wood and sugar bagasse, it is still much less than paddy husk or high-ash coal. (Coal has different ash contents, depending on the source.) There are a few steps to make our dust problem less cumbersome.

First of all, don't waste so much fuel. Even though you may have an old boiler, nothing prevents you from investing in a proper boiler control system, at least controlling the fuel feed automatically, based on the

steam pressure, the forced draft (FD) and secondary air (SA) based on the fuel feed and the Induce Draft according to the furnace pressure. Not only will you be having less of unburnt pieces flying around, but reduce that other thorn in the flesh - dark smoke emissions. Fly-ash by itself is much easier to handle than a mixture between unburnts, fly-ash and soot.

Secondly, invest in a proper dust collector. Modern axial flow vortex tube dust collectors (made in Malaysia, reliable and robust) are able to reduce the emission by more than 90%, making sure dust does not exceed emission limits and are not going to fall out in the surrounding areas. Very importantly, get your supplier to guarantee the dust collection efficiency and verify the latter through a third party using the applicable standards (MS1596:2003 and MS1723:2003).

Thirdly, service and maintain your dust collector as what you are doing with that nice car you are driving: on time and without fail. We all know the escalating cost payable upon major breakdowns because servicing was not done as required. (I know, sometimes we feel those service stations are taking advantage). Well, usually you will be able to maintain your filter in-house. If it is too complicated to maintain in-house, it may not be suitable for a palm oil mill.

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The fourth step is to monitor your dust collector and dust handling system. The Department of Environment has recently started to require “Performance Monitoring” for all dust collectors. This simply means that you log all the parameters that may indicate that your dust collector has a problem. This includes the amount of dust collected, the pressure drop across the filter, *etc.* Modern dust collectors are supplied with more comprehensive monitoring that will show the operator whether the hoppers are blocked or leaks are present over the discharge valve.

Lastly, manage the collected fly-ash by wetting it and storing it in an enclosed place

until it is sent away for disposal in landfills or by other methods. By the way, fly-ash can be used to prolong the life of concrete, so if you are burning efficiently and having only fly-ash, this may be another by-product with selling potential to complement your existing income.

We may summarize this into five words: efficient, effective, maintained, reliable and clean. Just five steps in getting rid of that nuisance we get when we burn some of the waste from our beloved oil palm fruits. Not only will we be happier, but we will also ensure a better environment for our workers, our neighbours and our children, the hope of tomorrow. ■