



STRATCOMM Bulletin

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Incinerators – the way forward in waste management

More mini incinerators should be set up in the country as it makes a good fit where land is scarce and can be used for other developments

HISTORICALLY, using landfill sites has been the most common method to dispose of garbage, until land started to become scarce, resulting in the search for other means that were not only sustainable but also minimised pollution.

Some countries then began using incinerators and many wondered, could this high-heated machinery be the answer to the problem of insufficient land?

In Malaysia, there are two known mini incinerators that are in operation. Two of them, one in Pangkor Island and the other in Cameron Highlands, are run by Alam Flora Environmental Solutions Sdn Bhd (AFES), a wholly-owned subsidiary of Alam Flora Sdn Bhd, under Matakoff Corp Bhd.

AFES operates the two incinerators with great success.

AFES Waste Management Facilities plant manager Mohd Halim Ab Rahman said the mini incinerator in Cameron Highlands completed its modification in March 2017 and has since burnt 16.39 million kg (16,387 tonnes) of waste from then till July 2021.

He said waste collection vastly increased from the time Movement Control Order (MCO) was implemented in March 2020, and can reduce waste sent to landfills and help conserve energy.

"In Cameron Highlands, we used to have about 40,000kg (40 tonnes) of waste each day, but after the MCO, it increased by 10%.

"Using the landfill method filled up space quickly and was not the most sustainable method. Even after dumping in landfills, we still need to compost the waste which generated greenhouse gases," he told The Malaysian Reserve (TMR) in an interview recently.

According to Mohd Halim, despite the high investments in mini incinerators, it has greater benefits in the long term, particularly with the limited amount of land in the highlands, including a reduction in the volume of waste from about 80% to 90%, as well as the possibility of operating all year round despite weather conditions.

Mohd Halim explained that mini incinerators operate by combusting the waste at very high temperatures, between 650°C and 700°C, which compares it to almost volcano-like. The process uses full combustion, only generating CO₂.

However, the machine produces acid gases after the incineration process — each machine is equipped with an air pollution control device in which an alkaline chemical is added to neutralise the acid substance.

"The gas at stack was then analysed through continuous emission monitoring system and the data has been closely monitored by the Department of Environment to ensure full compliance," he said.

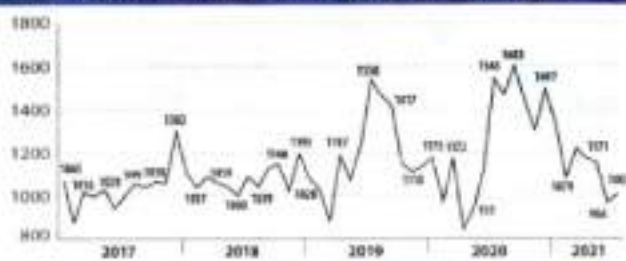
In addition, Mohd Halim said the mini incinerator contributed towards less waste to be sent to the landfill, as well as increasing the recycling rates. The centre has a pre-treatment section in which the waste is manually separated, then fed onto a conveyor with magnetic separators. The more waste is recycled, the less waste is incinerated to make the process easier and more sustainable, since recycled items can be reused, he said.

Mohd Halim said some of the major challenges with a mini incinerator include the high level of moisture in the waste content compared to other sites if there is plenty of moisture content,

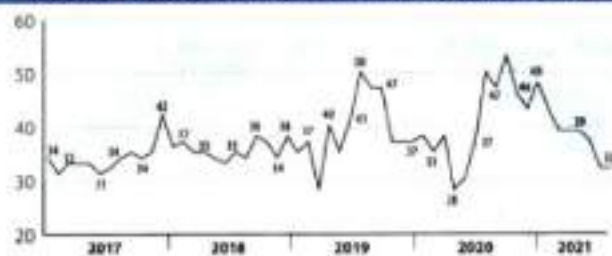


Mohd Halim says affordability is of less concern now and over the long run, incineration may prove to be a more sustainable option

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this makes it more difficult to burn as it requires more fuel. However, by modifying it with innovative designs, AFES is now able to recycle hot gas in the system, so that it can be reused and not wasted.

Another challenge faced is the wrong

perception that people have toward mini incinerators, simply because they think it is harmful and dangerous. To mitigate this, AFES is completely transparent with the data and authorities, ensuring that the incinerators operate within the emission limits, he said.

adding that to educate the public, they have also invited groups to take a look at their demo mini incinerator that can help people understand how it works.

Meanwhile, Mohd Halim said not many people in Malaysia are trained to operate mini incinerators, but the Cameron Highlands project has been successful for various reasons including the strong support from its management, which has designed a technical development team that was able to train employees successfully, as well as on-site, to help them understand the process and best practices.

Mohd Halim said there is currently a strong team with fundamental knowledge about incineration technology that can respond to design, testing and commissioning, as well as operational issues in the process.

"Also, despite not many vendors owning vast experience in incineration technology, AFES managed to tap into three separate vendors at first before narrowing it down to two main ones, where experience and input of both parties and AFES resulted in a final strong, quality technology built," he told TMR.

Mohd Halim opined that more mini incinerators should be set up in the country as it makes a good fit where land is scarce and can be used for other developments, such as schools or housing and waste-to-energy projects in the future.

Moreover, he added, affordability is of less concern now and over the long run, incineration may prove to be a more sustainable option. It can generate electricity and heat or chilled water and steam that can be used in factories.

"This can be an energy-generating method, so why waste it?" Mohd Halim concluded.

