

# Diversifying *within* the industry

By Stephanie Augustin

**W**hile municipal solid waste (MSW) represents the bulk of waste generated daily by Malaysians, other waste types such as hazardous and medical wastes are equally in need of treatment facilities.

The difference, of course, lies in regulation and consequently revenue.

Currently, the medical waste sector is well-regulated, with the waste being collected from clinics and hospitals by licensed collectors and sent to licensed facilities for incineration.

Meanwhile, hazardous waste, which is equally well-regulated, is generated from industries. Similarly, these are sent to a licensed treatment facility in Bukit Pelandok, Negeri Sembilan by licensed collectors.

Due to high tipping costs at this facility, some industries practise in-situ treatment while others turn to technology providers and operators such as Nasmtech Technology Sdn Bhd.

Unlike many technology providers that focus on burning technologies, Nasmtech was founded by a group of aircraft engineers with a focus on air pollution control services.

Thus, its Carbonator technology is centred around 'roasting' waste with hot air as opposed to burning it, which would produce pollutant gases.

Nasmtech Technology Sdn Bhd managing director Joe Wong explained: "While incinerators use lots of oxygen to combust waste, the Carbonator process works in absence of oxygen.

"We create the fire to generate hot air, which then travels inside an oven that circulates externally around a drum containing the waste.

"So the waste is never in direct contact with the heat - that is why we call it indirect heating. Once it is burned, the waste will release lots of pollutant gases.

"Thus, if you do not have oxygen in the heating process, you are actually avoiding the formulation of many toxic gases," he said.

Wong added that this also makes Nasmtech's system a bit simpler.

In Europe and Japan, there are very good air pollution control systems to



Nasmtech's Carbonator technology can treat both local and foreign MSW - only the process recipe may differ due to the difference in waste characteristics. Pictured here is the Carbonator™ for Industrial Waste.

deal with the pollutant gases that are released when their waste undergoes combustion. Their systems can trap the gases so that they comply with the quality of air emissions set.

On the other hand, the Carbonator avoids pollutant gases, making the system simpler in controlling emissions - basically cutting one step in the waste treatment process.

Wong recounted: "Why we started in industrial waste was because of the integrated waste management centres that are charging such high prices on the waste that is sent to them.

"I saw a viable business here because if I could reduce waste up to 80% or 90%, that represents savings for the end user.

"Let us say that for a month, you dispose up to 100,000 tonnes of waste to the integrated management centres. If I can reduce that by 90%, you are actually saving on paying for 90,000 tonnes of waste.

"That simple mathematics actually drew us to the business.

"Our first client in 2006 was disposing metal hydroxide waste and biological sludge - that was mainly sent to us for minimisation. We reduced their waste to 10,000 tonnes a month and they were smiling already.

"Once you have reduced your waste capacity with this cost-effective technology, then the supporting aspects such as transport costs and manpower to handle the toxic waste can be cut to minimum," he said.

By choosing to take up clients who had uniform sludge and were regulated to dispose waste properly, Nasmtech managed to make money in its first few years of business.

However, in the beginning, the founders had to put in a lot of their own money for R&D and building equipment, while spending two years in testing.

In securing the confidence of industry players, a lot of technical explanations were needed to convince them of the Carbonator process.

Wong said: "As we were talking technology, we had to convince a group of people with technical experts - there were a lot of technical explanations involved.

"It is very importantly to put up an operational pilot unit for them to see - that is what I did for my first project.

"This business is all about before and after, so the pilot unit will show clients how their waste would look before and after the treatment - and they trust that you can do the job.

"In between, there are so many pollutant gases you can control - even that we show them. All of the RM1.5 million investments in the initial two years was all our own pocket money," he recalled.

Recently, Nasmtech entered the medical waste treatment area, and is looking to replicate its success in neighbouring nations such as Thailand and Philippines.

In addition, the SME is keen to enter the local solid waste management industry, to deal with municipal solid waste, as the Carbonator process can be adapted to suit different waste compositions and characteristics.

Every waste whether MSW or hazardous waste, differs in their form (solid, sludge, slurry or liquid) and characteristics (moisture content, volatility, pH, etc.)

The Carbonator will utilise different process recipes (temperature, process time and pressure) to treat the waste based on their respective characteristics.

However, in Malaysia as in the case with fellow Asean nations, Wong said that when it comes to municipal solid waste, in many countries it is the case of 'so close, yet so far' because of political interference.

Moreover, Wong admits that the challenge is in lowering pricing to treat MSW, as he would have to charge RM100 per tonne.

Thus, Nasmtech is looking to the Philippines before looking inward.

Wong said: "Our pricing is on par with those of conventional incinerators that burn waste using diesel, but if we are talking about high-tech incinerators from Japan, we charge about 25% of their rates.

"That is why we have to sell more of the green aspect, we have to tell more people to go into green because the price is the same, but with significantly less pollution.

"In Philippines, if you want to touch waste business, they get very sensitive. They are very concerned with what you are going to provide them and what technology you are going to use in their country.

"They have two departments whose approval you need to obtain first: the Department of Environment and the Ministry of Science and Technology Philippines - similar to MOSTI.

"Now we have a free license to go in and do business so I am liaising with them regarding industrial and medical waste.

"Unlike Malaysia where medical waste is given to concession companies for about 15 years, in Philippines it is actually a free market - where you compete for how much you pay to treat the waste.

"They only have one technology there, as incineration has been banned and they only use landfills. Soon they will ban landfills so there is a big opportunity for Nasmtech to tap into," he noted.

Another aspect is the openness of governments to entertain new ideas. Wong has spoken in Thai parliament and gave presentations to the senators.

He said: "The first thing is when the government initiates something such as renewable energy, the industry is bound to come and look for us."

However, in the local MSW scene, Wong believes the issue lies in long contract periods which prevent local authorities and clients for switching to new technologies.

It is often the case SME versus GLC. He said: "Local authorities have given long waste management contracts to GLC operators utilising old technology or landfills.

"Thus, local innovators have difficulties in securing the contract and have to wait (it out). Even then, there is no guarantee that local authorities will change and take the risk to engage new contractors with new innovations," Wong added.

Wong also remarked that other Asean governments were quite receptive and enthusiastic about the Carbonator green technology, and listened to Nasmtech's presentations - but they would prefer to see the unit used by our government first.

He also suggested a feed-in tariff perhaps for Renewable Energy Source from MSW, or tax exemptions for being in this industry.

Among the benefits of utilising a local technology like the Carbonator is cost and time savings.

Wong said: "Servicing, maintenance and spare parts replacements are cheaper for local technology as they can be done locally with local materials, experts and contractors."

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