Singapore’s joined-up planning for waste management including a new 2900 TPD waste to energy plant

COVID-19
Tales of the Unexpected
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SENNEBOGEN
The lean green waste handling machines
Page 28
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FROM THE EDITOR

DEATHS UP: EMISSIONS DOWN
BUT NOT BY ENOUGH

Depending on where you live, we’re at least a couple of months into lockdown now. Tragically, around the world the death toll continues to rise, but it’s not all doom and gloom. With hundreds of millions of people staying home, and air travel all but cancelled, global greenhouse gas emissions have fallen sharply and air quality, especially in large cities, has noticeably improved.

Carbon Brief, a publication focused on emissions and climate change, gathered evidence on how the coronavirus crisis is affecting energy use and CO₂ emissions around the world, which suggests that the pandemic could cause emissions cuts this year in the region of 2 billion tonnes of CO₂ – a drop of around 5.5% from 2019.

But here’s the worrying thing, according to the report: “Even this would not come close to bringing the 1.5C global temperature limit within reach. Global emissions would need to fall by some 7.6% every year this decade – nearly 2800 Mt CO₂ in 2020 – in order to limit warming to less than 1.5C above pre-industrial temperatures.”

I find it a little alarming to think that in spite of crippling the global economy with drastic reductions in transport and industrial emissions, even if we kept this up, we would still (probably) not be doing enough to keep the temperature rise below 1.5C. Like it or not, it’s time to start thinking not only about how to reduce emissions and keep the temperature rise as low as possible, but also how to cope with the global warming we are already experiencing, and which is likely to accelerate.

For the UK at least, it seems that a warmer climate is also going to be a wetter one. Last autumn turned out to be so wet that farmers were unable to spread digestate on the winter cover crops. On page 26, Innes McEwen offers some top tips on storage and handling of biosolids from AD to ensure they can be recycled back into the agricultural soils.

If you’re interested in the thoughts of some of the industry’s leaders from around the world on how we can get the economy back up and running, and in particular the role of waste management and recycling in that, turn to page 6 for some Tales of the Unexpected.

Elsewhere in the issue, on page 14 we look at a 2900 TPD waste to energy facility being built by Keppel Seghers in Singapore. Importantly, the plant forms just a part of a symbiotic waste and resource management system that incorporates recycling, AD, sewage sludge, incineration and very little landfilling.

On page 17, Rick Hindley from the UK’s ALUPRO organisation explains the benefits of recovering aluminium packaging from incinerator bottom ash, and on page 28 we hear how German recycling firm A. Menshen is getting on with its latest SENNEBOGEN material handlers. Enjoy the issue.

Ben Messenger, Chief Editor

“IN SPITE OF Crippling the Global Economy with Drastic Reductions in Transport and Industrial Emissions, We’re Still Not Forecast to Keep the Temperature Rise Below 1.5C.”
In WMW’s round-up of opinions from industry leaders, Prof. Nickolas Themelis notes that the silver lining could be increased recognition of the need for high-temperature incineration for certain waste streams.

In an open letter, CEWEP, EuRIC and FEAD have called for the level of ambition of the European Green Deal and of the new Circular Economy Action Plan to be safeguarded as part of Europe’s COVID-19 recovery plan.

A Keppel-led consortium has secured a contract from Singapore’s National Environment Agency for the development of a waste to energy facility at the Tuas Nexus IWMF.

Rick Hindley explains how valuable metal packaging that escapes kerbside recycling can still be recovered and recycled from incinerator bottom ash.

A Keppel-led consortium has secured a contract from Singapore’s National Environment Agency for the development of a waste to energy facility at the Tuas Nexus IWMF.

Rick Hindley explains how valuable metal packaging that escapes kerbside recycling can still be recovered and recycled from incinerator bottom ash.

Swiss technology supplier Hitachi Zosen Inova has been riding high in the UK over recent months, with contracts for its 12th and 13th major WtE facilities moving forwards.

In Werne, Germany, STADLER has completely modernised a PET sorting plant for recycling firm RCS.

Innes McEwen explains how to prevent farmers drowning in digestate and how global warming causes difficulty with increased rainfall and flooding.

A. Menshen GmbH & Co. KG has long put its trust in SENNEBOGEN material handlers. Its latest additions, two 821 E series material handlers, are justifying that trust.
COVID-19: CORONAVIRUS REQUIRES MORE AND BETTER WASTE MANAGEMENT

Dear Colleagues and Friends,

The coronavirus crisis is ongoing, and our world is already swimming in uncharted waters. We all hope that it will come to an end as soon as possible, with the least amount of people infected and lost.

During this difficult period, we all need to prioritise public health protection above any individual, political or business interest and agenda. We also need to protect and take care of the health of ourselves and our families and contribute to the protection of the most vulnerable members of our societies: elderly and already sick people, the homeless, and marginalised and poor communities. This is a period in which no one should be left behind, no one should be left alone – it’s a time of solidarity and social responsibility.

In this period, we are all thankful to the health workers, doctors, nurses, administrators and all workers who sustain the operations of the national and local health systems. The willingness and ability of the global community to develop relevant medicines and a vaccine as well as the availability of these medicines and vaccination for the poorest countries will determine the future of global cooperation and response. No country and no company in the world should try or should be allowed to control the relevant solutions. Global coordination will make it or break it based on the course of the coronavirus crisis.

In this difficult period, we need to remember that the importance of a good public health system becomes obvious to all of us when we don’t have it – but usually in this case it’s too late to prevent serious damage. The same is true for waste management systems: we understand their contribution to the quality of our urban lives only when we no longer have them, even for a short period. Allow me to take this opportunity to highlight that during the global pandemic, thousands of ISWA members are already making extra efforts to ensure that waste management services will not be disrupted and no additional risks to public health will be created by improper waste management. Waste management workers, especially those in waste collection, should take extra precautions and health & safety procedures should provide protection against any potential infection from the waste streams and/or the equipment. The increased quantities of healthcare and medical waste should be safely treated and disposed of, making sure that they pose no risk of further infections and pollution. I am asking all ISWA members, national members, individuals and companies to offer their cooperation and expertise to the relevant local and national authorities. Last but not least, in this difficult period, our association’s operations and business model are also seriously affected. The GS and the Board of Directors are already working to identify the best way forward and proper solutions that will allow disruption to be minimised and our activities to continue. We will soon be able to provide you with further information. Until then, please stay safe, take care of your health, protect your families and societies, and work hard to make sure that waste management services will keep delivering high levels of public health protection.

Warm regards and stay safe.

Antonis Mavropoulos
President, ISWA.
COVID-19 TALES OF THE UNEXPECTED

With the exception of healthcare and social workers, the waste industry is right up there providing the most critical of services to get us through the crisis. When it comes to tackling disease, hygiene and sanitation is class 101. WMW brings you some key insights, forecasts, opinions and advice from leaders within our industry...

"NOW IS NOT THE TIME TO GO QUIET. AS A COLLECTIVE WE MUST MAINTAIN OUR VOICE AND SHOW JUST HOW MUCH INNOVATION IS TAKING PLACE, SOME AT NEVER-BEFORE-SEEN LEVELS."

PETER STREINIK
Head of Business Development at UNTHA shredding technology

COVID-19 IS A TIME FOR THE ‘WASTE’ INDUSTRY TO SHINE

Many people are struggling with the physical, psychological and financial impact of the COVID-19 outbreak, so could perhaps be forgiven for neglecting their environmental responsibilities – and in some respects obligations – when the focus is on weathering this storm as best they can.

But the environment has also been brought into sharp focus for others, not least due to media reports evaluating some of the more peripheral ‘side effects’ of the pandemic. On a positive note, there are fewer vehicles on the road, pollution levels have fallen, and we’re seeing a greater appreciation for being outdoors. The pace of life has slowed for many, communities have grown quieter and there are more opportunities to notice nature too. These benefits have also been widely acknowledged by mainstream news outlets and on social media.

But at the other end of the spectrum, reports about the increasing volumes of waste arisings – particularly from households – are leading to growing concerns that recycling and resource recovery is grinding to a halt. And where will that leave environmental progress?

Of course, it is impossible to make sweeping statements about how the industry has reacted across the globe. In the UK, for instance, refuse workers were granted key worker status, evidencing the role they play in keeping communities operating. Yet household waste recycling centres – until recently – have remained closed, which no doubt contributes to the reason why fly-tipping has quadrupled in some parts of the country.

Over in the United States, the second-largest garbage and recycling hauler in North America reportedly spoke very frankly to local governments several weeks ago about the risks to collections, rate levies and even potentially the need to dispose of recyclables due to collection challenges.

There have been application-specific headlines too, ranging from waste textiles struggles in Germany to rising demand for recovered paper in Poland due to shrinking supplies. Food stockpiling was also cited as a significant issue in the UK, with data from Nielsen revealing that consumers spent an extra £1.9 billion on groceries during the four weeks up to 21st March, compared to the same period in 2019. But an article in the Financial Times pointed out that this has happened in cities worldwide, from Maghreb to Manila. This is a complex time on many levels, and ultimately the environmental sector could take a huge hit, if we don’t keep talking. Because yes, the waste industry – like many others – is encountering difficulties. But grinding to a halt it is not.

So now is not the time to go quiet. As a collective we must maintain our
voice and show just how much innovation is taking place, some at never-before-seen levels. And how crucial the waste industry is in keeping countries running.

We’re helping to convert tyres – a notoriously problematic waste – into a range of secondary-use rubber products, for example, with residual materials also being used in thermal desorption processes for energy recovery.

We’re liberating valuable metals – from products such as mattresses and uPVC windows – which would otherwise remain ‘locked’ in complex waste streams if they weren’t shredded.

We’re supporting medical waste operators to achieve maximum capacity when handling the growing volumes of PPE, hospital waste and other hazardous materials being generated as a result of the health crisis.

And we’ll ensure that sensitive documentation, ranging from paper-based health records and bank loan applications through to organisations’ electronic data storage drives, are all compliantly destroyed with maximum consideration for the waste hierarchy as well as data protection regulations.

In truth the list goes on. The same can probably be said for so many other waste machinery manufacturers, waste transfer stations, MRFs, specialist accredited waste management organisations and more localised community groups. We must keep showcasing just what is possible, so that momentum is not lost.

Is it understandable that the environment isn’t everyone’s priority right now? Yes. But do we in industry have a duty to ensure we keep talking about the role of the waste hierarchy? The efforts operators are going to, to maintain nations’ resource security? And the innovations that all too often take place ‘behind the scenes’ to ensure we transform even the trickiest wastes into a valuable new recycle or alternative fuel? Absolutely.

“AS EMPLOYERS, WE MUST SERIOUSLY CONSIDER THE HEALTH AND WELLBEING OF ALL OUR STAFF AND MAKE THE NECESSARY ADJUSTMENTS FOR THEIR NEEDS.”

Jacqueline O’Donovan
Managing Director of O’Donovan Waste Disposal Ltd.

A NEW THREAT – COMPLACENCY

JACQUELINE O’DONOVAN ASKS IF SOCIETY IS IN DANGER OF COMPLACENCY AS THE PANDEMIC DRAGS ON AND LOCKDOWNS CONTINUE?

It is abundantly clear that the new threat to society is that of complacency. Every day it is more and more evident – look at the numbers of people on the roads, in parks and shopping at DIY stores. Hordes of people queue for hours, two metres apart, to go into a supermarket, only to forget once inside that they still need to keep that distance.

At the start of the restrictions, people were remarking on the damaging effects all the hand-washing was having, with their skin cracking or splitting, but these comments are becoming less and less as the days pass. Social distancing only seems relevant if there is a marker on the floor.

In the early days of lockdown, when someone came close and I pointed out ‘I am social distancing’, they would reply ‘oh, sorry, no problem’. Now some seven weeks down the line, I have had numerous instances where I have been glared at as if I have insulted them. But what has changed? The restrictions are still in place but with the passing of time, attitudes and moods have changed for the worse. The Government has warned us all that there could be a second spike which will result in yet another lockdown. The fact that so many people are struggling to abide by these first measures does not bode well. When will common sense prevail? Surely, it is clear by now that if we do what we have to and stick to the guidelines, we will have a reduced chance of second measures being introduced.

As a company, we are preparing to slowly bring our staff back to work after lockdown is lifted and I can already see the many restrictions we will have to implement. Changes will vary from staggered start and finish times to rotated breaks in order to minimise groups of people arriving or leaving together or having to share space at lunch and break times. We know that we will be met with some resistance as people do not tend to like change.

We are already prepared for some, if not the majority of our team to feel vulnerable and suffer with some level of anxiety on their return. But importantly, we must keep reiterating the importance of hand hygiene, cough etiquette and social distancing again and again. We cannot, as a country, afford for people to become complacent. It must become second nature until such time as a vaccine is found. We cannot allow all the hard work and sacrifice to be undone.

As employers, we must seriously consider the health and wellbeing of all our staff and make the necessary adjustments for their needs.

Jacqueline O’Donovan
Managing Director of O’Donovan Waste Disposal Ltd.
REBUILD AFTER COVID-19: ALL GOVERNMENTS SHOULD BAN ORGANICS TO LANDFILL

**MIKE RITCHIE LOOKS AT THE POTENTIAL FOR INCREASED USE OF ORGANIC WASTES AND THEIR DIVERSION FROM LANDFILL TO CREATE JOBS AND INCREASED ECONOMIC ACTIVITY.**

How on earth are organics connected to a COVID-19 recovery plan, you ask?

There is a lot of talk about on-shoring manufacturing, and that is a good thing, but it will require grants or ongoing subsidies or tariff barriers to be sustainable. But there are plenty of local jobs and investment opportunities that do not require ongoing government support. Composting and recycling of our organic waste is one such opportunity.

Recycling, including composting, generates three times more jobs than landfilling. Yet we landfill over 10 million tonnes of organic waste every year made up of food, garden waste, timber, pallets, cardboard and paper. What's more, these organic streams comprise half of all waste to landfill. All of that can be recycled into compost for farmers. It can be created cheaply and sold cheaply to compete with superphosphate fertilisers.

In the process it will massively reduce Australia's greenhouse gas emissions by avoiding methane emissions from landfill and also reduce the emissions associated with the making and using of superphosphate fertilisers.

All government has to do is mandate the collection of organic streams or ban their disposal to landfill.

Europe and many US states did it years ago. Adelaide, Perth and Melbourne have all required compulsory collection of household organics. All Australian cities and towns could follow suit and mandate kerbside organics collection or ban disposal of organics to landfill (the result will be the same). However, individual councils or states should not have to do it. The Council of Australian Governments (COAG) should agree to a national organics to landfill ban date.

In fact Pam Allen, the NSW Environment Minister, promised to ban organics to landfill in 1998, to come into effect in the year 2000. Over 20 years ago.

Since that time we have put another 200 million tonnes of organics into landfill nationally, generating approximately 200 million tonnes of additional greenhouse gas emissions.

To provide some perspective, by allowing organics to landfill, we have missed out on annual emissions cuts equivalent to removing more than 2.1 million cars from the road. We have also missed out on supplying 80-100 million tonnes of compost to our degraded Australian soils.

Banning organics to landfill would require over 200 x 50,000 t/yr composting facilities to be built, employing 10 people per facility. Or 2000 new jobs. It would stimulate the direct investment of over $2 billion worth of direct capital investment.

Those figures do not include the five-fold increase in secondary job creation in collecting, transporting, marketing and spreading the compost. That is over 10,000 ongoing new jobs, while there will also be plenty more construction jobs.

Therefore, yes – organics can help rebuild after COVID and produce a good environmental and economic outcome. It is not rocket science.

“BUSINESS LEADERS’ DESIRE TO KICKSTART THINGS AGAIN WITHOUT PROPER PLANNING MAY LEAVE THEM VULNERABLE TO EMPLOYEE CLAIMS OF HEALTH AND SAFETY VIOLATIONS. EMPLOYERS ARE STILL RESPONSIBLE FOR THEIR WORKERS INSIDE AND OUTSIDE OF THE WORKPLACE, AND THIS INCLUDES TRAVEL TO WORKSITES.”

**Ranjit Dhindsa**
Head of Employment at law firm Fieldfisher

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**Mike Ritchie**
Managing Director of MRA Consulting Group

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**Panit Dhindsa**
Head of Employment at law firm Fieldfisher
Dear friends,

We have decided to work on the least desirable product of society, trash. I am writing to you from one of the epicentres of the COVID terror attacking our planet (New York City).

Those of us at the top of the sanitation pyramid have the luxury of working from the relative safety of our homes. However, there are millions of unsung first responders: the sanitation workers who are collecting humanity’s garbage and the operators of waste to energy power plants, landfills and recycling plants.

Of those heroes, the least exposed to the mortal peril are WtE workers, who are physically separated from the feedstock to their plant. The most exposed are collection personnel and people working in recycling plants where “recyclable” objects must be sorted out manually. This fact was recognised by the advanced city of Milan, where “persons with COVID symptoms are requested to dispose of recyclable objects in their trash bags”.

The silver lining of the virus attack, for sustainable waste management, is that it will highlight the need for high-temperature technology that surely destroys all pathogens.

Life will go on after the virus tsunami and the international Sustainable Waste Management Conference in Thessaloniki has been postponed from June to, hopefully, September.

With best wishes for a healthy and pleasant summer.

“THE SILVER LINING OF THE VIRUS ATTACK, FOR SUSTAINABLE WASTE MANAGEMENT, IS THAT IT WILL HIGHLIGHT THE NEED FOR HIGH-TEMPERATURE TECHNOLOGY THAT SURELY DESTROYS ALL PATHOGENS.”

Prof. Nickolas Themelis
Chair, Global WtERT Council

WHAT TO DO WITH SINGLE-USE PPE

“WtERT” is the International Waste-to-Energy Technology Roundtable. Malek Sukkar, CEO of Averda, looks at what can be done to safely deal with huge quantities of vital personal protective equipment (PPE), which is made almost entirely of single-use plastic.

Of course, I wholeheartedly support the speedy manufacture and distribution of PPE to every worker who needs it around the globe. In the absence of a vaccine or even a widely accepted treatment, PPE is the best first line of defence against catching COVID-19 that we have. We need PPE. But we also need to figure out how to get rid of it.

Even before the COVID-19 pandemic took hold, the challenge of safely disposing of waste plastics was one which stumped many environmentalists and policy-makers. There is little in the way of a global plastics recycling industry, firstly because it’s technically difficult to recycle plastic and secondly because there’s not much of a market for recycled plastic: it’s so expensive that it’s cheaper for manufacturers to buy virgin. The dominant school of thought amongst activists was that the change had to be behavioural: we had to encourage consumers and manufacturers to drastically reduce the amount of plastic they bought and used in the first place. But when it comes to PPE, asking people to use less of it is simply not an option.

So if we can’t use less, and we can’t re-use it through recycling, what can we do?

The question of waste PPE is a global problem and it needs a multilateral solution. I call upon governments across the world to cooperate with each other, and on citizens to make this problem visible.

Longer term, more research is desperately needed into better plastics recycling technology.

The battle against PPE plastics waste may seem like another front opening up in a war that is already incredibly complicated. But even as we fight COVID-19, we must keep one eye on the long-term future of the planet. Because when we collectively beat this pandemic – which we will – we should turn our innovation, grit and determination to the future of our world.

“I DO NOT WANT TO SEE WHAT WE HAVE SO SHAMEFULLY SEEN IN THE RECENT PAST: RICHER COUNTRIES DUMPING THEIR WASTE ON POORER ONES.”

Malek Sukkar, CEO of Averda

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A LETTER FROM...
CEWEP, EuRIC and FEAD

In an open letter addressed to Ursula von der Leyen, President of the European Commission, Frans Timmermans, Executive Vice-President of the European Commission, Thierry Breton, Commissioner for Internal Market and Virginijus Sinkevičius, Commissioner for Environment, Oceans and Fisheries, CEWEP, EuRIC and FEAD have called for the level of ambition of the European Green Deal and of the new Circular Economy Action Plan to be safeguarded as an integral part of Europe’s COVID-19 recovery plan.

The signatories of the statement, namely CEWEP, EuRIC and FEAD, representing waste management and recycling industries at European level, would like to emphasise the need to safeguard the level of ambition of the European Green Deal and of the new Circular Economy Action Plan as an integral part of Europe’s COVID-19 recovery plan.

While the signatories understand the need to re-shuffle some priorities in order to provide swift responses to the most urgent problems caused by the outbreak of COVID-19 which has disrupted the European economy including our industries, we see any reduction of the level of ambition set by the EU’s sustainable agenda as being the wrong answer. On the contrary, the post-crisis offers a momentum to make the EU Green Deal a motor of Europe’s economic recovery. The new Circular Economy Action Plan and the new Industrial Strategy for Europe are the right responses to the economic recession. In that respect, it is instrumental to direct a significant part of massive public investments expected through the European Recovery Fund towards circular industrial value chains and infrastructures needed to make Europe climate-neutral by 2050.

The waste management and recycling industries have played a key role for Europe’s economy and society during the ongoing COVID-19 crisis. With more than 400,000 local jobs, they are an essential partner to other industries, to innovative and green economic recovery.

REALITY CHECK
“When we talk with people we notice that many think that landfilling is finished, or will soon be finished in Europe. The reality looks different. We still landfill 175 million tonnes of waste in Europe which emits more than 140 million tonnes of CO₂eq emissions.”

Dr Ella Stengler
Managing Director, CEWEP
Waste recovery and recycling outputs not only substitute primary resources often imported from third non-EU countries but save significant amounts of greenhouse gas emissions and energy.

Among the priorities set in the new Circular Economy Action Plan, the signatories would like to stress the absolute need to:

• Lay down measures to stimulate the demand for secondary raw materials in products through recycled content and green public procurement, incentives rewarding value chains that contribute to saving GHG and energy to bridge circular economy and climate policy;

• Further strengthen the internal market and, in particular, facilitate the creation of a well-functioning EU market for secondary raw materials thanks to simplified waste shipment procedures and EU-wide end-of-waste criteria;

• Speed up work on eco-design to ensure that tomorrow’s products will last longer and be easier to recycle when reaching end-of-life;

• Enhance investment certainty by implementing current recycling targets with the necessary financial support for countries lagging behind and consider the setting up of targets for industrial and commercial waste;

• Resume a fact-based discussion on proper treatment of residual waste in Europe, which cannot be recycled, through energy recovery or final disposal.

Furthermore, the signatories ask the European Commission and policy makers to prevent the leaking of waste streams suitable for recycling or recovery to large scale landfills. Existing recycling and landfiling targets for municipal waste need to be implemented without further delay and further ambitious measures are needed for other waste streams to be recycled and recovered, and diverted from large scale landfills. This would be a significant contribution to climate mitigation.

We stand ready to support your services in relation to the above-mentioned call for a recovery plan that supports a much-needed transition towards a more circular and climate-neutral economy.

Yours sincerely,

Paul De Bruycker
President of CEWEP

Cinzia Vezzosi
President of EuRIC

Peter Kurth
President of FEAD

“Diverting waste that can be recycled or recovered from landfiling is a win-win for climate mitigation. Therefore, the Green Deal can only be called ambitious if there will be further reduction measures for landfiling introduced. So far there are only EU targets for municipal waste in place which is a small part of the whole waste volume, but no EU targets yet for commercial and industrial waste.

We are happy to join forces with other European waste management associations requesting a fact based discussion on the need for residual waste treatment capacity in Europe. As a matter of fact, waste that cannot be recycled will still be there in a circular economy, and we have to ensure that it is treated in an environmentally sound manner without endangering human health.”

Dr Ella Stengler
Managing Director, CEWEP
American Manganese Inc., a Canadian critical metals company focused on the recycling of lithium-ion batteries, has launched its RecycLiCo™ pilot plant optimisation testing along with its contractor, Kemetco Research.

The company explained that the tests are focused on upgrading and perhaps doubling the processing capacity of lithium-ion battery cathode scrap material from the pilot plant’s current baseline capacity of 64 kg/day. The Kemetco team has planned to gradually increase pulp density in the initial stages of the RecycLiCo process to determine the optimal processing capacity without sacrificing the recovery potential of cobalt, lithium, nickel, manganese and aluminium. The projected timeline for the pilot plant optimisation tests is expected to take several weeks and the findings are to be incorporated in the detailed engineering of the company’s recently announced conceptual commercial plant layout.

By improving units of operation and increasing processing capacity, American Manganese said that it expects to decrease the cost of future commercial recycling plants.

“When we first commissioned the pilot plant project, we were interested in successfully scaling up our patented recycling process, which I believe we have demonstrated,” said Larry Reaugh, President and CEO of American Manganese. “We are now using this opportune time to determine the optimal processing limits and potential cost savings for our future commercial recycling plant.”

Kemetco Research has developed a conceptual layout for American Manganese’s first commercial lithium-ion battery cathode recycling plant with a 3 tonne per day processing capacity.

STOP DUMPING IN EPPING FOREST
Illegal fly tipping in Epping Forest has sharply increased, by over 50%, during the COVID-19 lockdown period. Between January and April this year, there was a total of 192 fly tips on Epping Forest land. Over the same period in 2019 there were 126, which means there has been an increase of 52.3%.

ISWA’s SOILS PROJECT
ISWA’s Soils Project aims at quantifying the benefit of organic matter in compost and digestate when applied to soils and taking a lead in providing a robust evidence base to link waste management and soil enhancement/improvement. The project aims to create four reports to summarise current knowledge about the fate of recycled carbon in soils, in particular its sequestration and effects on soils.

LOCKDOWN LEAP FOR EXCESS WASTE COLLECTIONS IN UK

Lockdown has led to a significant rise in excess waste collections from people’s homes, according to Skoup, the ‘online order to your door’ waste collection and skip hire service from Biffa. The company said that it has seen an increase in orders of almost 25% for the bag, van and skip service.

According to Biffa’s Guy Maddock, “Having extra time on your hands gives people the perfect excuse to clean their homes and get rid of all of the extra rubbish which has been cluttering up flats and houses.”
US organics solutions provider Lystek International’s multi-year food waste to energy demonstration project in Goleta, California has been showing positive results. As the lead project proponent, Lystek is working with the Goleta Sanitary District (GSD), University of California-Santa Barbara (UCSB) and the California Energy Commission (CEC). Under the project, source-separated organic food waste from the UCSB is pre-processed using a European de-packaging technology from Dutch firm Smicon before being co-digested in mobile skid-mounted anaerobic digesters. One of the project’s primary goals is to validate that SSO can be decontaminated to an acceptable level (typically less than 1%) for efficient anaerobic digestion. The Smicon unit is the first deployment of its kind in the United States. Since equipment commissioning began in August 2019, the unit is said to have provided a clean and acceptable organic slurry for the test digesters.

**Lystek Pilot Co-Digestion Plant Showing Positive Results in California**

Hertfordshire, UK based Bunting Magnetics Europe has launched a new Bunting ElectroStatic Separator in response to enhanced material separation requirements in the recycling, plastics and minerals industries. The system uses tungsten electrode wire to generate electrostatic charges to separate dry liberated particles. The company claimed that the new technology significantly broadens separation capabilities, opening up new opportunities for recovering materials from waste and optimising mineral reserves. The ElectroStatic Separation system exploits the difference in electrical conductivity between various materials in a feed material to produce a separation. The separation depends on a number of key material characteristics, including conductivity, moisture content and size range. In many applications, often due to the fine particle size, the ElectroStatic Separator is the only technology that enables a separation (e.g. -2 mm granulated cable scrap). The technology also replaces less environmentally friendly separation processes such as froth flotation in mineral processing applications (e.g. separation of rutile from silica sand).

**New ElectroStatic Separator from Bunting**

**“Even though this is a demonstration-sized unit, we believe that the technology can be scaled up for full commercial-sized operations, similar to existing units in Europe.”**

Jim Dunbar
Lystek General Manager for California Operations, who oversees the project.
Between 1970 and 2016, Singapore’s growing population and booming economy caused a seven-fold increase in waste generation. But the city nation, renowned for its cleanliness, has not sat idly by as mountains of waste slowly overshadowed its island.

Currently, Singapore’s solid waste disposal infrastructure consists of four waste to energy plants – Tuas, Senoko, Tuas South and Keppel Seghers Tuas, as well as the Semakau Landfill which opened on 1 April 1999 and is currently Singapore’s only landfill facility.

More recently, Singapore’s National Environment Agency (NEA) has sought the development of an Integrated Waste Management Facility (IWMF) to help meet the country’s future waste management needs and achieve long-term environmental sustainability. To that end, in April this year a Keppel-led consortium received the Letter of Acceptance from the NEA for an Engineering, Procurement and Construction (EPC) contract worth approximately S$1.5 billion (US$1.07 billion) for the development of a waste to energy facility and a Materials Recovery Facility for Singapore’s new Tuas Nexus IWMF.

By Ben Messenger
Marine arm of Singapore Technologies Engineering Ltd. Keppel Seghers, China Harbour and ST Engineering's Marine arm's share of the works under the EPC contract will be approximately 48%, 31% and 21% respectively. Keppel Seghers will be responsible for the overall project management.

“As a developer and operator of two of Singapore’s current four WtE plants, Keppel, together with its partners, is honoured to contribute further to Singapore’s sustainable urbanisation through this flagship project,” says Dr Ong Tiong Guan, CEO of Keppel Infrastructure. “This project will contribute significantly towards Singapore’s long-term waste management plans.”

The consortium will work closely with the NEA as well as their consultants – a multi-disciplinary consultancy team led by Black & Veatch and AECOM, in association with Ramboll, for the design, construction and commissioning of this flagship project.

“ST Engineering values industry collaboration, especially one such as this that helps facilitate Singapore’s drive towards environmental sustainability,” says Mr Ng Sing Chan, President, Marine of ST Engineering.

TECHNOLOGY

The facility will feature Keppel Seghers’ air-cooled grate, boiler design and advanced combustion system. In addition, the facility’s wet flue gas cleaning system will ensure the facility’s emissions comply with Singapore’s regulatory requirements and standards. It will generate sufficient electricity to sustain the operations of Tuas Nexus IWMF Phase 1 and the initial phase of PUB’s Tuas Water Reclamation Plant (Tuas WRP), with excess electricity for export to the grid.

China Harbour will undertake the civil, structural and landscaping scope of the project, while ST Engineering’s Marine arm will be responsible for the construction of the MRF, power-island and the balance of plant.

The MRF will feature advanced technologies to automatically sort metals, paper, cardboard and plastics, improving sorting efficiency over existing systems and contributing towards the overall recycling rate in Singapore.

THE THIRD INTEGRATION PROJECT FOR KEPPEL

Singapore’s IWMF will mark the third integrated waste management project that Keppel Seghers has undertaken. The company has also designed, built and is currently operating Qatar’s Domestic Solid Waste Management Centre, an
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"The concept of the Tuas Nexus has stirred a lot of interest in the global waste management industry... It marks a new chapter for solid waste and used water treatment here in Singapore based on a circular economy approach. It is the first greenfield project that involves the development of two mega waste treatment facilities located side-by-side to exploit co-location synergies."

Mr Tan Meng Dui
CEO, NEA

With the construction of HK’s IWMF, which is currently the first and largest WtE project in HK, progressing well, Singapore’s IWMF will be the second waste management facility to be built by Keppel Seghers and CHEC worldwide. In addition, CHEC also undertook construction of the Tuas Sewage Treatment Plant in Singapore in 2019. The strategic fit for Keppel Seghers and CHEC will create more opportunities for cooperation in the future,” concludes Mr Tang Qiaoliang, President of China Harbour Engineering Company Ltd (CHEC).
In the UK, data from the Environment Agency shows that the amount of aluminium packaging recovered from Incinerator Bottom Ash (IBA), the by-product of municipal waste incineration, rose by 4.5% last year – from 25,546 tonnes in 2018 to 26,696 tonnes in 2019.

But how exactly is aluminium removed and recycled from IBA? Can it return to the value chain and be made into new packaging products? What’s more, does it lose its superior properties during the energy recovery process? In this article, I’ll tackle each question in turn, explaining the benefits and challenges associated with recovering aluminium from IBA.

TURNING WASTE INTO A RESOURCE
Typically comprising glass, porcelain, stone, sand, brick, concrete and clinker, alongside both ferrous and non-ferrous metals, the IBA is sold to specialist aggregate companies, which separate, clean and treat it. The aggregate is used primarily in the construction industry, while the non-ferrous metals (found as melted and re-solidified shapes) are removed for recycling.

Earlier this year, I visited the Scanmetals facility in Willenhall to see exactly how aluminium and other non-ferrous metals are recovered from the incineration of municipal waste. A major player in IBA metal recovery, the company has been operational in the UK since 2017.

An incredible process to watch, Scanmetals shows that zero metal waste is achievable. In fact, when combined with kerbside recycling rates, more than 52% of all UK aluminium packaging and 75% of aluminium drinking cans are recycled every year.

DISPELLING THE MYTHS SURROUNDING IBA RECOVERY
The IBA recovery process practised by Scanmetals dispels a common misconception – aluminium that escapes kerbside recycling isn’t necessarily lost forever in landfill. In fact, more than 26,000 tonnes are reclaimed and recycled every year.

Did you know that valuable metal packaging that escapes kerbside recycling can still be recovered and recycled from incinerator bottom ash? Well, thanks to continued innovation from across the waste management supply chain, it can.

By Rick Hindley
Another misconception is that aluminium recovered from IBA is almost useless once recycled. Again, this simply isn’t the case. In fact, as incinerators run at such high temperatures, the aluminium melts and reforms as globules once the IBA cools.

Once separated, graded and cleaned, the recovered aluminium can be used in a variety of high-value applications. Most commonly, it’s recycled to form die-casting ingots for the automotive industry (essential for manufacturing engine blocks), but work is also underway to develop pioneering techniques to achieve the purity rates required in the production of aluminium packaging materials.

Compared to using virgin resources, recovering aluminium from IBA is not only cheaper, but also considerably more environmentally friendly. In fact, recycling aluminium saves around 95% of the energy needed to make the metal from raw materials.

WILL IBA RECOVERY RATES CONTINUE TO INCREASE IN THE UK?
With landfill space depleting and energy recovery technology continuing to progress, the UK is noticeably increasing its reliance on waste to energy solutions. While for some this is controversial, it is good news – alongside the obvious benefit of power generation (turning waste into a resource), IBA recovery helps us to recycle an even greater volume of aluminium packaging every year.

However, it’s hugely important to remember the position of energy recovery in the waste hierarchy. While it may prove a ‘catch-all’ for metal packaging that escapes kerbside recycling collections, it shouldn’t be a reason to reduce our focus on best-practice municipal recycling measures.

Alongside creating complex alloy materials, rather than single-source metals for use in infinitely recyclable packaging products, the cost implication of incinerating waste and then recovering aluminium from IBA is much greater than traditional recycling processes. As such, we should see it as an added benefit rather than a widespread solution.

As the most flexible and easiest packaging material to recycle, more than half of aluminium packaging is currently recycled (52%) and rates are continuing to increase incrementally (up 11% since 2010). Infinitely recyclable, reformed endlessly and retaining its properties indefinitely, nearly 75% of all aluminium ever produced worldwide is still in use today – the perfect, infinite, circular economy.

It’s essential, therefore, that kerbside recycling rates continue to increase and that we continue to prioritise the use of aluminium as a sustainable packaging material. Aluminium recovered from IBA absolutely contributes to a circular economy and we firmly advocate the process, so long as our national vision of 100% aluminium recycling rates is maintained.

Rick Hindley
Executive director at Alupro, a not-for-profit organisation with over 30 years’ experience representing the UK’s aluminium packaging industry

“ANOTHER MISCONCEPTION IS THAT ALUMINIUM RECOVERED FROM IBA IS ALMOST USELESS ONCE RECYCLED. AGAIN, THIS SIMPLY ISN’T THE CASE. IN FACT, AS INCINERATORS RUN AT SUCH HIGH TEMPERATURES, THE ALUMINIUM MELTS AND REFORMS AS GLOBULES ONCE THE IBA COOLS.”
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International Solid Waste Association
Swiss waste to energy technology supplier Hitachi Zosen Inova has been riding high in the UK over recent months. In February, financial close was reached on a 42 MW project being developed by Covanta and Biffa and on 24 April, the company secured a contract from SSE Thermal and Copenhagen Infrastructure to construct a new 46 MW plant on the Slough Trading Estate near London, England.

By Ben Messenger

**SWISS ON A ROLL IN THE UK**

Strategically located just off the M1 motorway in the East Midlands, the 350,000 tonne per year Newhurst Energy from Waste facility will be a significant addition to the UK’s waste management infrastructure. It supports both the government’s drive to reduce reliance on landfill and the UK’s ability to treat more non-recyclable waste without relying on export to European facilities.

The project is being developed by joint venture partners Covanta, Biffa and Macquarie’s Green Investment Group (GIG). The JV is 50% owned by Covanta and GIG, with Biffa owning the other 50%. Covanta will operate the plant and Biffa will supply the waste. Hitachi Zosen Inova (HZI) is to act as a turnkey partner. “The Newhurst EfW facility will provide important sustainable waste treatment capacity in the drive to move non-recyclable waste away from landfill and combat climate change,” explains Covanta CEO and President Stephen J. Jones.

“Today’s announcement marks our third of four initial development projects to reach financial close with Green Investment Group and our first project with Biffa. Together, we have created a powerful partnership that will provide meaningful returns in our pursuit to protect tomorrow.”

Once operational, the plant is forecast, on a whole project basis, to prevent 236,000 TPA of biogenic waste and 103,000 TPA of non-biogenic waste from being sent to landfill. It is also forecast, on a whole project basis, to avoid 70,000 CO2 eq per year for the remainder of its
lifetime – estimated by comparing the emissions associated with the project to a counterfactual (alternative method of energy generation and waste disposal). In this case, the energy counterfactual is local marginal electricity grid emissions and the waste counterfactual is disposal to landfill. GHG emissions from the project are anticipated to be 30% less than the counterfactual emissions.

“To increase resource efficiency, we need the right infrastructure. Together, GIG and Covanta are developing a pipeline of projects that will form the backbone of the UK’s next generation waste management system,” comments Edward Northam, Head of Green Investment Group Europe. “Our ongoing partnership with Covanta is helping the UK reduce reliance on landfill for non-recyclable waste, creating a cleaner, greener environment for all. The Newhurst facility is an exciting new addition to that partnership and our first project investing alongside Biffa.”

DELIVERY
To deliver the Newhurst project, its twelfth overall in the UK, Hitachi Zosen Inova will be acting on behalf of the developer – estimated by comparing the emissions associated with the project to a counterfactual (alternative method of energy generation and waste disposal). In this case, the energy counterfactual is local marginal electricity grid emissions and the waste counterfactual is disposal to landfill. GHG emissions from the project are anticipated to be 30% less than the counterfactual emissions.

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DELIVERY
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opers to deliver a plant with electrical net efficiency of 31.3% – “one of the highest efficiency rates in the world”. The company says that it won the public tender to build the new facility, at least in part, based on its previous working relationship with Covanta, following the delivery of plants in Dublin, Ireland and Rookery South, England for the New Jersey-based waste to energy specialist.

“HZI is a proven provider in delivering world-class energy from waste facilities,” says Tom Koltis, Covanta’s Executive Director of European Development. “Trust is a key factor in the successful delivery of a major project of this type.”

HZI will serve as overall turnkey contractor, delivering the entire building construction, the procurement function and the technology for the project, which will feature a state-of-the-art air-cooled reciprocating grate as well as HZI’s XeroSorp® dry flue gas treatment system.

“The plant is equipped with a highly efficient flue gas treatment system that fully complies with the most stringent emission limits, and often does noticeably better,” explains Ingo Eifert, Project Director at HZI, who is responsible for the Newhurst project. He says that by installing XeroSorp®, the plant operator will benefit on more than one level: “The size and design of the flue gas treatment system are geared to enhancing energy efficiency and also deliver a positive impact on water use.”

Biffa will provide 70% of the fuel for the facility from its existing local waste collection services, and Covanta will supply technical oversight during construction in addition to operations and maintenance of the facility for an initial 20-year term.
STADLER’S PET PROJECT DELIVERS NOT SO FLAKY UPGRADES FOR RCS

For over 40 years, RCS in Werne, Germany has offered its recycling services to businesses. Specialising in the disposal of commercial waste, the company has three core competencies – waste disposal, raw material recycling and plastics. To optimise the latter of these, the firm contracted STADLER to completely modernise its PET sorting plant.

By Ben Messenger

Sustainability and the environmentally friendly use of resources are the principles at the heart of RCS’s corporate raison d’être. They run through every aspect of its operation, from the advanced methods it uses to collect waste to the processes it uses to transform that waste into secondary raw materials ready to be returned to the production cycle. These core values also form the basis for its service to clients, as it works in partnership with them to develop a concept that is environmentally friendly and individually tailored to their needs.

An important area of focus for RCS is the recycling of PET bottles to produce plastic flakes for a variety of applications and high-quality regranulate for the food sector. This activity is centred at its sorting plant, where it separates clear PET from coloured PET (which account for 85% of the input), aluminium and ferrous cans, film and other materials. With a capacity of 7 tonnes/hour, the plant operates on a continuous shift system, pro-

PET bottles are increasingly being sold with full-body sleeves. To keep flake quality high, this led STADLER to install its new Delabeler system as part of RCS’s modernisation programme.
"THE BIGGEST ADVANTAGE WAS A TRIPLE INCREASE IN QUANTITY, QUALITY AND YIELD. IN ADDITION, WORK PROCESSES HAVE BECOME EASIER FOR OUR EMPLOYEES. ALSO, THE STADLER EQUIPMENT IS VERY DURABLE AND THEREFORE REQUIRES LESS MAINTENANCE."

Alexander Rimmer, also joint CEO of the company, “We particularly appreciated their technical know-how and the support during the entire project. They offered us great technical experts who advised not only on the technology and processes, but also on the implementation possibilities specifically adapted to our technical requirements.”

The completion of the project within very tight deadlines was a key requirement for RCS, and STADLER delivered on this important demand: “What particularly convinced us was that they followed our tight schedule and were able to meet our expectations,” adds Rimmer.

The modernisation has brought multiple benefits to the sorting plant – not only in terms of the quality of the output, but also for its operation and running costs, much to the satisfaction of the CEOs. In addition to increased yields and purity, the modernisation simplified maintenance, thus reducing yields and costs and workflows.

FURTHER UPGRADE WITH A LABEL REMOVER

The recycling industry is in constant evolution, as the packaging used by manufacturers changes over time. This is the case with PET bottles, which are increasingly packed in “full-body”
sleeves: “To optimise sorting and achieve better quality for our customers, the separation of label and PET bottle must take place before sorting,” explains Francke.

Once again, RCS turned to STADLER for a solution to this new requirement: “With the STADLER Label Remover, the labels are stripped off and the PET bottles are less damaged than with other manufacturers. As a result, we can register less fine abrasion,” says Alexander Rimmer. “We are very satisfied with the Label Remover because it requires less maintenance and its throughput is geared to that of our plant. With this machine, there is less wear on the knives and the machine is not very susceptible to impurities such as foil or wood. In addition, it does not cause any damage to the PET bottles. With the Label Remover, we can separate the labels from the bottles before sorting, which enables us to guarantee a consistently high level of purity,” concludes Rimmer.

STADLER’s long-standing relationship with RCS is a hallmark of the company’s approach. As Willi Stadler, CEO of the STADLER Group, concludes: “I am very proud of having worked side by side with RCS over the years, building a real partnership that has enabled us to support them as their business has grown and evolved. Together, we have been able to anticipate the changes in market demand and find effective solutions for their operation. I am looking forward to being at their side, helping them meet future challenges.”

**FACTS**

**2019**

STADLER’s Label Remover launched; named the Delabeler, it removes labels from bottles of all types.

**80%**

The Delabeler achieves a quality standard of up to 80% of labels removed.

**80-240 RPM**

The Delabeler features an electrical cabinet with frequency inverter and adjustable rotor speed – from 20 to 60 Hz (80 to 240 rpm).
As the transition to renewable energy moves apace, Anaerobic Digestion (AD) plants are becoming an increasingly common sight in rural landscapes. Often based on farms, they make renewable biogas by decomposing organic matter, such as agricultural slurries and specially grown crops.

Once the resulting biogas has been siphoned off, a thick sludge is left behind, the broken-down remains of the plant’s original feedstock. Known as ‘digestate’, it might look like waste, but in reality it’s a highly valuable resource that should be managed with care. Praised as a natural fertiliser, digestate can help farmers reduce their reliance on artificial fertilisers by providing a nutritional boost to their next season’s crops.

I work with over 450 farms, largely in and around East Anglia, England, which grow the crops for Future Biogas’s 13 AD plants. We provide all these farming partners with digestate, as well as guidance on how and when to use it. However, there’s only a limited window for spreading this digestate. It should be done on flat fields during dry weather at the start of the growing season, usually in late February and early March. This is why the incredibly wet early spring weather of 2019-2020 proved highly challenging to those of us in the energy crop AD business.

The reality is that this will not be the last time this scenario arises. As the world warms, such record-breaking rainfall looks set to become more common. The AD sector is going to have to adapt to survive. We need to futureproof our digestate management for a changing climate. Here are my three key learnings:

1. **Enhance Storage Capacity**
   As the climate changes, the increase in extreme weather events should not mean farmers dump digestate on land whenever a rain, snow or frost-free window presents itself. Digestate should first and foremost be spread to improve the nutrient content of crops. It is a useful farming aid that should be applied at the right time and in the right place, not waste to be disposed of.

   It all boils down to storage. AD plant operators and their farming partners should be considering increasing their capacity. There are two ways to do this. The first is to invest in more tanks or lagoons, requiring a substantial financial outlay. The second is to make arrangements for excess digestate to be stored in someone else’s facility over winter. Of course, this too will come at a cost.

   At Future Biogas, we prefer the first option, although this winter the waste recy-
clinging consultants at the 4R Group helped us enormously in terms of storing excess digestate. In the long term, however, it’s important to us that our digestate is spread on the land around our plants. It brings a degree of eco-friendly circularity to the whole AD process – by allowing the next set of energy crops to benefit from the remaining nutrients of the previous harvest.

2 ENSURE CLEAR LINES OF COMMUNICATION

In a rapidly evolving situation, it’s vital that all teams understand where responsibilities lie. Make sure everyone knows who is in charge of removing digestate and who the end user will be. In a complex operation like ours, with hundreds of farming partners, this can be logistically challenging. It pays to create a detailed plan in advance and to make sure everyone understands the parameters of their role.

“In this changing world, planning is everything. My team and I are already hard at work, preparing for the winter of 2020/21. Whatever weather it plans to throw at us, we’ll do our best to be ready.”

Innes McEwen
Head of farming at Future Biogas, the UK’s largest green gas producer

3 PLAN TO STORE DIGESTATE LONGER

The window for spreading digestate is becoming shorter, so AD plant owners and farmers should be planning to store it for longer. In all likelihood, legislation will soon make this obligatory.

Spreading a greater quantity of digestate more quickly will have a raft of practical and financial ramifications. Plant owners will need to plan thoroughly and make sure the necessary infrastructure is in place – especially in terms of transportation and machinery, which will both need to be scaled up. For example, it might well be necessary to use HGVs instead of tractors, impacting on local road networks and communities. Likewise, machinery of a greater capacity and extra seasonal staffing will be required. All of this will have cost implications.

OVERVIEW OF THE REGULATIONS AROUND DIGESTATE RECYCLING & SPREADING

DR BECKY WHEELER, HEAD OF CONSULTANCY AT THE 4R GROUP, explains that practices on the ground are certainly changing with regard to storing and spreading organic amendments, like digestate.

To stay ahead of regulatory changes and our changing climate, significant planning and investment is often required. First and foremost, you must establish if the land in question is in a Nitrate Vulnerable Zone (NVZ). Currently, NVZs make up about 55% of land in England – and are likely to be rolled out in Wales in the near future. Being in an NVZ means additional regulatory obligations on anyone using nitrogen fertilisers and other organic amendments.

But since 2018, new legislation in England – the Farming Rules for Water, also known as the Reduction and Prevention of Agricultural Diffuse Pollution Regulations – means all AD plant owners and farmers have a legal obligation to store and use fertilisers, including all types of digestate (just like slurries, dirty water and runoff) in a way that safeguards the environment.

In short, good agricultural practice is now a statutory obligation in England, and Wales is soon to follow suit. This, in conjunction with the 2018 Code of Good Agricultural Practice for Reducing Ammonia Emissions, means lots of recent operational changes on the ground for AD operators.

The term ‘digestate’ is broad. It ranges from stackable solids to brown watery liquids with almost no solid content – but they all tend to share a high nitrogen content and other key crop benefits. Digestate falls into three regulatory pathways, depending on its composition and quality:

• **PAS 110/Quality Protocol Certified Digestate:** If your digestate is PAS 110 certified, it means it’s made from source-segregated feedstock that meets the industry quality standard. If this is the case, it is not classed as waste and can be used under the Environment Agency’s Digestate Quality Protocol (QP), which sets out criteria for the use of quality AD outputs.

• **Farm-Fed Digestate:** Digestates produced by AD plant operators who use crops, grown by farming partners, and farm manures fall outside of PAS110/QP and waste regulations. As with all digestates, spreading should be done with precision application equipment, to reduce ammonia losses, and form part of a full farm nutrient management plan, to ensure over-applications are avoided.

• **Waste Digestate:** Digestate derived from source-segregated feedstocks that are not certified under PAS 110/QP is officially classed as waste. Its storage and spreading falls under the Environmental Permitting Regulations. The digestate can be stored under either ‘standard rules’ or a bespoke permit – or temporarily under a ‘land-spreading’ permit.

Generally speaking, digestate with over 30% readily available nitrogen now needs to be covered during storage to minimise ammonia losses, although this varies depending on the specific circumstances.
The SENNEBOGEN 821 Mobile handlers at Menshen process a wide variety of materials – non-ferrous metals, scrap steel but also bulky waste and timber.
Over the course of 60 years, family-run business A. Menshen GmbH & Co. KG has developed from a one-man operation founded by Arnold Menshen into the internationally active recycling company that it is today, employing around 60 people at its Werdohl site. Although the firm is today a part of a globally active corporate group with over 2700 employees, the traditional values of the family business have not been lost.

The recycler has a holistic approach to handling all types of waste material, including non-ferrous metals, scrap steel, construction waste, bulky waste and waste paper. To handle the wide variety of materials on site and to invest in the future, in 2018 A. Menshen decided to add two additional mobile 821 E series material handlers from SENNEBOGEN – itself a family-run business. In total, the firm now operates seven of SENNEBOGEN’s iconic green material handlers side-by-side both inside and outside the 70,000 m² site.

ENVIRONMENTAL BENEFITS
Paramount to the company’s future-oriented economic decision-making is the question of whether an acquisition will benefit not only itself, but in the long term, also the environment, e.g. through better energy efficiency, long-lasting components, and lower particulate matter and noise emissions. Menshen says that its deliberations with SENNEBOGEN and sales and service partner BRR-Baumaschinen Rhein-Ruhr GmbH were also based on many years of experience and trust between the partners.

“After working with SENNEBOGEN machines for 200,000 operational hours...

To deal with the wide range of materials processed at its yard in North Rhine-Westphalia, Germany, recycling company A. Menshen GmbH & Co. KG has long put its trust in SENNEBOGEN material handlers. When it came to investing in a future with lower fuel consumption and reduced maintenance costs, in 2018 two new mobile SENNEOBEN 821 E series material handlers were added.

By Ben Messenger
and experiencing BRR’s after-sales service, it was clear to me that there was no alternative,” explains Thomas Busche, Technical Manager at the Werdohl site.

Menshen’s philosophy is that by processing residual materials and putting them back into circulation, it is making a positive contribution to a circular economy on a daily basis. The decision to procure two new 821 Mobile E series was made on the basis that, with proper maintenance, they will have long service lives.

In order to make the on-site processes as efficient as possible, the SENNEBOGEN machines are in constant use at Menshen. Their tight day-to-day business includes unloading trucks, feeding the indoor scrap press and sorting materials outdoors. In these circumstances, energy efficiency and low fuel consumption are essential requirements for operating the machines.

“Heavy machinery will always remain heavy machinery. But the fuel consumption of SENNEBOGEN machines compared to others on the market was a key factor in our purchasing decision,” continues Busche. “9.6 litres of diesel per hour when carrying out demanding tasks saves money and is also acceptable in our ecological balance sheet.”

According to SENNEBOGEN, it’s able to achieve such frugal fuel consumption through the use of electric drives. Remondis is one of the biggest players in both the German and international recycling markets, with around 36,000 employees, 1400 of whom are located at the Lippe plant alone. A wide variety of waste materials are processed at the Lippe plant in Lünen, including metal slag, plastics and also old electrical appliances.

Back in 2016 the company began a project at the Lünen site, which is also the largest industrial recycling centre in Europe, for the emission-free reprocessing of recyclable materials. A constituent part of the old electrical appliance dismantling centre is a stationary SENNEBOGEN material handler that operates entirely without producing emissions and fits perfectly with Remondis’ concept.

Closed Loop: The plan to make all the recycling processes at the dismantling centre in Lünen CO2 neutral is a pilot project for other subsidiaries.

“For us, this project is about taking a holistic approach,” explains Christian Vollmer, Purchase Manager Assets & Services at Remondis. “We operate our electric machines using self-generated electricity and when they get to the end of their service life, they can be completely recycled and go back into the cycle.”

Until then, however, the site will first benefit from the active support of the stationary 817 E series in extracting waste material. In a partially open 600 m² hall, it extracts cable waste and sorts plastics and metals that have been delivered from across Europe. The 817 E series is equipped with a 75 kW electric motor and operates across a three-shift system, racking up about 5000 operational hours a year. When this is compared to the consumption costs of an equivalent diesel engine, the initial investment in the electric drive and power supply is soon offset.

At the Lippe plant, electricity is generated by an on-site biogas facility and an animal carcass incineration unit. This means that Remondis is not dependent on external electricity providers or subject to electricity price fluctuations.

“Experience has shown us that electric material handlers retain their value much better and suffer less from wear and tear. Longer service intervals and the elimination of oil changes primarily save us resources and, of course, money,” concludes Vollmer.
figures for a 24-tonne material handler because the hydraulic components are specifically tuned to the engine, meaning that the optimal amount of hydraulic oil is supplied to the machine’s circuit depending on the specific task and the lifting force required.

EcoMode and stop and idle automation also contribute to the reduction of unnecessary fuel consumption without needing input from the operator. All these factors mean that machine components, such as pumps and valves, suffer less stress, which in turn lengthens their service life.

PUTTING PEOPLE FIRST

As a company, A. Menshen believes that its most important assets should not be left out when making long-term decisions. As well as the environment, the people who operate the machines must benefit from the investment. Machine operators, who spend eight hours or more each day in their work environment, need a space where they feel comfortable and safe.

For Menshen’s operators, the Maxcab from SENNEBOGEN is the ideal workspace. There is the option to have all windows made from bulletproof glass or protected by additional safety guards. The equipment and the roof are fitted with powerful LED spotlights in order to illuminate the work area as well as possible and ensure the best visibility in dark indoor spaces. Furthermore, the comfortable operator’s seat is equipped with air suspension to relieve back strain.

“By investing in another SENNEBOGEN machine we have made the right decision on every level. We are looking forward to many more years of working together,” concludes Thomas Busche.

“The machines are robust, economical and durable. Needing to buy a new machine after a short period of time is, in many ways, not justifiable.”

Thomas Busche
Technical Manager at A. Menshen GmbH & Co. KG in Werdohl, values sustainable and long-lasting machine acquisitions.

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Extended Producer Responsibility (EPR) is an efficient resource management tool whereby producers take over the financial and/or operational responsibility for the end of life management of their used products. This can include collecting, sorting and treating these products to recycle and recover them. Its basic feature is that actors across the packaging value chain (manufacturers, importers and retailers) assume a significant degree of responsibility for the environmental impact of their products throughout their lifecycle. This includes products’ ‘upstream’ impact linked to the selection of materials, product and material design and production processes as such, as well as their ‘downstream’ impact relating to the products’ use and disposal. In so doing, producers should designing their products so as to minimise their life-cycle environmental impact, inter alia by making them fully reusable and/or recyclable.

The role of EPR is to establish functioning circles that materials stay inside of as much as possible. Every stakeholder participating in this circle from material and packaging producers to brand owners, retailers, inhabitants, local authorities, waste management companies and recyclers has to fulfil its specific role as best as possible so that the circle functions optimally. The EPR producer responsibility organisation has to enable and facilitate this process to inject additional funding when and where necessary.

ISWA’s Working Group on Governance and Legal Issues (WGGLI), in partnership with EXPRA, has prepared an online EPR Library. The papers in the collection consider the theory behind EPR and describe numerous practical examples of various approaches that exist across the world and across product categories.

WMW spoke to Joachim Quoden to learn more...
COULD YOU TELL OUR READERS MORE ABOUT THE LIBRARY

EPR is a concept, a tool that a government can use to achieve policy goals. But, it is not a fixed formula or business plan but allows a lot of flexibility and options how to apply it. On one hand, this is part the success story as every country has its own background and conditions, but on the other, it is the biggest challenge as there are now myriads of different implementations and you will not find two EPR systems neither for packaging nor for any other waste streams which are identical.

My personal goal is to allow all countries to raise the full potential of EPR. It is such a fascinating tool, unfortunately complex, that can really help us to move to a circular economy. But it has to be applied in the right way and only if we understand the various best practices and solutions, we can apply the right model for our specific situation and waste stream. And this library full of first-hand experience and best practices – hopefully growing in the future – can be the platform for this exercise.

EPR remains mostly, although not exclusively, a practice of mature European waste management systems. Do you have the impression that more and more non-EU countries will adopt EPR schemes?

I think that this is already a false impression. EPR also started in the 90s in Japan and Canada for packaging. For WEEE you can find examples all over the world, see the impressive membership of our friends from the WEEE Forum having members from all continents. In most of the countries that have not yet started to use this tool, you can find a lively discussion more on the how and not anymore on the whether to use it. So, I believe that in 2030 you will find it for packaging, WEEE, batteries, etc very soon all over the world.

HOW HAS THE LATEST EU CIRCULAR ECONOMY FRAMEWORK IMPACTED EPR SYSTEMS?

The new Waste Framework Directive (and the waste stream directives like the packaging directive) followed by the Single Use Plastic Directive recently revised in 2018 and 2019 will have a drastic impact on the EPR systems in the European Union and all other countries inspired by this legislation. And not only because of new and higher targets with a new measurement point for recycling. The key change will be caused by the so called Minimum Requirements for EPR which all countries now have to implement. Minimum rules for governance and transparency, data management and public awareness and communication, monitoring and enforcement by the government, strict rules and guidance in the case of competing PROs, modulation of the EPR fees taking into account for example recyclability etc.

If applied as soon as possible by the Member States, and if applied in the best way, we will see a boost in the performance of all EPR systems, which will become more comparable in their activities, an increase in the available infrastructure for collection and sorting at home but also on the go and new applications for recyclates.

CONCLUSIONS

This library is open to everyone. So, if one of your readers has experience of EPR, has a story to tell, a best practice, or even a failure, we would be more than happy to receive their manuscript.

Our WGGLI is always looking for new members, people who are willing to work on horizontal topics and to provide us with the new ideas.

Finally, I think that the textile sector might be the next big industry sector where EPR can bring about a solution to the drastically growing amounts of textile waste, one of the downsides of ‘Fast Fashion’. We cannot continue to shop the textile waste to non-European countries. We have to find solutions here in Europe. But what can you do with a shirt which was sold for 99c? Does it have enough value to pay for its collection, sorting and marketing? I don’t think so. So involving those who are producing or marketing these clothes to ensure a circular economy for textiles might be a possible solution – EPR for textiles?

Check out the library at: www.iswa.org/media/publications/iswa-extended-producer-responsibility-library/
LATIN AMERICA

A COVID-19 Update

Atilio Savino, the ISWA Board Member representing the ISWA Regional Chapter of Latin America, explores the following question in regard to COVID-19: ‘Can you tell us what the impacts have been on collection and waste systems in Latin America?"

The characteristics of the quarantine vary from nation to nation. Stricter countries include Argentina, while Mexico and Uruguay have a softer approach. However, across the region, the movement of people and the activities they are restricted to are impacting waste generation.

The Waste Management Outlook for Latin America and the Caribbean (UN Environment 2018) reports that waste collection services cover more than 93% of the population. Currently, the service is uninterrupted despite the reduction in personnel.

Final disposal follows this trend. Of course, we have to bear in mind that a predominant characteristic is that almost 30% of waste is disposed of in open dumps with the obvious health risks.

The collection of recyclables has been interrupted across the whole region and municipal solid waste has decreased due to a link with commercial activities. However, household waste quantities have not decreased significantly because of the increase in food waste and packaging due to more people eating at home and increased food delivery. In big urban centres, the decrease in the volume of waste generated is significant. The reason is that commuting is suspended. In Buenos Aires the decrease was 34%. The reason is that instead of three million people commuting into the city daily, fewer than 500,000 now travel in. The decrease in Bogota was 25%. Both countries have strict quarantine rules.

All countries have developed protocols or regulations relating to the protection of waste workers. All the activities of urban recyclers (formal or informal) have been suspended. This creates an enormous social problem related to the lack of income as the recyclables markets collapsed.

The role of the Regional Chapter since the start of the pandemic has been to translate all the reports issued by ISWA and to distribute them in the Region. National Members usually work with local, provincial or national bodies to contribute to the development of safety protocols, healthcare waste collection, treatment and final disposal.
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