COMPOnews

INTERNATIONAL

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10 Years Compost Systems

25 Years Compost
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Editorial

25 years of compost - 10 years of Compost Systems

Birthdays need celebration! A good time for a look in the rear-view mirror. In May 1987, as a young man, equipped with a freshly acquired driver‘s licence, I began to explore the compost scene in Austria. Whilst undergoing mechanical engineering training I started dabbling in selling composting and cultivation techniques!
One should probably refer to these initial attempts as a prolonged holiday job for the first two years. But in 1989 the first steps to independence were made, with a list of products dealing directly or indirectly with the subject of „compost“. In those days, people used to inquire „Composting - what is that?“ Farmers, local communities, gardeners and regulatory authorities faced similar challenges in engaging with the „composting“ trend. As a supplier of machines and accessories, I was on the one hand sneered at and on the other closely watched by potential competitors as they had difficulty trying to work out what I was up to! Fortunately, I was born with two special characteristics: One was the love of compost and the other was the willingness to single-mindedly pursue my ideas.

Flashback:

My parents started to become interested in organic farming in 1971. Both had opted out of their previous professions (my father had worked in industry, my mother was a teacher). Initially, they started to explore the subject of soil fertility using the simplest of means in sheep‘s wool sweaters. It became clear after just a few years that explaining this subject would not be a walk in the park. What had started as a hobby became a profession, a vocation and ultimately, to a certain degree, an obsession. After an in-depth study and countless tests performed on their own farm, they made the breakthrough of achieving soil fertility using compost without other fertilisers and pesticides.
In 1983 my parents started to pass this newly acquired knowledge on to other practitioners in the form of courses. An undertaking that quite quickly took on far-reaching proportions.

Time to grow up!

The initial phase of „being watched and sneered at“ was soon followed by an intensive growth phase in the newly emerging composting industry market. For this, we were awarded the Young Entrepreneur prize by the Economic Chamber of Upper Austria in 1993. The demand in the newly emerged market was so great that customers tore the products straight out of our hands.
But as always in business, success also attracts envious persons, opportunists, freeloaders and parasites. The agricultural machines in just the ST series alone which we had developed at the time had been copied more than 50 times over the course of the last 25 years, not by farmers to produce a machine for their own use but by professional mechanical engineering companies trying to cut the ground from under our feet. Fortunately, nobody managed to force us out of business in all those years, not by a long chalk. The emergence of competitors, however, created a completely new trend as well. A trend in which individual persons or organisations tried to develop new and associated products to cash in on the growing market. These included dubious licensing models in some cases, low-budget models in others through to new secret patents and all sorts of shenanigans mixed with entrepreneurial little games. It was as if the locusts had discovered the young little compost plant as a feeding ground. Lots of junk was placed on the market; whether expensive or cheap, successful or a flop - compost making had become a business, an industry.
Although the first parasites were cast out following a market adjustment and a sharpening of the profile, the next hurdle was already waiting. Municipal Undertakings entered into the industry, and in the absence of proper regulations or legal framework conditions or minimum standards, one prediction unfortunately came true as more and more emphasis was placed on the idea of waste disposal, rather than production of compost. Our machines and equipment, which had been built with the aim of producing „good quality compost“ in mind, were being judged against the interests of a completely new industry - the competition over quantities and the most favourable price. This was probably a foreseeable development in the light of present economic times but was a bleak issue to have grown out of our aim to produce quality compost as a soil fertiliser.

The bigger, the better:

Inevitably, a trend started that is unfortunately still continuing to this day: Big is good, bigger is better but it can never be big enough. Driven by performance, throughput and considerable „megalomania“, attempts were made in the golden days to replace the lack of technological development by HORSEPOWER. The issue of functionality started to take on less importance than the issue of souping things up. The industry started to jump on the bandwagon with crazy designs, supplying the market with new inventions every day that were supposed to allow you to beat nature and be even more efficient.

The breach:

This trend, which seemed to hound us in the mechanical engineering industry more and more, required me personally to perform a daily balancing act which started to make me seriously doubt my own credibility. Nevertheless we carried on every day as it was a matter of „sink or swim“. Despite all our technical and technological expertise, my time was taken up fighting fires rather than preventing them.
The tide finally turned in 2002, after a tempting offer made by a business partner. This took place in a restaurant in the city centre of Vienna, after visiting a reference facility. The Landfill Ordinance had percolated into the minds of customers and the hygiene regulation 1774/2002 had been recently adopted by the EU albeit in its basic form. Sat round the table, using napkins, tablecloths and beer mats, we started to outline the possibility of an environmental technology that would take the requirements of the disposal model and the needs of the end product „compost“ into consideration in equal measure. The evening ended with the decision to jointly develop a new technology that would cater to these combined requirements. This was in contrast to much of the industry where under the motto: „Cheap compost - whatever the cost“, lots of useless technological accessories had been developed which on balance accounted for a proportion of the total costs which were unfundable.
The evening meal ended with the decision to take the bull by the horns and implement our new strategy! A few months after this decision, I put aside

... the first series are running through production

... when CE was still insignificant

... global export of agricultural machines

... the first series-produced self-propelled equipment

the management in the old mechanical engineering and distribution company and Compost Systems was born!

The first step is always the hardest

With a well equipped backpack and with a research budget in place, we set out to develop the New Earth System. Several years of development and the construction of a full scale test plant with process testing by external audit brought us closer and closer to our goal.

Many things could not be defined as specific goals but instead only as a nebulous SOMETHING on the horizon. The national interpretation of hygiene regulation 1774/2002 only became established and reliable gradually. Statutory targets for the reduction and control of waste deposited in landfills were also slow to come into force (which, incidentally, continues to be one of the most difficult subjects in waste management in many EU member states).

Assuming a moving target, we ran steadily towards the horizon. It should be noted that a research project is still a long way from a profitable operation- a fact that became more and more apparent throughout the course of development! The renovation and improvement of underperforming existing facilities became a complementary area of business that would generate both finance as well as know-how.

We seized the opportunity, loosely under the motto: „anyone who learns from the mistakes of others does not need to make his own mistakes“. Anyone who works in building and construction can confirm that one has to have a long breath. But anyone who wants to work in public building and construction will need more than just staying power. It should be mentioned that one makes a virtue of necessity.

All these activities in the early years brought a wealth of experience into the company, not to mention the fact that there are very few specialists in the „biological waste treatment“ sector. But even fewer of them dare to interfere with existing systems - whether due to a lack of basic know-how or due to a company guidelines. In addition to the New Earth procedure, other processes such as the COMPObox process were developed, sometimes simultaneously. In addition, we used the time to perfect the suction ventilation technology.

Fusion with Seiringer Umwelttechnik

The aeration technology by Seiringer Umwelttechnik has always been a core part of Compost Systems technology. Both companies had grown ever closer together over many years of collaboration and in 2007 their merger was a mere formality. With his environmental engineering company, Hubert Seiringer - himself a pioneer in the Austrian compost scene - did not only contribute a product line to the company but a field-tested system that works perfectly both-biologically and practically.

The first large-scale plants

By steadily increasing the tax burden for landfilling legislators urged municipalities to seek other means of disposal. Our first large-scale plants were able to demonstrate that our technologies not only worked on paper but performed in the field as well. Our plants in France, Poland, England, Czechia, Italy, Slovenia, Ireland, Germany and of course Austria have proven our system works all over Europe.

What is left?

In the course of an intensive growth process, change is continual. 10 or 25 years are a short time in the evolution of Homo Sapiens. Let us consider the fact that we use a „fossil“ for fuel today which is pumped out of the earth in the form of oil. It is also indisputable that a large proportion of CO_2 pollution in the air, which contributes to global warming, comes from the soil. This is in addition to that from oil and means the 30 cm of surface soil referred to by the farmer as topsoil. There is no need for us to panic that we'll be out of work in the near future!

It's a fact that, since the latest economic crisis in Greece, even public authorities have to accept that the supply of money is not limitless. The search for economic solutions for refuse management satisfy the environmental concerns has become more important than ever before.

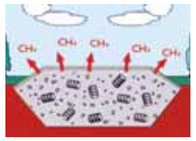
Operating costs are now evaluated in public invitations to tender! This is the wind in our sails that has spurred us to substantially expand our team of employees.

By also supplying the international - non-European market, we have successfully taken another step to avoid boredom in the company for a long time to come! Building the first composting facility in Mumbai, the first and largest of its type in Asia, has increased the selfconfidence of the company. Our newly built research facilities in Colombia and China are complementing our ambitions for the global market. But there is enough work within Europe as well. Since Austria and Germany are the only countries that have fully implemented the landfill ordinance, countries such as England or France still have some way to go. There are even former Eastern Bloc countries that show ambition with regard to implementation. Poland has for example only recently specifically modified its Statutory Regulations to ensure environmentally responsible refuse management.

By contrast, countries such as Hungary, Romania or Bulgaria are still in the early stages of development and still have a long way to go.

....the first new EARTH facility is finished

Compost Systems builds state-of-the-art refuse treatment facilities AROUND THE WORLD



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UK

New Earth Group

increases treatment capacities for household waste by more than 300,000 tons/year

Exhaust air purification and conditioning

Turning machine = TracTurn

With its treatment plants in Leicestershire, Bristol and Scottish Borders, New Earth Solutions UK is expanding its treatment capacities by more than 300,000 tons of residual waste per year.

Verwood England: New Earth Solutions is continuing its expansion course. In spite of the reluctance of British Municipalities with tight budgets to commit to financial framework agreements or even just long-term contracts, New Earth Solutions is standing strong and forging ahead, expanding its capacities for the treatment of residual waste by more than 300,000 tons per year.

New Earth Solutions is expanding its capacity by more than 300,000 tons per year

With its existing operational plants in Leicestershire and Bristol, and the plant in Scottish Borders which is currently in detail design, New Earth is demonstrating its commitment to the biological treatment of Municipal Waste. This is to the delight of Compost Systems as the supplier to New Earth of their proven process technology for biological treatment. Compost Systems supplies the engineering for the exhaust air and waste water treatment including exhaust air purification, ventilation, measurement and control technology as well as the facility monitoring and the compost turning equipment. Compost Systems also assists with and supervises the acceptance testing and start-up.

Leicester: After a 10 months construction period, the facility in the Midlands went into operation in the summer of 2010. At a capacity of ca. 50,000 tons of household refuse per year, the facility produces CLO (Compost Like Output) in addition to recovering recyclable materials and SRF (Substitute Recycled Fuel). CLO is a compost-like product that is used for soil improvement for restoring sites such as landfills and quarry workings. It is not intended for use as a fertiliser on agriculture, especially in food production.

New Earth Solutions mechanical-biological waste treatment in Avonmouth/Bristol

Bristol: After the go-ahead was given in autumn 2010, the Avonmouth facility was built near Bristol in no time at all. The first loads of household refuse were accepted on time in April 2011. The facility has been running at full capacity since August 2011, accepting about 150,000 tons of household refuse per year. The TracTurn was successfully used as a turning machine for Residual MSW (Municipal Solid Waste) in this region is to be processed into CLO (Compost Like Output), SRF (Substitute Recycled Fuel) and recyclable raw materials. The goals are ambitious: Start of construction is scheduled within 2012, start-up of operation middle 2013.

Additional facility in Scottish Borders with 60,000 tons of household refuse per year

New Earth Solutions is currently working on expanding in the British market and its track record of building at least one facility per year is likely to continue.

Project Manager Markus Bock during acceptance

facility. Apart from the high turning capability, the extremely high throughput capacity per square meter of hall area is crucial in Bristol as well.

Scottish Borders: By constructing a facility in Scottish Borders, New Earth has now also succeeded in making the leap to Scotland as well. With a treatment capacity of more than 60,000 tons per year, the household refuse from this

The growing pressure on Municipalities to finally stop taking waste to landfill and increase recovery is wind in the sails of New Earth. Even the clear commitment by the British government to „Recycling First“ instead of blindly squandering the waste resource by means of a waste incinerator is proof for New Earth that its strategy is the right one.

With this ambitious goal, New Earth Solutions is now also starting to utilise the substitute fuel in its own facilities. Substitute fuel is converted into electric and thermal energy using pyrolysis and gasification technologies' that have been developed independently' Test facilities are already running and large-scale facilities are under construction.

Hrastnik and Pragersko

Planning phase, start of construction in 2012

After the composting facilities in Puconci and Vrhnika have already been built with Drava ptuj, the ground-breaking ceremony for composting facilities of Pragersko (Slovenska Bystrica region) and Hrastnik (Zasavje region) is due to take place before the end of the year.

Slovenia is adopting regional provision to implement the EU Landfill Directive. Both are relatively small facilities compared to the industry benchmark. However, the client pays high attention to compost quality and meeting landfill criterias. Likewise, the collection and treatment of the odours that evolve during composting had to be a priority. Therefore, the decision was made to use the „newEARTH“ process which allows also smaller facility units to be built and operated cost-efficiently.

There will be a bio treatment facility with technology by Compost Systems about every 70 km across all of Slovenia once these two facilities are completed.

The planning and preparation of the design phases are drawing to a close and construction is scheduled to start in the second half of the year. The facilities are scheduled to be operating by 2013.

Pragersko - Slovenska Bystrica region

Start-up: in 2013

3,000 tons mechanical-biological waste

3,000 tons separately collected biological waste

Aerated maturing process

Biofilter and scrubber

newEARTH facility

Hrastnik - Zasavje region

Start-up: in 2013

6,000 tons mechanical-biological waste

3,000 tons separately collected biological waste

Aerated maturing process

Biofilter and scrubber

newEARTH facility

Zambrow composting facility

By building a sorting hall for mechanical pre-treatment and composting for the biological treatment step, the Zambrow location now meets the requirements of the European Landfill Directive.

Zambrow is a small city of about 25,000 people in Eastern Poland, about 100 km from the border to Belarus. The facility was constructed for 7,500 tons of organic fraction from household waste (8-80 millimetre).
The household waste is mechanically processed in the upstream sorting plant - recyclables are separated out by means of automatic sorting or manual selection, substitute fuel (> 80 mm fraction) is produced. The organic fraction, which is mainly found in the < 80 mm fraction, undergoes biological treatment in the four composting boxes and on the maturation platform.
The degradation process is controlled automatically by a PLC, aeration times and irrigation amounts are regulated by a control system according to the progress of degradation. After spending about four weeks in the boxes, the composted material is further processed on an open post-treatment area until landfill acceptance criteria are met. A wheel loader is used for cost-efficient filling and emptying of the boxes as well as for all material movements on the post-composting area. In addition to the entire process and plant design, Compost Systems also supplied the aeration technology as well as the waste gas treatment. Control system and monitoring equipment were also installed by Compost Systems. After the Czarnówko composting facility, the Zambrow composting facility is the second COMPObox facility in Poland.

The word Zambrow is Old Polish and means something like „wisents' place". The last wild wisent was shot in the Caucasus in 1927. All wisents now living in Europe are descended from only twelve wisents that had survived in zoos and vivariums!

Ecorpain composting facility

After Chaumont, the box composting facility in Ecorpain-Smirgeomes is now the second facility that is being built with Bioreva as the general contractor and Compost Systems as the technology supplier.

Ecorpain is located in Western France, about 40 km from Le Mans. There is an existing landfill at this location and a more than 20 year old mechanical processing system for simple composting. The new facility had to be situated in the old composting area to take advantage of the existing infrastructure and the logistically convenient location.
Bioreva decided to tear down the old facility completely, leaving only the transfer area with the feed hopper of the mechanical processing system in place. However, this had to be renovated completely, in order for it to be incorporated into the new facility. Some 20,000 tons of household waste per year are first shredded and screened to 50 mm. After about 3-5 days in a rotting drum, the homogenised material is transferred to the composting area.
Each week, one of the tunnels is filled. Aeration times and irrigation intervals are automatically regulated by the control system depending on the degradation progress. After about four weeks, the material is transferred to the aerated post-treatment area followed by another six weeks of composting.
All the movement of materials in the boxes and the post-treatment area, filling and emptying of boxes as well as loading for post-processing is done very cost-efficiently by a wheel loader.
The long treatment time and complex post-treatment allow the production of „CLO" (Compost Like Output) which is used for recultivation purposes.

The Ecorpain project represents the second facility planned jointly with Bioreva as general contractor. The third joint project is already planned for 2013 at the Spanish-French border in Bil Ta Garbi.

newEARTH S MBT

India

Mumbai

The largest professional biological treatment facility in Asia prior to start-up

With a population of 1.1 billion, India is one of the most promising markets in the world economy - and one not to be ignored by a company that focuses on environmental protection. Although the average Indian family produces only a fraction of the amount of waste produced by a European one, with more than 20 million people in Mumbai alone, it puts the need for a simple solution into perspective. With property prices that are astronomical and transportation logistics that could be described as more or less chaotic (depending on the time of day), the handling of the citys' waste poses a challenge that could hardly be greater. To date, Municipal waste had been buried in several landfills that were in part poorly controlled, or not controlled at all. The new waste treatment centre in Kanjur will relieve part of that burden by processing more than half of the waste collected in Mumbai before too long. At an initial capacity of 4,000 tons per day, which is to be increased to 7,500 tons per day by 2020, Mumbai wants to show the rest of India the way forward!

Compost Systems is in charge of the technology of the biological treatment facility. At an initial capacity of daily 500 tons the newly built facility is going to begin operations in summer 2012. After a testing and start-up phase this facility is to be doubled to 1,000 tons per day and quadrupled to 2,000 tons per day in the 3rd construction phase. A bioreactor landfill and a mechanical processing plant will be built in addition to Compost System's treatment technology.

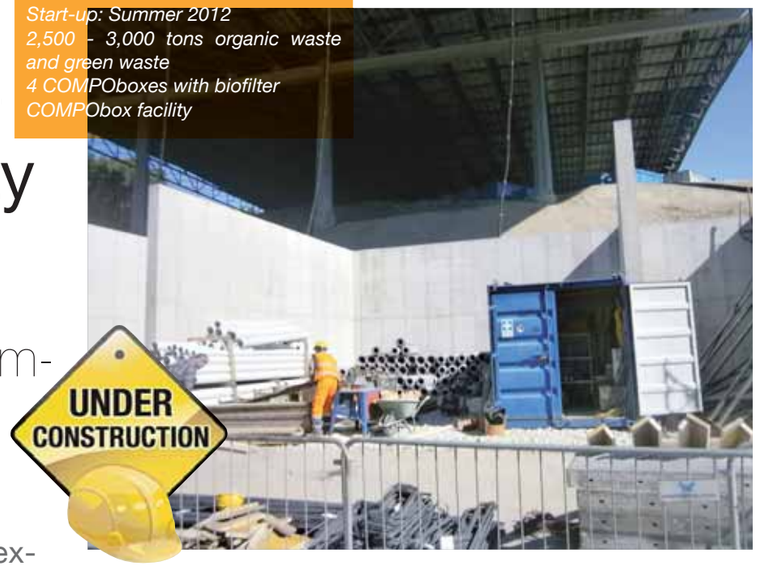
The Construction and Operating company of Antony Lara already has extensive experience with waste. Antony runs a fleet of about 1,000 waste collection and street cleaning vehicles in India. By taking on the operation of a treatment plant, Antony is anticipating a rapidly growing emerging market with 1.1 billion customers in the background.

With daily more than 1,000 tons of excavated earth the construction land was risen approximately 4 m. In the background „THE WALL"! At a length of more than 5 km, the wall surrounding the Kanjur facility is a record in itself. Using the simplest of means, even the concrete blocks were manufactured in the facility.

Schabs composting facility

In South Tyrol, each „district association“ operates its own composting facility.

Construction time: about 6 months
Start-up: Summer 2012
2,500 - 3,000 tons organic waste and green waste
4 COMPOboxes with biofilter
COMPObox facility



Following the successful expansion of an existing composting facility by Compost Systems in the adjacent Pusta valley, the Eisacktal district association has now also decided to have four new closed boxes built for the COMPObox process. This will increase the capacity of the facility and improve the emissions of the entire complex.

The advantage of a composting box is that the odour-intense decomposition during the first rotting weeks can take place in a closed system with a controlled two-stage exhaust air treatment (scrubber and biofilter).
Mainly bio- and green waste is usually processed in the boxes. However, they can also be used to compost sewage sludge or material from mechanical waste treatment („residual waste“). The boxes are filled once a week, and then the material needs to be turned after a maximum of two rotting weeks. After four weeks of closed process, the material undergoes post-treatment on the existing facility until it is mature. Work on the construction site started again in March 2012, and composting is to take place in the boxes as early as summer/autumn 2012.

With the composting facility in Schabs, every third composting facility in South Tyrol is now equipped with a Compost Systems aeration system.

NUA Hollabrunn

At the end of the year 2011, the rules in Austria were changed to prohibit the operation of a composting facility on a landfill cover. So the NUA Abfallwirtschaft GesmbH decided to completely rebuild their composting facility to allow it to maintain its established location in Hollabrunn.

With 5 composting facilities, the NUA Abfallwirtschaft GesmbH operates most composting facilities in Lower Austria.

Once approval had been granted, work had to proceed at full speed so that the new facility can start operations at the turn of the year 2011/2012. The newly constructed facility was built in accordance with the current requirements of the „state of the art of composting“. In order to meet the oxygen demand during the main composting phase, the platform was equipped with seven lines about 70 m long positive aeration ducts.
The required proof of material sanitisation is obtained by continuously monitoring the temperature via the COMPOtemp temperature measuring probes. Reinfection of material that has already been sanitised is prevented by the side displacement turning used.
The newly built facility allows to process about 10,000 tons of sewage sludge and green waste per year. The produced compost is mainly used as a soil improver and in agriculture.

Construction time: 6 months
Start-up: Winter 2011/2012
10,000 tons of sewage sludge and shrub cuttings
positive aerated main-rotting
TracTurn side displacement
COMPOnent facility

Sonnenerde drying box

Biological drying has been a proven application for Compost Systems for years. At first glance drying using an external energy is a completely new field of activity. On closer inspection, however, the Sonnenerde company was able to develop a cost-efficient drying procedure by combining elements tested in the field with the COMPOnent aeration system.

Terra Preta is artificial black earth. The native inhabitants of the Amazon region produced coal out of wood and animal and plant waste, and mixed it with the nutrient-poor soil. The oldest finds of terra preta date back several thousand years and allowed large civilisations to settle in the Amazon region in spite of the „thin" topsoil.

The Sonnenerde company has been a well-recognised producer of high-quality soil blends in Austria for years. The company's CEO, Gerald Dunst, has been a leading contributor in the field of humus buildup by compost fertilisation. For two years, Sonnenerde has been working intensively on producing „terra preta" - a term for the „most fertile" soil in the world (very high water and nutrient absorption capacity).
Charcoal is a key element for terra preta. Charcoal, as a very stable form of carbon, is able to bind nutrients and create a biosphere for certain „growth-enhancing" microorganisms due to its large surface area. Charcoal is obtained directly from paper fibre sludge at Sonnenerde via a pyrolysis system (Pyreg System). The Pyreg system, however, can only process the sludge at more than 55 % dry weight, wheras the dry weight percentage at the time of delivery is less than 30 %.
A cost-efficient process was required to dry the sludge that could be implemented using simple construction measures such as a box that could be loaded using a wheel loader, and that would be able to withstand the high drying temperatures. As an operator of composting facilities, Sonnenerde was familiar with Compost System's aeration technology. An idea was then developed to combine the tried-and-true aeration components with the waste heat generated by biochar production in a drying box. In order to use the pyrolysis system to its full potential, about 25 m³ of dry input material must be placed in the about 50 m² drying box. Since drying efficiency rises disproportionally with temperature, the amount of air supplied is regulated so the drying air is at maximum temperature at all times. The achieved high temperatures are similar to the temperatures achieved during composting (50-80 °C) and therefore do not pose a problem for the aeration technology.
The facility was put into operation in December 2011 and can process about 20 tons of paper fibre sludge per day. The biochar produced is not only used for soil mixes (terra preta) but also for soil improvement and as a feed supplement etc. The waste heat generated in the process is used to dry the input material and to heat the buildings of the adjacent composting facility.

Start-up: December 2011
1,000 tons per year of paper fibre sludge
50 m² aerated box

CMC ST 350 - the logical consequence

By adding the ST 350 to its Agroline, Compost Systems is expanding its product portfolio of tractor-operated turning machines.

With a working width (= rotor length) of 3.4 m and a heap cross-section of about 4 m², Compost Systems expands its Agroline for tractors above 100 bhp.
With or without a super creeper gear, the new unit works well with a push axle (option) even without creeper speed. The disadvantage: The turning unit has a transport height of more than 4.5 m and can be difficult to transport on public roads. The advantage: The rotor can be lifted from the heap at any time just as it can be in its smaller models.
As with the smaller models the classic construction on top of a trailer ensures that lateral forces are stabilised and not transferred to the tractor.

Maximum width: 4,000 mm
Maximum height: 1,700 mm
PTO: Walterscheid W2500
Tractor power: from 100 bhp
Turning capacity: up to 1,200 m³/h/120 bhp
Working speed: 100 - 500 m/h
(depending on material)

CMC SF 300 MD

The new SF 300 MD now has a new drive concept. Mechanical - directly through gearbox and PTO - is the name of the new magic formula. This concept, which has been successfully used for years on the SF 250, has now been transferred to the SF 300 as well.

In combination with a stronger engine and serial track drive, the new concept is not only stronger, faster, better, but also cheaper.
In the SF 300 MD, special attention was focussed on robustness and ease of servicing. This is an important aspect in view of the fact that we are talking about low-volume manufacturing numbers.
The engine is by Caterpillar-Perkins and, at 131 bhp, supplies enough power to mix a lot of compost in a short period of time. In addition, the rotor has been modfified based on our latest knowledge to minimise wear and tear and optimise effect.

Maximum width: 3,500 mm
Maximum height: 1,600 mm
Chassis: Hydrostatic caterpillar
Driving system: Electro hydraulic
Rotor drive: Mechanical
Turning capacity: up to 1,000 m³/h
Working speed: Stepless up to ca. 4 km/h
Height adjustment: Hydraulically

TracTurn IV - holding all the aces ...

Mechanical engineering

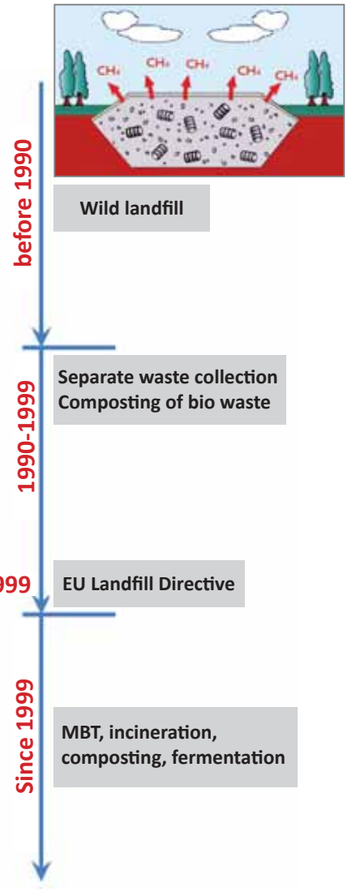
Compost Systems has been offering the TracTurn to the market since 2010. TracTurn was first officially presented to the public at the IFAT, the International Trade Fair for Waste Technology, in September 2010. Since then, the turning machine has proved itself in many facilities, under a wide variety of conditions and especially carrying vehicles.

It is not necessarily just raw horsepower that is important with the TracTurn, but also lifting force. 11 tons required on the lower links is a challenge with which not all tractors can cope.
Once the tractor really has the TracTurn on its linkage, the next question is whether its running gear is able to carry it.
In fact, both tyres and axle loads have to be inspected and modified if necessary. For example, CASE/Steyr offers the Puma extra series for the TracTurn with a reinforced rear axle and a reinforced lifting mechanism.
In the interest of riding comfort and safety for the driver, a reverse drive system on the tractor is considered essential. In this respect too, there are various options. While Claas pivots the entire cabin, the other manufacturers merely pivot the seat inside the cabin. Fendt and Valmet offer a reverse drive system as factory-made standard equipment while the others offer it as special factory-option.
In the meantime, the number of tractors tested has grown to almost a dozen. Furthermore, the portfolio has been expanded by another potential member since the last Agritechnika. The introduction of the new CASE Magnum with the new CVX transmission, should make even the Puma's big brother a suitable work horse for the TracTurn. Test coming soon!
However it must be said that not all that glitters is gold. Contrary to the philosophy „bigger is better", space is a scarce commodity on composting facilities. Any paved surface must be drained and could be used for producing compost and so are hard to come by. Thus, factors such as manoeuvrability, overall view and the ability for multiple use count as well - keyword: industrial front-end loader.

Research and development

Biological waste treatment - much has happened...

... in the waste management sector since 1990. Waste treatment has enormous potential in preventing emissions that affects the climate and is gradually taking these challenges seriously.



Before the European Landfill Directive (EU Directive 1999/31/EC) was passed in 1999, household waste was generally buried untreated or in contained landfills according to the principle „out of sight - out of mind“. This waste will emit high concentrations of greenhouse gases (methane CH_4, carbon dioxide CO_2, nitrous oxide N_2O, ammonia NH_3) for a long period of time. When the Landfill Directive was introduced, EU-wide regulations were created for depositing waste in landfills that entailed emission control improvements. Separate collection of biodegradable waste for composting was introduced thereby binding CO_2 in the soil as humus.

Nowadays, a wide variety of technologies are available for waste treatment (incineration, fermentation, composting) with their respective advantages and disadvantages. The objective is the same: a sustainable and environmentally friendly procedure with high throughput.

While all of the carbon is emitted in the form of CO_2 in the incineration process, mechanical-biological waste treatment tries to recover as many recyclable substances as possible. The organic part is biologically stabilised and only the high-caloric waste portion (substitute fuels) is transferred for thermal utilisation. In composting, however, organic waste is processed into compost by what CO_2 is bound in the soil in the form of humus to improve soil fertility (CO_2 reduction).

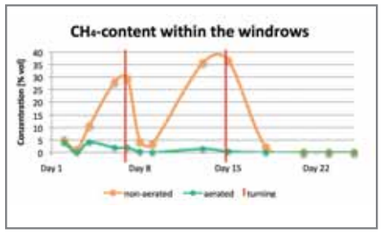
However, not all treatment methods work equally well. A wide variety of methods have been developed over the years especially in composting. In the most commonly used method in Austria, the windrow composting, significantly higher piles are used nowadays.

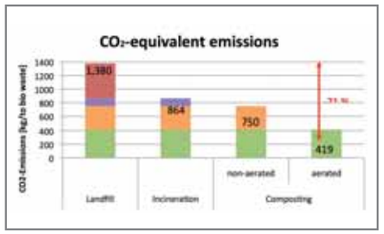
With such composting dimensions, the natural chimney effect and the consequent inflow of air and exchange of gases are reduced. If there is insufficient oxygen, the aerobic process will stop, and gases that are harmful to the environment (CH_4) will be created.

In order to understand this emission behaviour, a comparison test was conducted between aerated and non-aerated windrows within the framework of a scientific research paper. Composting windrows that consisted of the same starting mixture, a windrow width of about 4.5 metres and a windrow diameter of about 6.5 m² were placed on a aerated and a non-aerated area. The gas composition of the windrows (CH_4, CO_2, O_2) was then measured in the following four weeks of decomposition time, and the odour emissions were captured and documented.

CO_2-balance

Based on the measured values, equivalent CO_2 emissions of 400 kg per ton of biodegradable waste were generated in the aerated version. Non-aerated biodegradable waste generated a CO_2-equivalent emission of 750 kg per ton of waste. With additional 15 % of equivalent CO_2 emissions, incineration would be above non-aerated composting (865 kg per ton of waste). According to literature, equivalent CO_2 emissions of 1,380 kg per ton of waste were determined in landfills. As a result of the aerobic stabilisation with active aeration, as much as 70 % of the CO_2-equivalent greenhouse gas emissions can be prevented compared to untreated waste disposal.





Odour emissions

In respect of odour emissions, non-aerated windrows develop four times higher odour emissions on average than aerated windrows. Enormous odour concentrations that were up to six times higher than with aeration were released especially during the turning process. This is considered to be due to the anaerobic decomposition conditions inside the compost windrows. Active aeration was able to reduce the emission of odour-intense substances as a whole by 75 % during the first four rotting weeks.

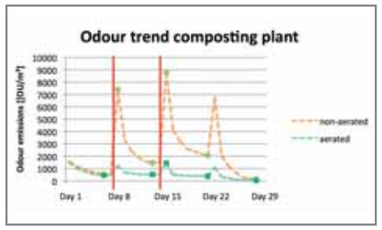
Conclusion

Without doubt, the EU regulations to no longer allow untreated waste into landfills has resulted in a major contribution to climate protection. The trend to first sort through the waste before submitting the high-caloric fraction to thermal recycling is another key step in the direction of climate protection and also the conservation of resources.

The extremely positive influence of composting on climate protection is indisputable as well. By binding CO_2 in the soil, carbon has been placed where it provides the greatest benefit - namely as humus in surface soil. In addition, nutrients are recycled back into the soil.

It is, however, also significant that the various treatment methods used in composting can result in extremely different CO_2 releases to the atmosphere. If the ratio between structure and windrow size is not restricted, the natural chimney effect alone will no longer be sufficient to ensure aerobic conditions, resulting in increased greenhouse gas emissions (CH_4).

Very striking differences were measured in the comparative test study between non-aerated and aerated windrows. Thus, the ventilated windrow reduced the emission of gases environmentally harmful by almost half, and odour emissions by 75% compared to the non-aerated ones.



Fresh kitchen waste can putrefy very quickly, turn anaerobic and release high amounts of methane.

During turning, the release of odours is the strongest. Anaerobic piles have the highest odour potential.

To secure compareable results under all weather conditions, a special testing tool was built, that provides same conditions for all sampled windrows.

Ready made compost returns important nutrients to the soil an on top, brings significant amounts of carbon to the soil, that is of maximum importance for a sustainable healthy productive soil.

Reinforcement in the Compost Systems team:

>>Christian Zimmerl
brings 10 years of experience from the fields of Architecture and Project Management into the company and reinforces our Engineering and Implementation team.

>>Mech. Eng. Christoph Daniel
has graduated in Agricultural Engineering from the Francisco Josephinum in Wieselburg and with his many years of experience in the construction sector (e.g. at Liebherr and Siemens) is going to support for our Mechanical Engineering department

>>Roman Lugmayr, B.Sc.
is actually writing his Master thesis for his „Biological and Environmental Technology“ study at the University for applied sciences. In 2010, he wrote his Bachelor thesis on the „Climate-relevant emission behaviour of composting facilities“. Roman Lugmayr is joining our Research and Development department and will become available to the company full-time in autumn of 2012.

Further informations at **www.compost-systems.com**

You have or are looking for a second-hand machine?

Give us your technical data and wishes.
We will gladly put you on our contact list.
For more information on our second-hand machines please contact
Mr. Würzl: a.wuerzl@compost-systems.com,
tel.: +43 7242 350 777-14 or on our website:
www.compost-systems.com under the heading “compost turner – second-hand”.

Compost turning machine
CMC TA 350 windrow width max. 4 meter; year of manufacture: 2010; operating hours: approx. 200; hydraulic push axle;
Location: Austria

Compost turning machine
CMC SF 300 windrow width max. 3.2 meter; year of manufacture: 1995; operating hours: approx. 7,500

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