

Successful step into plant engineering



**Modern technology
for waste splitting**



**TERMINATOR-
Stationary solutions**



**Topic MBT-
New projects and
experience**



**MBT-Output:
maturation and
screening**



Dear readers,

This edition of KOMPTECH FARWICK News deals with our youngest branch, the activities of the company KOMPTECH FARWICK Anlagenbau in Austria and Germany.

The KOMPTECH FARWICK Anlagenbau GmbH Wien was founded beginning of 2003 and has already successfully effected several projects together with our German project department respectively some of them are in transaction at the moment. Please find below the most important projects:

Name	Costumer	Location	
MBT	Servus Abfall	Frohnleiten (A)	in operation
Splitting plant	Zellinger	Walding (A), Oldenburg (G)	in operation
Stationary shredding plant	various	Linz, Liezen (A), Minden (G) Erbenschwang, Lübeck, Bochum (G)	in operation in transaction
Biowaste preparation plant	Schuh	Langenzenn (G)	in operation
Stationary shredding plant	Linde	Cröbern, Schöneiche (G)	in transaction
Biogas plant	Marchfelder Bioenergie	Markgrafneusiedl (A)	in transaction
MBT	Schwarze Elster	Lauchhammer (G)	in order

In the meantime projects with an order value of approx. 8 Mio. EURO are in operation, projects with approx. 4 Mio. EURO are in transaction. The orders in hand of not already started projects amount to approx. 5 Mio. EURO. The biggest of it is the mechanical part of the MBT „Schwarze Elster“ in Lauchhammer (G). The project companies are on the one hand as mentioned located in Vienna (the KOMPTECH FARWICK Anlagenbau), who is responsible for Austria and the new EU-countries (Slovenia, Poland and Hungary) and on the other hand in Germany, the company Maschinenbau FARWICK in Oelde, that is belonging to the KOMPTECH FARWICK Group.

I want to use this opportunity to express my thanks to our customers for their confidence. I would also like to thank, together with my colleague in the management and partner Rudolf Pretzler, our colleagues, above all the management directors of the project companies and the project engineers, who did a perfect job in a very short time.

Innovation stands on the first place for our machines as well as for our plant construction. After the landfill regulation has come into force in Austria the composition of industrial waste has changed enormously. Waste, which at former times has landed on the landfill without further notice, has to be treated now. Some of our competitors are biting on granite – not KOMPTECH FARWICK. You will find more about it in this edition.

I wish you much fun and the gain of the latest findings during reading this edition.

Yours sincerely,

Josef Heissenberger
Chairman of the management

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MBT Schwarze Elster



In Lauchhammer (Brandenburg, G) a new plant for mechanical-biological waste treatment of 50.000 tons per year garbage and bulky refuse is built up for 18 Mio. Euro. KOMPTECH FARWICK supplies the plant for the mechanical pre-treatment. Georg Körner, Management Director of the federation of waste disposal „Schwarze Elster“, explains what he highly appreciates on the plant engineering.

Mister Körner, why do you get into the mechanical-biological waste disposal, named shortly MBT?

The background for the construction of the new MBT plant is the directive „TA Siedlungsabfall“, saying that starting from 1st of June 2005 it is not allowed to deposit waste without a preceding treatment. With the MBT we don't want only to burn the waste or let it rot, but we would like to use it energetically. Therefore a very new preparation plant is constructed on our own area for around 18 Mio. Euro.

What are the definite duties and goals of the plant?

Our plant should prepare garbage and bulky refuse mechanically and biologically. Every year we have in our sphere of responsibility approx. 50.000 tons of it. At the moment 2/3 of the whole bulky refuse are deposited. One part of our waste is treated biologically before the deposit, thereby the organic part is reduced in a maturation plant. The bulky refuse is sorted out completely and 85 % are used.

The procedure separates into a mechanical and biological treatment. After the delivery the waste is presorted and shredded. With screens, magnetic cutters, a ballistic sifter and other procedures the waste is disintegrated in usable and unusable material streams. One of these material streams with a high percentage of organic substances is transported into the biological treatment part of the plant. In closed ferment containers sealed from gas,

biogas is produced by means of fermentation. This is due to the high methane content flammable and is usable in a power station plant. We can produce heat and electricity. After a first valuation our company could run energy self-sufficient. The residual material, which remains after the fermentation, is dried up with the BHKW plant and deposited afterwards.

Which part the company KOMPTECH FARWICK is taking over?

KOMPTECH FARWICK is the partner of the working pool, which has the construction order as general contractor. Also included are the company Haase Anlagenbau GmbH (Neumünster) and HTL Hoch- und Tiefbau Luckau. KOMPTECH FARWICK delivers the machines for the waste separation and preparation. This includes the shredding and screening technique.

Which advantages do you see in the components of KOMPTECH FARWICK?

I really appreciate that KOMPTECH FARWICK is producing most of the components on their own. Especially regarding warranty and maintenance issues it is important, that the service company knows his machines very well. In addition the manufacturer is the direct competent contact person.

Which technical particularities do you appreciate especially?

Especially succeeded are the changeable teeth of the waste shredder TERMINATOR. In comparison to other products not the whole roller has to be changed in the case of breakage or wear. The variety of the machine could be a further advantage for us, which is also able to shred difficult materials with the combined cutting and breaking technique.

How is the 18 Mio.- project financed?

The waste federation „Schwarze Elster“ is financing this project by own means via fees. There are no subsidies for this project.

When should the plant start its operation?

We hope that we have installed the reactors for digestion and the halls until end of the year, so that KOMPTECH FARWICK can begin with the installation of the machine beginning of next year. The trial phase could start beginning of November 2005 according to our schedule.



The modern splitting- and



Ing. Gottfried Reither, Management Director of KOMPTECH FARWICK Anlagenbau GmbH guides us through the technique of a modern preparation plant.

The increasing requirements and the competition situation in the refuse derived fuel (RDF) market don't make the positive decision for investment resp. an economical consideration for a „splitting“ – and RDF-plant easier.

A basic requirement to such a preparation plant is the acceptance of different input materials. The technical realization of the tasks has to have a maximum on flexibility. In addition the possibility should exist to react on the desired output materials in regard of grain size and different sizes.

One of the essential criterias for a decision is the regular maintenance, energy and personnel costs. This influences the manufacturing costs per ton input material a lot more than the amount of investment, which can be calculated according to the hours of operation.

KOMPTECH FARWICK has therefore asked himself how to fulfill these requirements mentioned above, taking as a basis the enormous experiences of our customers and in co-operation with many manufacturers of separation and sorting machines. At the same time we refer to the internal knowledge about the produced shredders and drum screens.

The selection of the appropriate pre-shredding aggregate

is very important for the flexibility of the plant, which influences in regard of the insensitiveness to interference materials and shredding quality the trouble-free operation of the plant. KOMPTECH FARWICK has the perfect solution in his product range with the electrically-hydraulically powered TERMINATOR (1) with a fine shredder roller and an adaptable counter comb.

Also the separation of iron material is required (2), (3) directly after the shredding aggregate in order to protect the screen and separation aggregates of damage.

A primary screen stage (4, separation cut approx. 150 mm), who is separating the stream into minor and major grain – subsequently the so called „fluidezed bed fraction“ can be produced - facilitates the exact adjustment of the sifting aggregates.

In principle it is easier to select material streams in a tighter grain belt than in a mixture of different part sizes.

The minor grain („fluidezed bed fraction“ – for exploitation in power station plants with fluidized bed-firing technique) can be brought to a second screen cut for the separation of the inert materials (5, dependent on material 20-40 mm sep. cut). The resulting minor grain is sluiced out (6), but it is also usable depending on the input material as a incineration fraction.(11).

It is essential that the load with dust is kept as low as possible during the second screen stage for the following sifting. The vertical streaming sifter (7), which is sucking foils and light materials out of the material stream, is exposed to a minor wear in the pipe bends and the cyclone. An additional positive effect is the installation of a small dust filter equipment for the separation air. The fraction which is leaving the separation cyclone (8) is transported to a after shredding treatment (10).

The remaining heavy fraction is sluiced out according to its quality (6) or is put together with the major grain of the first screen stage into the drum sifter. (9).

For the major grain of the first screen stage a separation into a light and heavy fraction is assigned by means of a drum sifter (9) with air over a rotating drum. A separation with a vertical sifter would cause obstruction in the sifter pipes because of the size





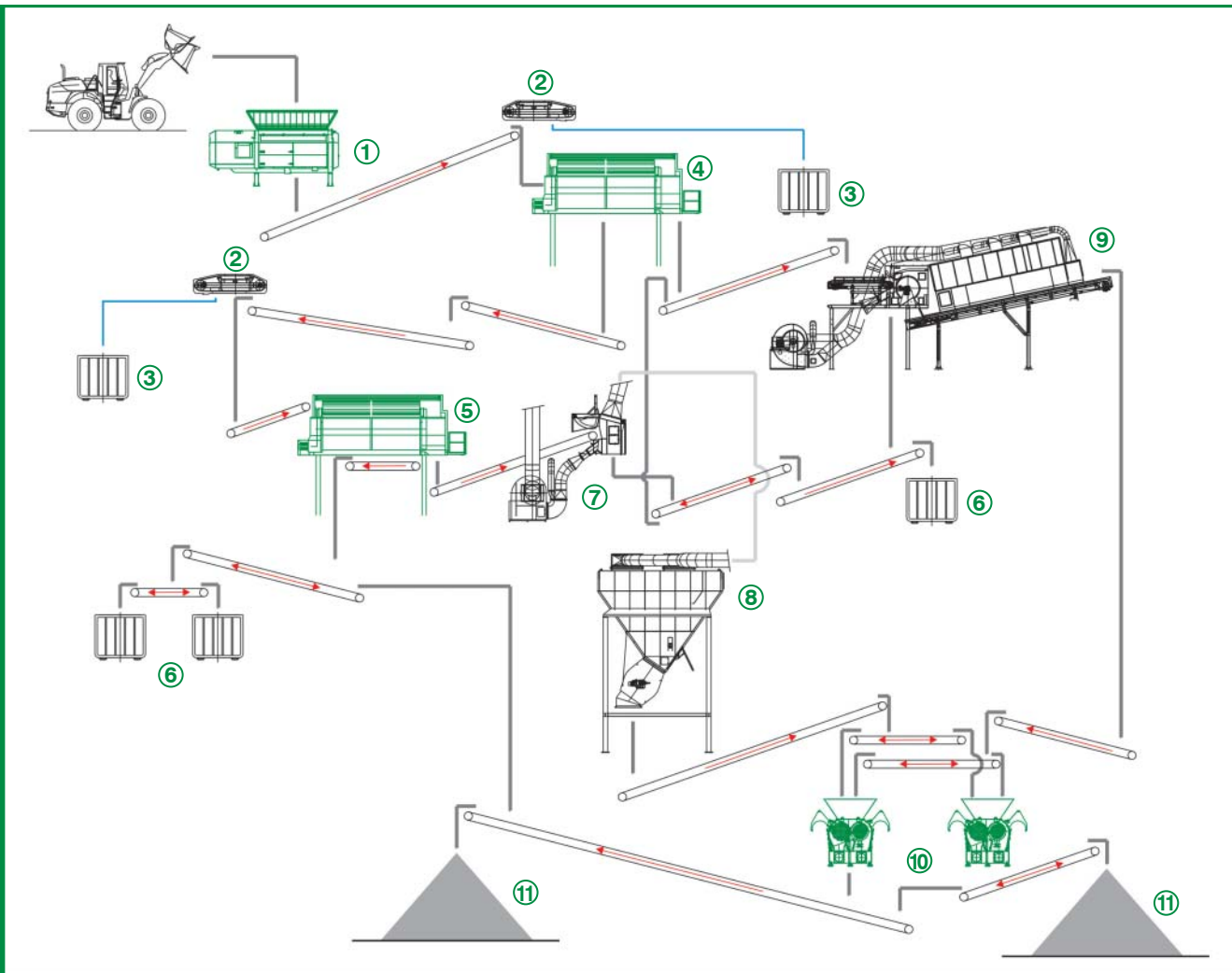
RDF plant

of the parts (> 150 mm). The heavy fraction in the drum sifter is led off (6), the light fraction reaches the after shredding treatment (10).

The following shredding (10) of the light materials coming on the one hand out of the vertical sifter and on the other hand directly out of the drum sifter, should be done with slow-running machines, which can produce different combustible fractions by changing the screen baskets. The formation of the after shredding treatment into two lines has proved in practice, because of the relatively often necessa-

ry adjustment tasks the effective operation time of the whole plant can be improved remarkably. (Turning, adjusting the knife plates, changing the knife plates).

As described at the beginning a mixture of the obtained "products" resp. an avoidance of the one or another process step is absolutely required because of the reversing conveyor belts. So one can react systematically to the conditions of the market of RDF's and the desired combustible (11) with defined attributes can be produced.



- | | |
|--|------------------------------------|
| 1 Pre-shredding KOMPTECH FARWICK TERMINATOR F | 7 vertical streaming sifter |
| 2 Fe-separation | 8 cutting cyclone |
| 3 Sluicing of Fe-materials | 9 drum sifter |
| 4 1. screen cut KOMPTECH FARWICK drum screen | 10 Fine shredding |
| 5 2. screen cut KOMPTECH FARWICK drum screen | KOMPTECH FARWICK Chippo |
| 6 Sluicing of inert materials | 11 combustible fraction |



Key component TERMINATOR high increase of stationary solutions

Everybody knows that KOMPTECH FARWICK is producing high quality waste shredders in the mobile sector. Obviously everybody also knows that the shredders of the TERMINATOR- series are also in the stationary sector nearly unique relating to their power. Only because of this fact the high demand for electrically-powered, stationary solutions can be explained. Nevertheless, for all who are not yet familiar with the advantages of the TERMINATOR, find a short summary below:

Universal application:

Mixed waste, waste residues, industrial waste, bulky refuse – everything which fits into the big shredder area and which is grasped by the aggressive teeth, can be shredded. By an intelligent hydraulic system with constant power control an independent adjustment of the shredder process on the material is carried out: High number of revolutions of the roller and high throughput with material which is easy to cut and high power with material which is hard to cut.

Undisturbed working is secured:

The infinitely variable adjustment of the cutting gap allows the exact adaptation of the shredder degree onto the process steps to follow. Via the number of revolutions of the roller the volume stream through the installation can be freely adjusted. – Screens, separators etc. can be operated very optimally. Dependent on technology non-shredded material can't be introduced into the material stream and causes

blockades. If it happens that the material cannot be shredded after several reversing proceedings an overload protection prevents damages on the roller and on the counter-comb. The machine stops the roller and informs about the cause via the display. By swinging out the counter-comb the shredding area can be reached and the contaminants - most of the time massive iron parts – can be removed easily.

Economy – a basic requirement:

Strategy on spareparts – high standing time, cheap parts, serviceable several times, fast changing system – is perfectly realized.

Regarding energy consumption, the hydraulic drive has in comparison to the directly driven systems a smaller efficiency, but causes less and lower peak loads of energy consumption during blockades and starting-up because of the puffer action of the hydraulic. Power-supply companies use these peak values for their calculation, so in general the solutions with the hydraulic system have a clear advantage.

NEW: Highest flexibility in regard to positioning

From now on the stationary TERMINATORS can be better adapted to the local surroundings. If desired the drive unit can be separated from the shredder unit. The drive unit can be placed protected from dust and easily accessible in containers or supply room. The compact shredder unit can be integrated place-saving into the process course. Filling the shredder unit is possible from all sides.



Stationary technology: External drive in a container or in the engine compartment KOMPTeCH FARWICK offers flexible solutions



The right choice - MBT-plant



Mag. Gerhard Ziehenberger, Management Director of Servus Abfall Dienstleistungs GmbH & Co. KG informs about the decision for the MBT plant in Frohnleiten and the experiences up to now.

KOMPTECH FARWICK: *How do you see as an operator of a plant the year after the implementation of the landfill regulation and the connected changes?*

Mag. Ziehenberger: For an operator of a plant some essential and incisive changes have resulted, whereas the MBT in Frohnleiten represents only one building-stone of the realization of the landfill regulation. The most important change is the transition from the „simple“ deposit of unrestricted amounts to the treatment of time- and amount- related, exact defined charges, which are resulting in operation conditions of the plant.

KOMPTECH FARWICK: *Which requirements originate from the operation of a MBT plant?*

Mag. Ziehenberger: Within the operation of a plant standstill times are a very huge challenge. The non-treated amounts can't make up easily because of a clearly defined configuration of the plant. A positive remark is that the plant in Frohnleiten is functioning trouble-free so far, the technology is relatively simple and robust. In comparison to several incinerators, which have long standstill times and therefore have to force with reduced throughput, the odds are clearly on our side.

KOMPTECH FARWICK: *What are the reasons for the construction of the MBT plant in Frohnleiten apart from the legal conditions?*

Mag. Ziehenberger: The main reason for the building of the MBT plant and the operation as „Servus Abfall“, which is a co-company of public authorities and private partners, was the reaching of independence in the area of waste economy. The good co-operation with the city and the local companies in Frohnleiten and the big potential of the place with an already existing landfill and functioning infrastructure has led to the decision for the mechanical-biological waste treatment on the one side and for the building of the plant on this place on the other side. A further reason is the existence of several mechanical pre-treatment in

Styria, above all the AEVG in Graz, from which the material can be taken over for the treatment in the MBT plant in Frohnleiten.

KOMPTECH FARWICK: *What are your positive and negative experiences in the first few months of operation and which challenges are resulting for the next years?*

Mag. Ziehenberger: After putting into operation the plant the most important requirement is that the plant runs almost trouble-free in the next few years, in order to guarantee the economy of the company. The operation runs more trouble-free than expected, even the energy consumption is less than expected. A potential for an optimization in the next time exists in shortening the maturation time of the intensive composting phase, in order to increase the throughput observing all limiting values at the same time. The MBT plant is under-used regarding the amounts, at full load some weaknesses could possibly occur. In general the plant is functioning very satisfying, for a final résumé it is at course too early.

KOMPTECH FARWICK: *Will the know-how gained from the operation of the plant be used in the future and for other projects?*

Mag. Ziehenberger: Of course can the experiences gained from the operation of the plant be used in other, similar disposal areas in the country and also in neighbored foreign countries. We will try to translate the gained knowledge into action in other projects in the next few years. In Austria most of the work is already done, here there is no big potential anymore. The situation is different in the neighbored countries in the East and South. There are no concrete plans for aimed activities, but all possibilities are sorted out, in order to get busy in these areas depending on the waste economical developments. On the part of these countries some conditions have to be fulfilled for a functioning waste economy.

KOMPTECH FARWICK: *How was the co-operation with the partners during the building and operation of the plant?*

Mag. Ziehenberger: Good partnerships are the assumption for the long-lasting success of a project, especially during challenges like the building and operation of the MBT plant in Frohnleiten. In our case the co-operation of the whole working pool in general and especially KOMPTECH FARWICK is very good. The positive experiences of the past have been confirmed, the little problems were solved together, only in this way partnerships can function.



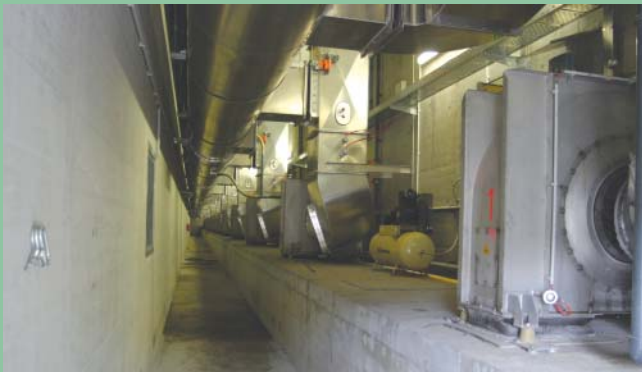
Frohnleiten



1. Feeding systems: MASHMASTER mixing units



2. Automatically filling of the rotting tunnels



3. Engineroom - ventilation



4. Decompaction unit for breaking up after 2 weeks of composting



5. Emptying of the tunnel after 4 weeks



6. Loading into containers for transport to maturation



7. Treatment of exhausts- acid washer



8. Treatment of exhausts- view into the biofilter



Positive in the future



Ing. Wolfgang Thomann, Management Director of the local companies in Frohnleiten speaks about the change of the place Frohnleiten from a landfill into a waste- and disposal economical centre of competences.

KOMPTECH FARWICK: *How has the year and the resulting changes been after the implementation of the landfill regulation for you as the operator of a landfill?*

Ing. Thomann: The amounts of waste for deposit have decreased, since in Styria as one of only 4 federal states there is no exemption permit, that means that there is a fixed time for the implementation of the landfill regulation. At the moment the streams of waste are going the reverse way, away from Styria. Huge, economical drops are resulting, which we have to cope with.

KOMPTECH FARWICK: *Which steps did you make to implement the requirements of the landfill regulation?*

Ing. Thomann: On the one hand the MBT plant was built in Frohnleiten, in order to meet the treatment order for waste, on the other hand current is produced in the power stations within the landfill area. With the heat of these power stations the drying of the sewage sludge is operated, which is conditioning the sewage sludge as RDF. By that Frohnleiten has reinforced its position as a waste-and disposal economical centre of competences. Not only the economical existence but also the disposal security for the customer can be guaranteed.

KOMPTECH FARWICK: *How do you see the future of the landfills in general and especially in Frohnleiten?*

Ing. Thomann: The future for landfills is positive, because they will still be essential for a working waste economy. In the meantime they are seen as the final link in the waste economical chain – but without

a landfill the waste economy wouldn't function. The operation of the landfill in Frohnleiten is secured for 30 more years.

KOMPTECH FARWICK: *How do you see the experiences with operation of the maturation on the landfill in Frohnleiten?*

Ing. Thomann: For the maturation in general: The more homogeneous the waste is, the less complications occur during the operation. Negative influences has the use of sewage sludge in the intensive composting phase and the maturation. For these waste streams other ways of disposal make more sense, for exemple the use as compost or the preparation as RDF by drying the sewage sludge. A functioning screening technique is very important for the maturation and the observation of the limiting values for depositing the output material. Here on the landfill in Frohnleiten a star screen of the company KOMPTECH FARWICK is used. The first experiences can be valuated as very positive, although high demands are made for the technique of the machines.

KOMPTECH FARWICK: *Did you have to face some more challenges?*

Ing. Thomann: The logistics of the company has become a lot more difficult due to the extensive plant engineering. The streams of waste, which are reaching the plant, have to be clearly defined by the construction parameters of the plant, because standstill times can't be made up. This fact increases the demand for planning in the logistics enormously.

KOMPTECH FARWICK: *What are your wishes for the future?*

Ing. Thomann: The essential point, that has to be fulfilled, is the stabilization of the legal situation. Especially for the plant engineering, which will amortize only within the next 15 - 20 years, the legislation is asked to create legal frame conditions, guaranteeing a long-lasting security for investments. Otherwise an economical existence is impossible for waste disposal companies.





Process course maturation



Modern technology for the maturation of MBT-output: Trapezoidal windrow turner SIDETURN and star screen MULTISTAR 3SE of KOMPTECH FARWICK

On the site of Frohnleiten first the delivered, mechanically pre-treated waste undergoes an intensive composting in closed tunnels. After the legally fixed composting time of 4 weeks the material leaves the closed plant and is then transported to the open maturation area on the landfill area. The required area was made trafficable also for very heavy machines, independent of weather conditions by a special stabilization procedure.

The internal procedure is created that alongside of the pile the charge of a week of the intensive composting is laid aside in the form of a row. On the opposite site one row of the stabilized waste compost is removed with a wheel loader and supplied to the star screen. The maturation time is about 10-12 weeks long, with a resulting pile dimension of approx. 90 m x 70 m. If the height of the pile is about 3 - 3,5 m at the beginning, it will be approx. 2 m at the end, due to the maturation loss. The turning with the powerful windrow turner SIDETURN is done once weekly and lasts 15 hours. The content of water in the maturation amounts to 30-35% of the humid substance, if necessary water is added during the turning process.

At the end of the maturation time the material is screened through the 3- fraction star screen MULTISTAR 3SE. In one screening action 3 fractions are produced, whereas the screen section is selected via the regulation of the numbers of revolutions of the stars. So one can react flexibly on the output-material of the maturation and the requirements of the Austrian Regulation for Landfills can be executed exactly. Small grain and as a rule also the middle fraction, which can if necessary also be wind-sifted, remain under the calorific value of 6.000 kJ/kg DS (dry substance) and are stored. The gross fraction, between 5 -15 %, is incinerated. Also the further limits, demanded by the regulation, of the parameters respirations activity (AT4) and sum of gas contribution (GS21) remain surely under in the output maturation.



The throughput of the SIDETURN is between 1200 and 1500 m³/h (in this case)



Star screen MULTISTAR 3SE for the compliance of the calorific value (according to the Austrian Landfill Regulation)



Hungary's road to a modern waste business



With the entry into the EU, Hungary is now obliged to implement the far-reaching environmental laws of the Union. Not an easy task, although there are some provisional regulations. The chosen way goes into the direction of separated collection and most possible utilization of the waste streams. Since a long time the transfer of Know-how and technology between KOMPTECH FARWICK, our Hungarian distributor MUT Hungária GmbH and important decision makers in the Hungarian waste economy was practised and is now bearing fruits.

The developed machine- and plant technique by KOMPTECH FARWICK meets the demand of the Hungarian market. The growing treatment plants in the course of the realization of the national project plan for waste management have the focus on separation for material valuation and composting.

The right technique for the new market

Therefore one bet next to the reliable plant technique also on the flexible mobile technique. Whereas for the waste field stationary and mobile solutions are used consisting of the universal waste shredder TERMINATOR

and drum screens, for the composting the combination of the universal wood shredder CRAMBO, the compost turner TOPTURN X and drum screens are employed. At the moment there are 3 „MAXX“ drum screens, 3 „TOPTURN“ turners, 1 „TERMINATOR“ shredder and 1 „MASH-MASTER“ mixing unit and 1 „HURRIKAN“ air separator prepared for delivery for the East-Hungarian waste economy project. The next project is in elaboration.

**MUT
HUNGÁRIA**



A TOPTURN X53 is on the way to Hungary.