



GORE® COVER FOR RECYCLING PARKS



RECYCLING PARK: THE INTEGRATED APPROACH TO A COMPREHENSIVE WASTE TREATMENT PROGRAMME

All waste streams collected in one plant for subsequent processing

- Source Separated Organics (SSO)
- Municipal Solid Waste (MSW)
- Refuse Derived Fuel (RDF) Biodrying

Integrated process steps

- Separation and recycling
- Preparing for re-use
- Biodrying of RDF fraction
- Stabilization before landfill

Various targets achieved

- Fulfilling regulatory requirements: Council Directive 99/31/EC of 1999 on the landfill of waste and regional requirements
- Proven waste volume reduction in the biological fraction up to 40%
- Drastically extending the lifetime of landfill capacity whilst recycling
- Building carbon credits
- AT₄ <10 mg O₂/kg DM, DRI1000 etc. requirements



GORE® COVER: ONE SOLUTION FOR A WIDE SPECTRUM OF TREATMENTS IN THE RECYCLING PARK

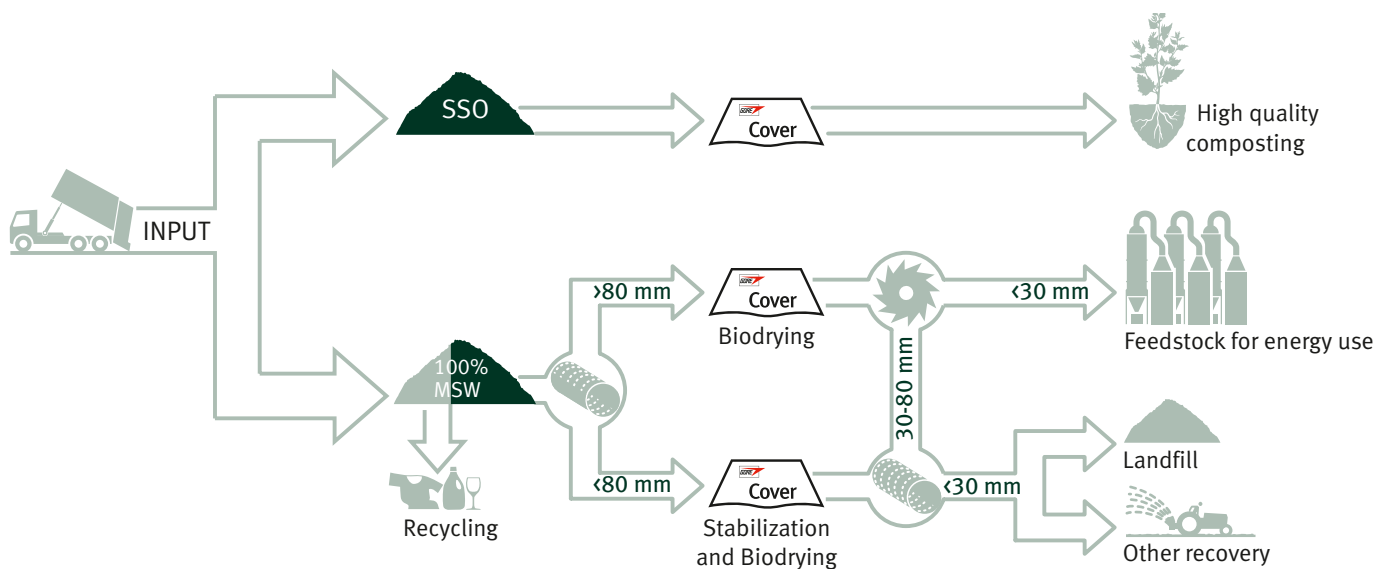
Treatment of separated organic waste for high-quality compost

- from yard waste to food waste
- from green cuttings to digestate
- from source separated organics (SSO) to manure
- from catering waste to paper sludge
- from fish waste to slaughterhouse waste

Treatment of municipal solid waste (MSW)

- Mechanical Biological Treatment (MBT) to
- achieve the required stabilisation level (e.g. AT₄, DRI100 or others) before landfilling
 - create alternative fuels, Refuse Derived Fuel (RDF)
 - produce Compost-Like Output (CLO)

INTEGRATED RECYCLING PROCESSES STEP BY STEP. REDUCED LANDFILL. VALUABLE OUTPUT.



GORE® COVER VALUES FOR RECYCLING PARKS

- One technology concept for different treatment steps
 - easy to operate
 - easy maintenance
 - easy to expand
- Investment and treatment costs per ton are lower compared to MBT building technology or incineration
- Highest system flexibility to meet peak season
- Regulatory requirements are proven by e.g.
 - VOC study (California, 2009)
 - Odor emission study (Germany, 2006)
 - In vessel approval (Germany, 2002)
 - UBA emission study (Germany, 2008)
 - Lowest possible emission rate compared to all other technologies: reduced emissions from an industry average of 47kg to 12 kg per ton
 - Stabilization Requirements; AT₄ value (e.g. Poland 2012)

RECYCLING PARKS REFERENCE



CASE STUDY 1: SPAIN

Households: 75,000 households with 300,000 inhabitants

In operation: since 2009

Input quantity: 190,000 tons/year

Input material: Municipal Solid Waste (MSW) without separate collection

Regulatory requirements: Meeting national legal requirements for stabilized waste to landfill

Output

- Recyclables: Separation of paper, cardboard, PET, plastic, FE/NE, textile, glass
- RDF like material for energetic use
- CLO: for agricultural applications
- Landfill: extended lifetime by factor >5

Mass balance per year		
	Tons/year	%
Input	160,000	100
Recyclables	78,400	49
CLO	19,200	12
Mass reduction	28,800	18
Landfill	33,600	21

CASE STUDY 2: HUNGARY

Households:	54,000 households with 270,000 inhabitants
Municipalities:	112 pooling in one Recycling Park since 2009
In operation:	since 2009
Input quantity:	160,000 tons/year
Input material:	Municipal Solid Waste (MSW), Source Separated Organic (SSO)
Regulatory requirement:	Hungarian national law on waste treatment, landfill requirements

Mass balance per year		
	Tons/year	%
Input	160,000	100
Recyclables	55,000	34
RDF	27,000	17
Mass reduction	28,000	17
Compost	20,000	13
Landfill incl. CLO	30,000	19

Output

- Recyclables: Separation of paper, cardboard, PET, plastic, FE/NE, textile, glass
- RDF material for energetic use
- CLO: use as daily landfill cover – not to be used in agriculture
- Compost: high end quality supplied for agriculture and private gardeners
- Landfill: legal requirements fulfilled





CASE STUDY 3: ITALY

Households: 330,000 households with 1,350,000 inhabitants

Municipalities: One province supplying into one Recycling Park

In operation: Starting 2011

Input quantity: 624,000 tons/year

Input material: Municipal Solid Waste (MSW)

Regulatory requirement: Stabilized material IR1000 fulfilling national requirements

Output

- Recyclables: Separation of paper, cardboard, PET, plastic, FE/NE, textile, glass
- RDF material for energetic use
- Landfill: legal requirements fulfilled

Mass balance per year		
	Tons/year	%
Input	624,000	100
Recyclables	312,000	50
RDF	69,000	11
Mass reduction	93,000	15
Landfill	150,000	24



WELL COVERED. WELL DONE.

- Comparing cost of ownership GORE® Cover is the most economic solution for the treatment of solid waste (Composting, Stabilization before landfill and Biodrying)
- GORE® Cover eliminates the need for buildings for the composting of organic waste
- GORE® Cover is accepted as in-vessel technology worldwide
- GORE® Cover offers solutions for green waste, food waste, other source separated organics, biosolids and MSW
- Static composting with positive aeration using membrane technology has the lowest possible emission rate

More than a cover – it's a complete system

- Support with site layout, commissioning, training and marketing of compost
- Back up for the efficiency and profitability of the site throughout its entire life-cycle via on-site check-ups
- Availability of a whole range of complementary customer services
- Web-based service platform for coordination of system components and spare parts (24 hours / 7 days a week)
- Training and support for owner and operator
- Demonstration packages and trial set-ups available on request

Experienced Partners for your Waste Treatment Solution

- GORE® Cover is sold by partners and system suppliers all over the world
- Please contact us to find your best partner for your local need



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BIODRYING & STABILIZATION WITH GORE® COVER FOR USE IN ENERGY RECOVERY PROCESSES

BIODRYING WITH GORE® COVER PAYS OFF

By substituting oil, gas, coal and other fossil fuels with municipal solid waste, turned into RDF (Refuse-derived fuel) a true energy recovery can be achieved and a clean environment is supported. BIODRYING with GORE® Cover adds ecological and economical values to waste. Expanded lifetimes of landfills and stabilized marketable compost are further values to benefit from.

The GORE® Cover system is an all in one technical solution to recover energy.

BIODRYING

First value of the waste is recovered by assorting recyclables like glass, PET, metals, etc. with mechanical pre-treatment. The remaining municipal solid waste is screened and divided into two fractions. Parts larger than 80 mm are



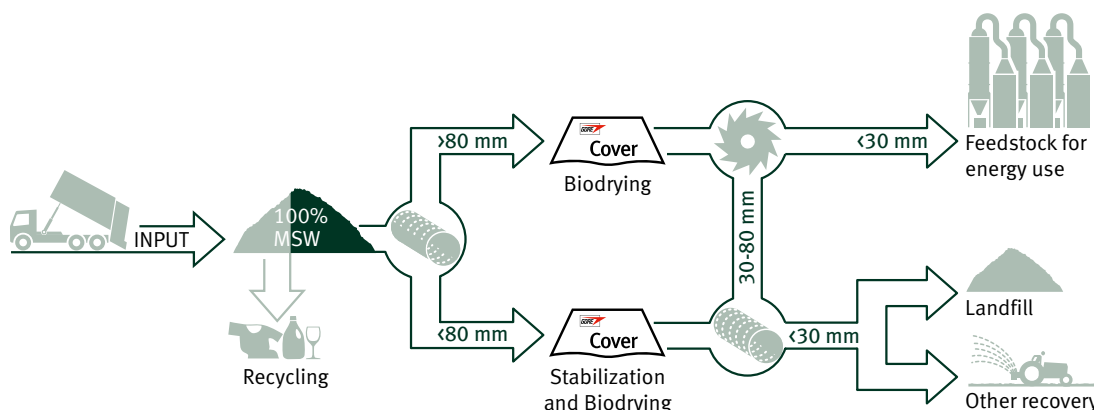
processed through the GORE® Cover system with a short exposure time to achieve <20% moisture content and a calorific value of >20Mj/kg. The result will be grinded to pieces smaller than 30 mm and the outcome is directly sold to feed energy intensive industries, like the cement industry.

STABILIZATION

Second fraction with parts that are smaller than 80 mm may contain a lot of biomass and

water. They need to be stabilized according to EU Council Directive 99/31/EC and to meet individual country regulations (e.g. AT4, IR1000, ...). After STABILIZATION the outcome is screened. Remaining parts with a size of less than 30 mm are marketed as compost-like material or dumped at the landfill. Compression in STABILIZING processes may triple the value of 30-80 mm units to the level of a middle calorific fraction. The outcome is sold as RDF to

energy intensive industries. GORE® Cover technology is an enclosed system and it is proven to provide best possible emission control (odour, VOC, greenhouse gas, dust, germs and bacteria). Lowest CO₂ equivalent emissions allow to generate carbon credits from the process. GORE® Cover technology persuades with a convincing cost/performance ratio due to low investment and maintenance costs, easy operation and flexible use.



GORE® Cover values for BIODRYING & STABILIZATION

- Energy recovery by extraction of RDF for energy intensive industries
- Small organic fraction output can be used as compost
- Big organic fraction with increased calorific value is an excellent energy supply for energy intensive industries
- Significant volume reduction before landfill



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