

WHAT'S NEW IN MSW MECHANICAL BIOLOGICAL TREATMENT?

A Breakthrough Technology by **ENERSI S.p.A.** & Associated Companies

Piazza San Giovanni Decollato 12 - 05100 Terni - Italy - Tel.+39 0744 082309 - email info@enersi.eu - web www.enersi.eu

PATENTED

1

INDIFFERENTIATED WASTE TO ENERGY

Our press allows the MSW to be separated into an energetic dry fraction and a wet fraction (OMG - Organic Material Gel) with about 50% of solids and 50% of water.

This OMG can be directly processed in our new and patented software driven high loading rate biodigestion system, to obtain as an output biogas and organic soil improver. The dry fraction has a high calorific power and can be sent to other process, such as for example pyrogasification or thermic valorisation.

Press-extrusion consists of the squeezing out of waste by a high pressure machine, which works at low energy cost (less than 12 kWh per ton of processed waste) the organic fraction is separated from others components without grinding, which would contaminate the quality of the organic matter. The press is available in various sizes and types, to satisfy all local needs.

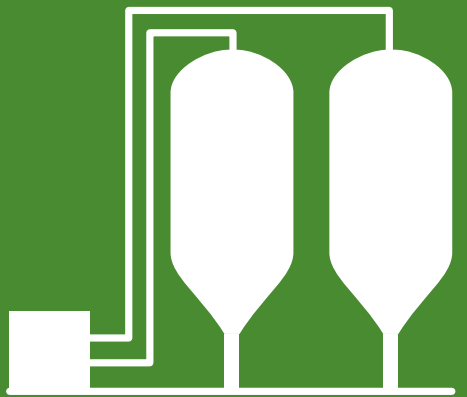


PATENTED

2

SOFTWARE DRIVEN HIGH LOADING RATE BIODIGESTORS

1. Excellent biodigestion process
2. Higher biogas production (20% more)
3. Ready to use soil improver (20% moisture)
4. Reduced wastewater to treat or use (No pre-treatments with addition of water)
5. Half energy for self- consumption needed (No energy consuming pre and post treatments)
6. Half amount of land space needed
7. Reduced capex needed
8. Easy to transport, because of its modular design
9. Less operation & maintenance cost due to high level software



High loading rate Biodigestors module

3

HIGHER ENERGY AND MATERIALS RECOVERY

1 ton of MSW produces :

- 800 KWe
- 1200 KWt
- 80 KG soil improver
- 100 KG inert materials recycling (Iron, Aluminum, glass)
- 12 KG ash to dispose

data refers to a complete process including ENERGETIC DRY FRACTION converted



4

VERY ATTRACTIVE PROFITABILITY & RETURN ON INVESTMENT

PLANT TYPE: 102,000 tons/year
(all figures in € per ton of MSW processed)

Operating cost unit 1 (extrusion and biodigestion)	(23)
Operating Cost unit 2 (Dry fraction process)	(33)
Income from electric energy & material sales unit 1 (0.14 €/KWh)	31
Income from electric energy sales unit 2	85
Income from thermal energy	42
Tipping fee	30
EBITDA	132
Depreciation (15 years)	(27)
PRETAX PROFIT	105
I.R.R.	> 20%

5

SCALING UP CAPABILITY MAINTAINING ATTRACTIVE ROI

Our concept is modular and scalable while maintaining attractive returns.

We can make feasibility studies from 5,000 tons per year (separation and organic fraction) up to the equivalent of bigger incinerators (> 800,000 tons per year).

