Industrial Tests with a New Mechanical – physical RMSW Processing Plant in Búslakpuszta, Hungary

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Content

- The project
- Preliminaries
- The design of the RMSW (residual municipal solid wastes) mechanical – physical processing technology.
- The built processing plant in Búslakpuszta – Zalaegerszeg, Hungary
- Industrial tests with the technology
- Conclusion

Project

A consortium formed from a machine and technology producer (**3B Hungary Ltd.**), a scientific partner (the **Institute of Raw Materials Preparation and Environmental Processing, University of Miskolc**), and a public waste managing service company (**Zala-Müllex Ltd**.) has started the development and construction of an RMSW processing technology targeting no-landfilling for this waste stream.

GINOP-2.1.1-15-2016-00904 "Development of new equipment production for the low and medium capacity RMSW processing technologies"

Preliminaries - Sampling

Sampling (Zalaegerszeg-Búslakpuszta
2016. October 10 – 14)**:**
MSZ 21420 28 and 29 Hungarian Standards
More detailed analysis

History of developments:

- **Model machines**
- **Model KLME separator**
- **400 mm wide „pilot scale” KLME separator**
- **1200 mm wide industrial size KLME separator**

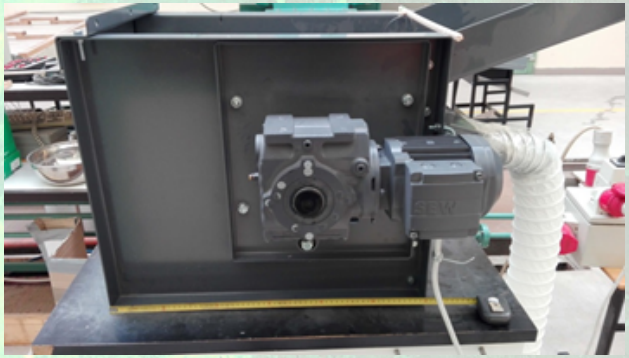
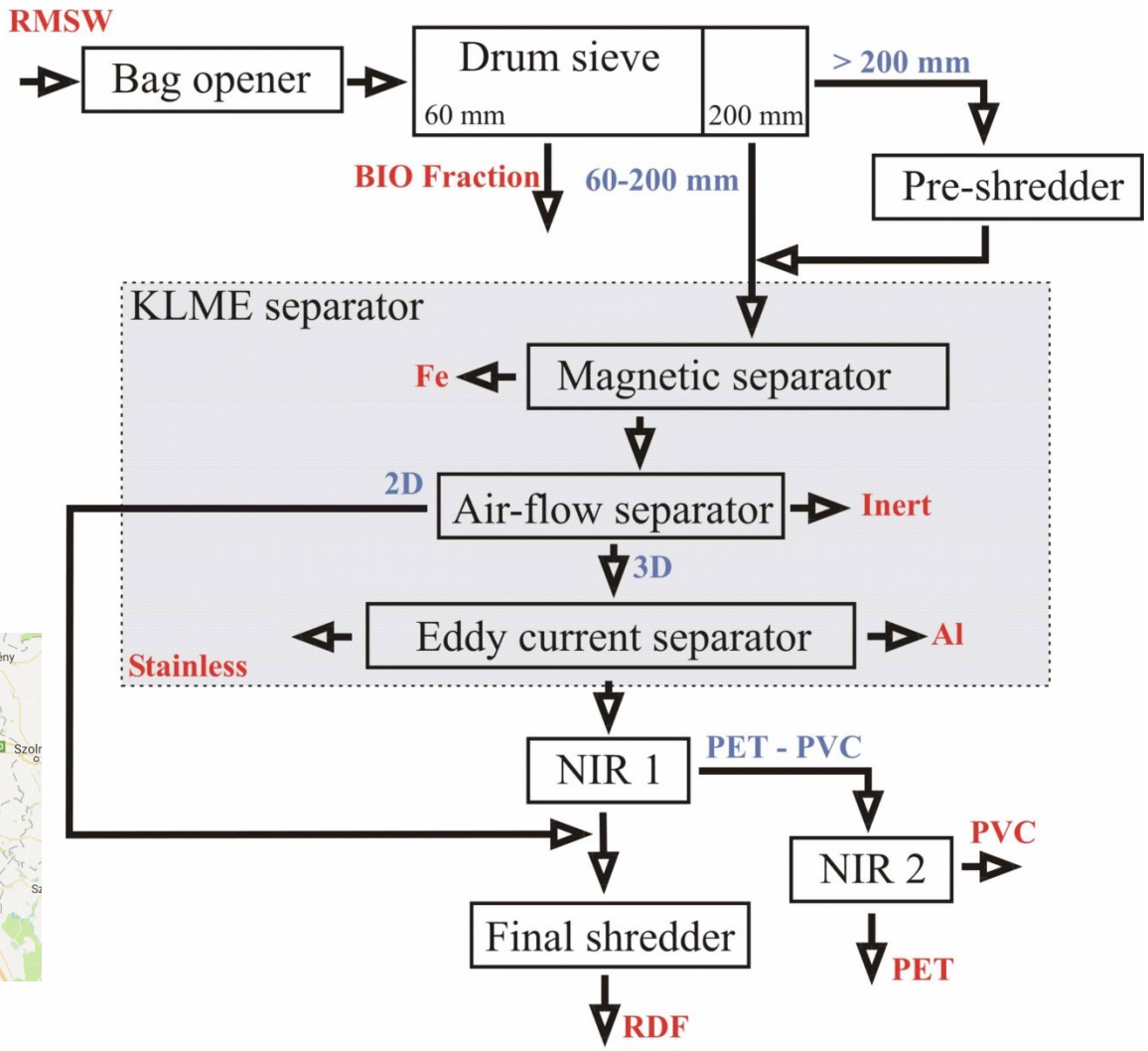


Photo of the 400 mm wide KLME pilot scale machine:

industrial prototype KLME in the production plant

signed mechanical – physical RMSW processing technology

- This is the 27th RMSW processing plant in Hungary.
- The 1st almost completely Hungarian made one.
- Location: Zalaegerszeg –



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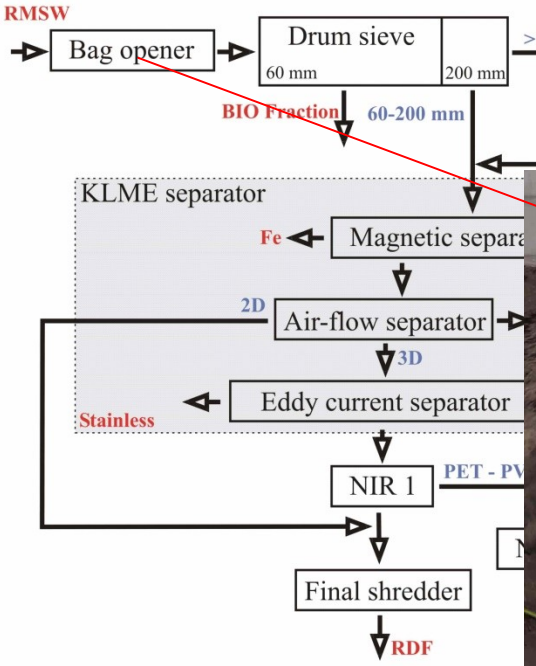
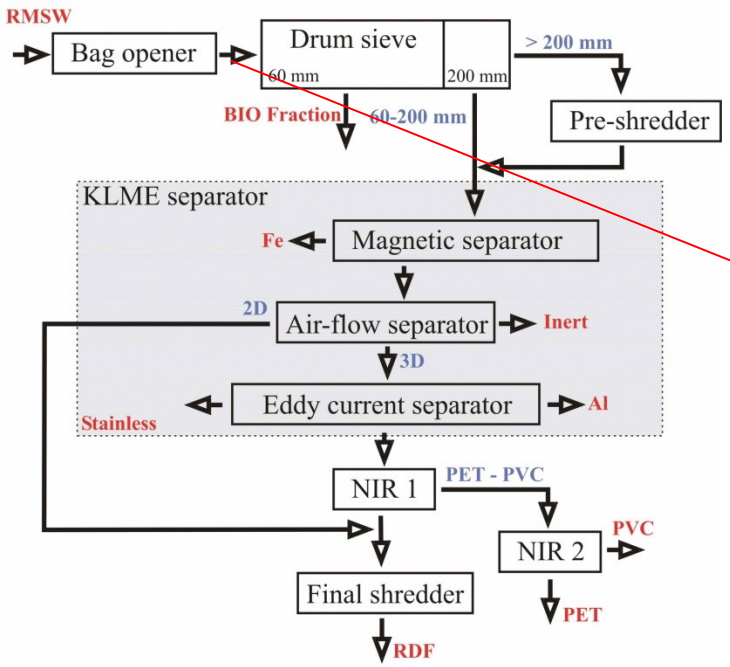
ne factory hall. The final shredder (METSO).

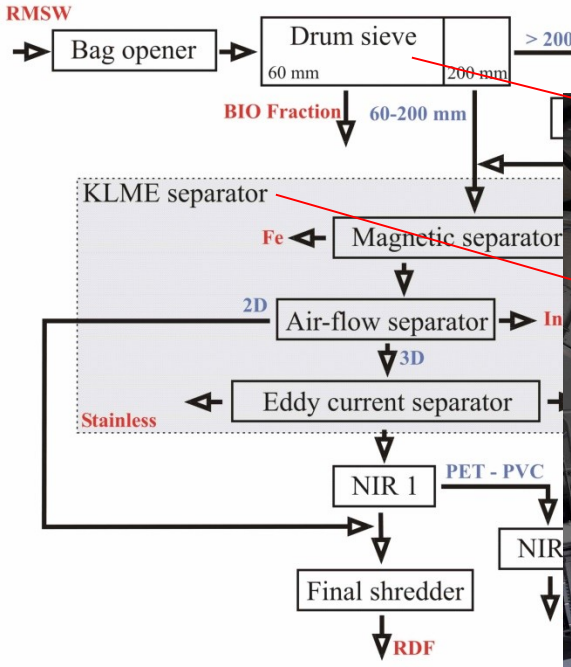
The feed and the bag opener.



eding belt conveyor before the drum sieve.

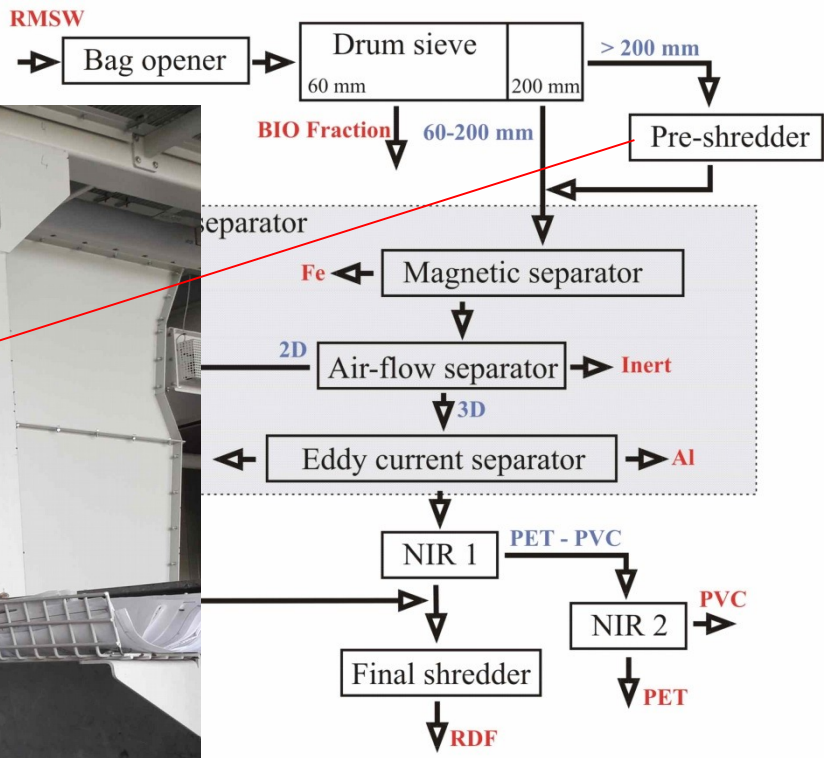


The drum sieve and the KLME separator.



Hammer mill for pre-shredding

Csőke B., Rácz Á., Nagy Z., Németh Sz..



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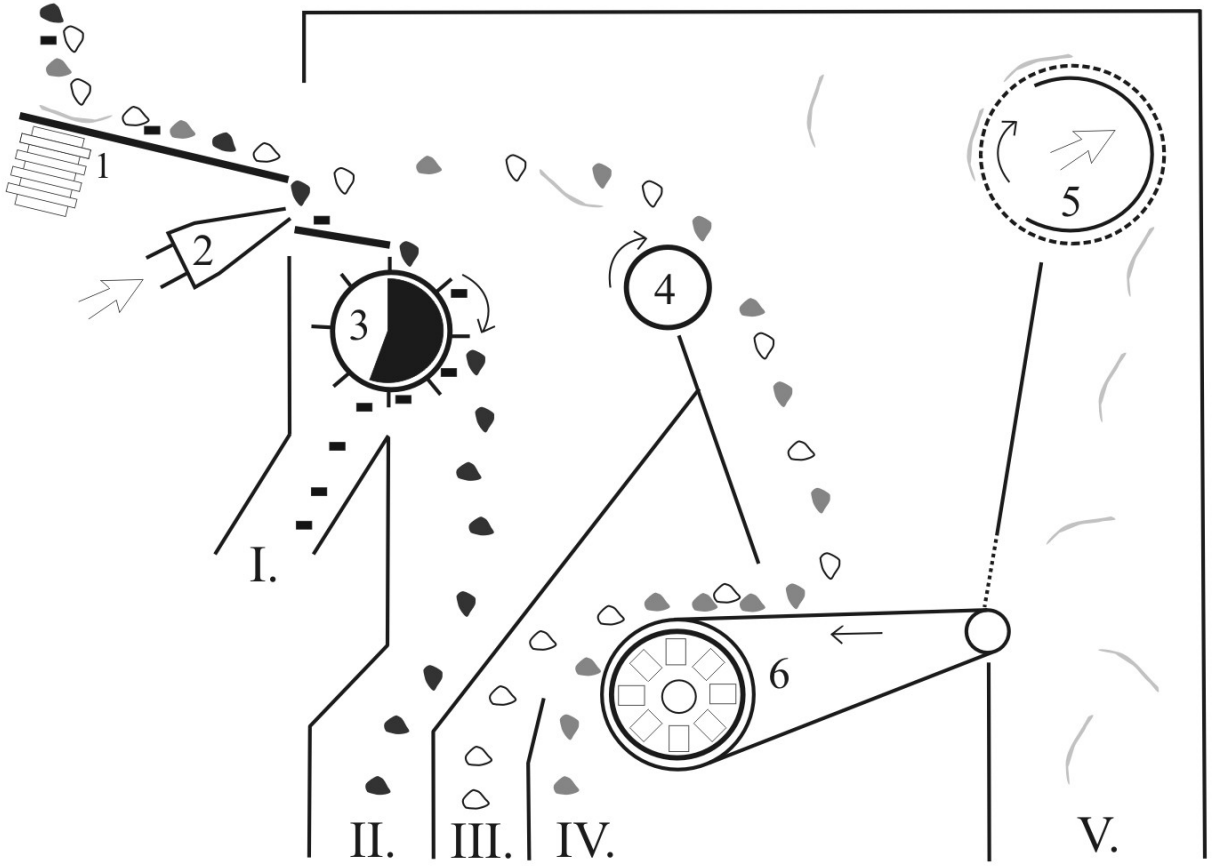
nciple of KLME

bined magnetic, eddy-current and air flow separator)



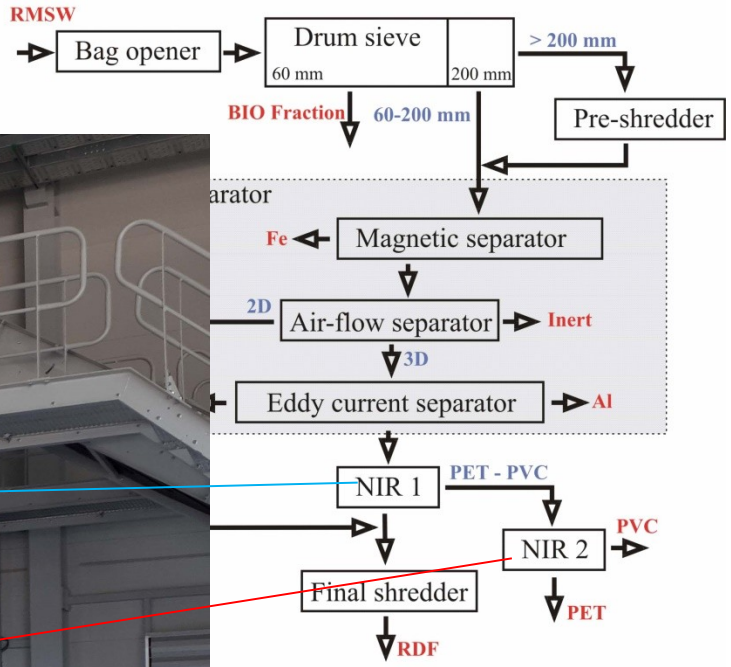
Main technological unit

1. Vibrated feeder
2. Air nozzle
3. Magnetic drum
4. Rotated auxiliary cylind
5. Exhaust cage
6. Eddy current separator

Numbers and short nam of products:

I. Magnetic
II. Inert
III. Al
IV. 3D
V. 2D

The NIR (near infrared) sorters.

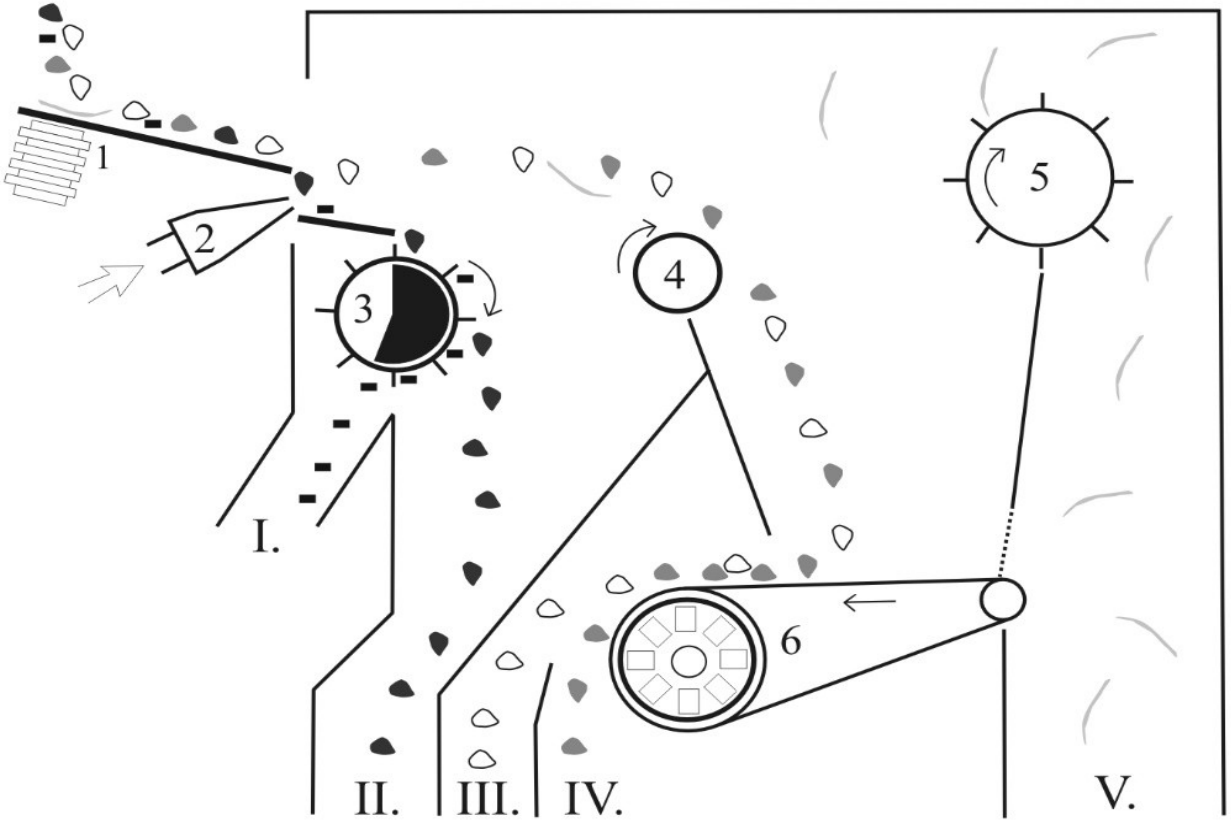


German camera and software.

Subcontractor: **MTA SZTAKI**

rst industrial experiment. 23 May, 2018

terials in all outputs, but clogging was found in many places.
esign and modification of the KLME.
e KLME separator with nailed roller schematics:



Main technological units:

1. Vibrated feeder
2. Air nozzle
3. Magnetic drum
4. Rotated auxiliary cylinder
5. **Nailed roller**
6. Eddy current separator

Numbers and short names of products:

I. Magnetic
II. Inert
III. Al
IV. 3D
V. 2D

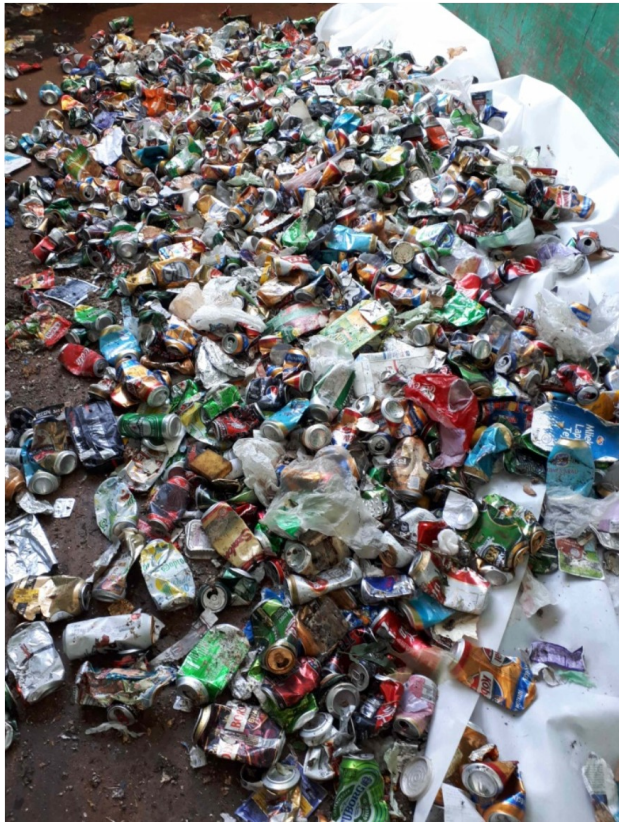
ults of the 24 July, 2018 industrial test

Main technical parameters of the 24 July, 2018 industrial test (nailed roller 2D separator):

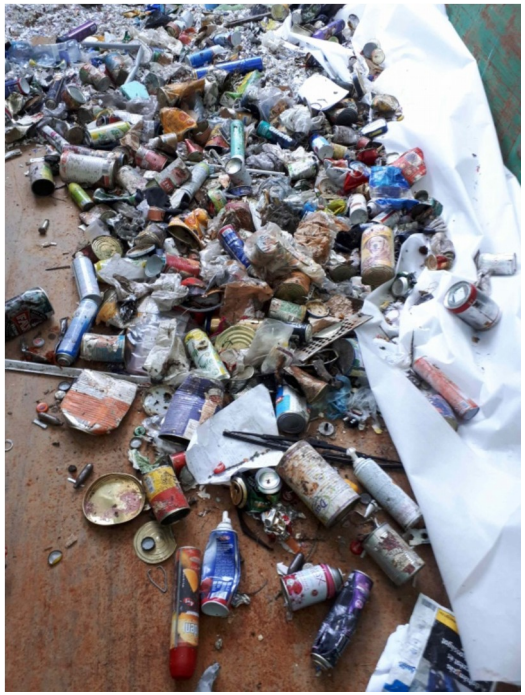
Parameter	Value
Moving floor conveyor speed	0.05 m/s
Revolution number of the bag opener rotor	4.8 1/min
Tangential speed of the drum sieve perimeter	1.13 m/s
KLME air nozzle air flow rate (blow in)	4800 m3/h
air flow rate, sucked out from the KLME	7400 m3/h
Revolution number of the eddy-current separator pole motor	2800 1/min
NIR1 and NIR2 feed belt conveyor speed	3 m/s
Belt conveyor speed before the Metso rotary-shredder	1 m/s

ults of the 24 July, 2018 industrial test

Al product



Fe product



Bio fraction

ults of the 24 July, 2018 industrial test

Inert product

PET

RDF

inauguration ceremony at 13 July, 2018

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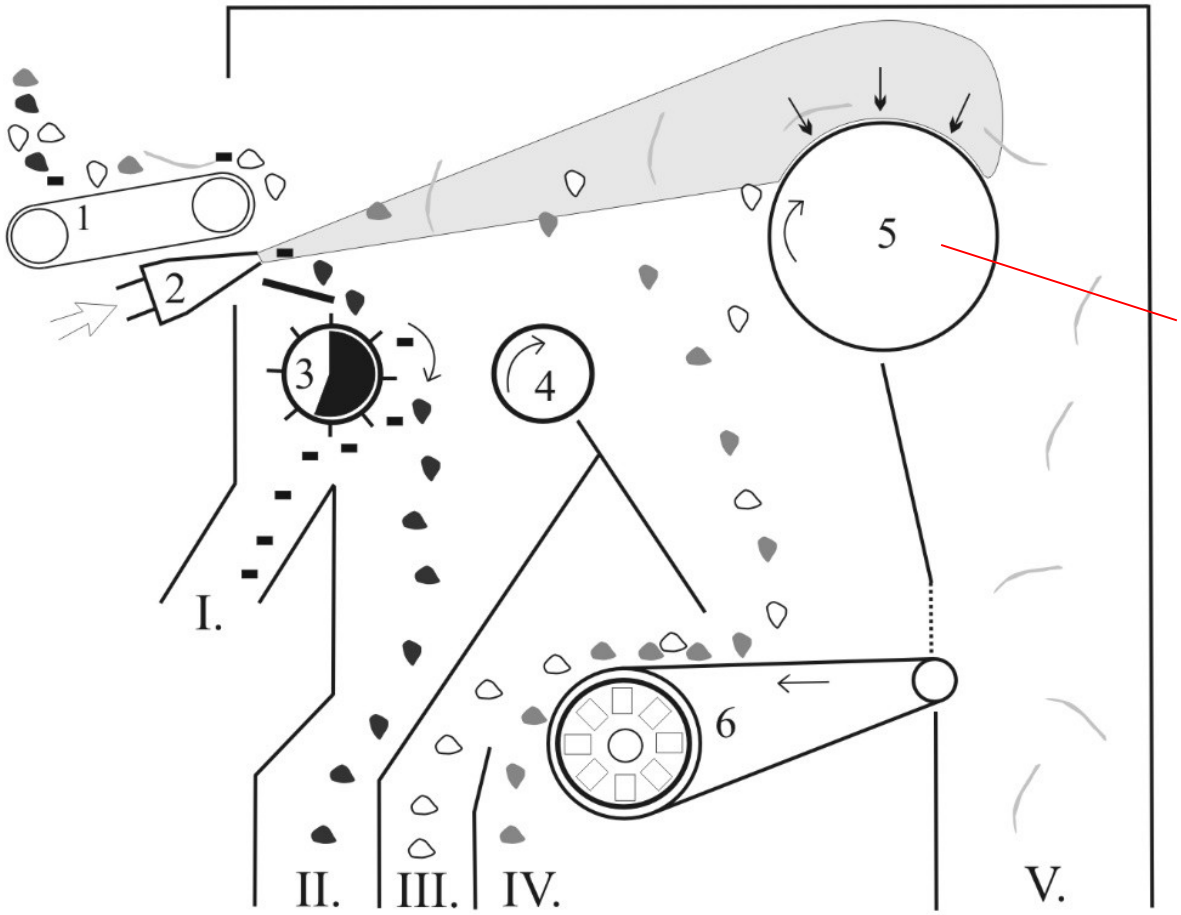
urther modifications and tests



Main technological units:

1. Belt conveyor feeder
2. Air nozzle
3. Magnetic drum
4. Rotated auxiliary cylinder
5. **Coanda roller**
6. Eddy current separator

Numbers and short names of products:

I. Magnetic
II. Inert
III. Al
IV. 3D
V. 2D

The KLME separator with Coanda roller schematics

Conclusion

- The municipality of Zalaegerszeg has decided to improve their MSW managing in the future, namely they would like to decrease landfilling near to 0 %.
- The first stage of this conceptual plan is almost fulfilled because a new, almost completely Hungarian made mechanical-physical RMSW processing plant was inaugurated on 13 July, 2018 at Búslakpuszta, Hungary.
- Since then, after the redesign of the KLME separator the plant is in normal operation.
- The KLME separator was equipped with a Coanda roller. The house of the KLME separator was also modified because of the experienced air beam distraction by nearby walls.
- If the blown-in air beam hits the upper part of the Coanda roller the evolving Coanda effect helps for the 2D particles separation.

Thank You for Your attention!

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