

**Biogas from household
waste organics,
the experts for
more than 30 years!**





Purac signed an agreement to set up the partnership and promote Dranco dry anaerobic technology in Asia.

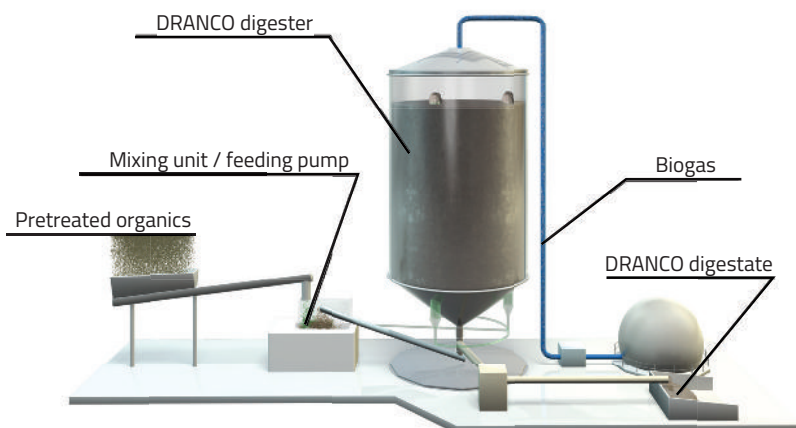
THE DRANCO TECHNOLOGY: leading the way in anaerobic digestion of municipal waste

The **patented DRANCO process** is unique because of the vertical design with top to bottom vertical movement in the digester, the high-solids concentration and the absence of mixing inside the digester. These principles combined with > 30 years of proven performance make the DRANCO process the most efficient way to digest household waste and (semi-) solid feedstocks.

Advantages of the DRANCO digestion:

- external mixing: no mixing equipment or moving parts in the digester
- no formation of a floating layer, or settling of glass, sand, etc. in the digester
- minimal or no wastewater production
- minimal surface requirements

The DRANCO technology is the most efficient dry digestion system on the market with its high loading rate due to its vertical design



The experience with the DRANCO technology has resulted in the development of a concept for agricultural feedstocks: the **DRANCO-FARM technology**.





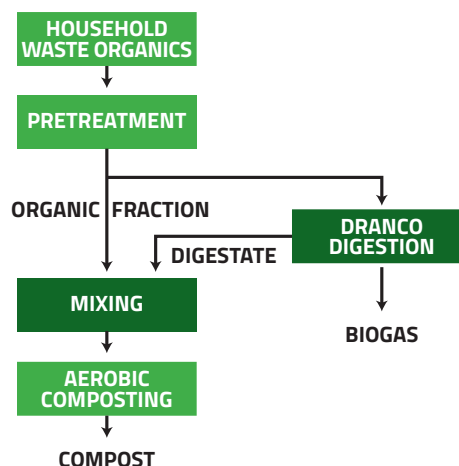
1

ZERO EXCESS WASTEWATER IN DRANCO PLANTS

Partial stream digestion is an approach for treating municipal waste organics in which a fraction of the organics is digested, and the remainder is combined with the digestate prior to aerobic composting. The digestate is immediately mixed with the drier, non-digested fraction which provides food for the microbes during aerobic composting. The heat energy given off during composting dries the mixture.

Advantages of partial stream digestion:

- avoids costly dewatering step (CAPEX & OPEX)
- avoids treatment of excess wastewater
- easy integration in existing composting plants with increase of capacity
- synergy between anaerobic digestion and aerobic composting



DRANCO partial stream digestion plant in Hengelo (The Netherlands)



2

DIRECT INTEGRATION WITH WASTE-TO-ENERGY PLANTS

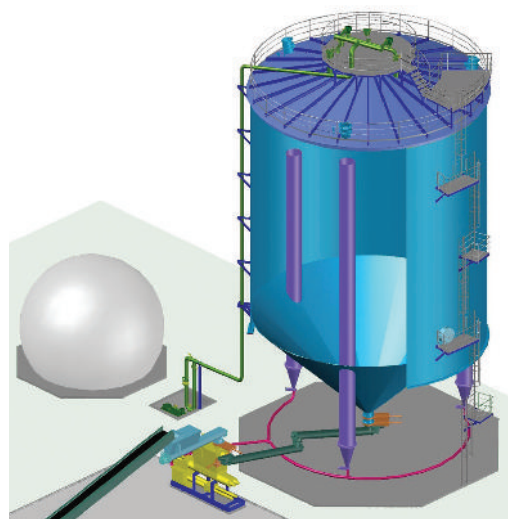
Attero is a strong and dynamic player on the Dutch waste market. The **integrated municipal waste processing plant** at the Wijster location has been up and running since 1996. The plant consists of three parallel processing lines and has an annual processing capacity of 800 000 tons. In the separation plant residual waste is divided into substreams. Materials that are suitable for recycling are taken out. Attero processes the organic fraction in their DRANCO digestion plant. This DRANCO installation processes about 55 000 tons of organic waste per year. The digestate has a dry matter content of > 40% and is directly pumped into the boilers of the thermal treatment plant in combination with other waste fractions.

DRANCO plants
in Wijster
(The Netherlands)

3

BIOMETHANE FROM ORGANIC WASTE

Attero also purchased a second DRANCO biogas plant for source separated organics. This digester processes 40 000 tons of organic material per year. The biogas from both plants is upgraded to **biomethane**. This renewable natural gas is injected in the regional gas grid. Both plants together produce about 6.5 million cubic meters of green gas, which corresponds to the annual gas consumption of 4 000 households or enough to drive > 100 million car kilometers.



SORDISEP: clean compost and recyclables out of mixed waste organics

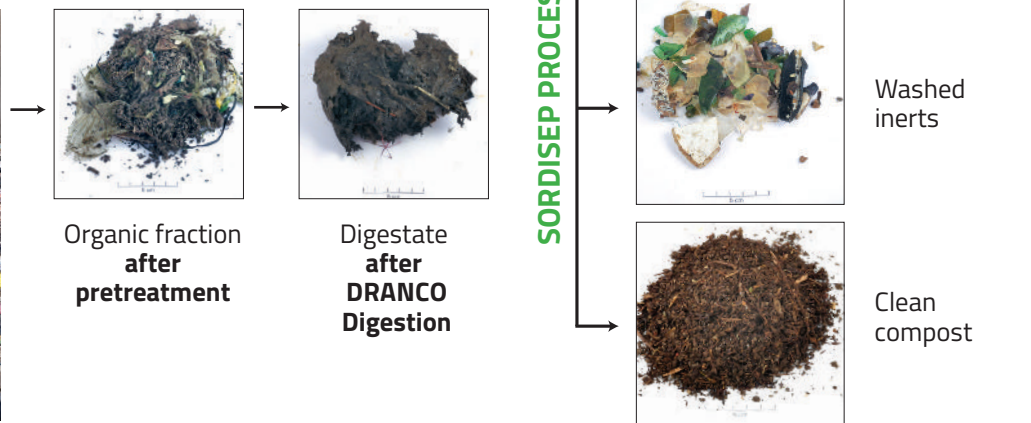
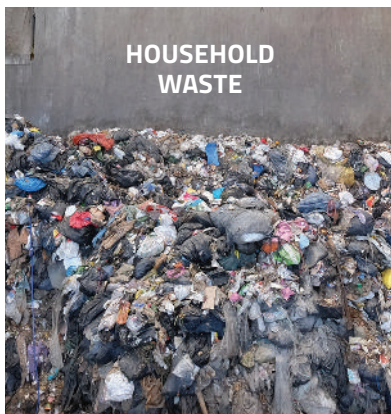
SORDISEP is a wet separation technology for maximum recycling and high quality compost production from MSW digestate.

The **wet separation process is positioned after the DRANCO digester**. The digestate is now free from sticky organic components since they were converted into biogas in the digester. A series of equipment separates and removes heavy inerts and a light fraction, which can be recovered in order to produce marketable end products and a clean compost. This greatly increases landfill diversion, organics diversion and recovery of materials.

Advantages of the SORDISEP separation:

- high quality compost from MSW
 - no contaminants
 - low heavy metals
- higher material recycling and landfill diversion rates
 - washed inerts
 - recyclable/combustible light fraction/RDF
- higher biogas production than wet separation before digestion
- continuous water recycling and reuse

**SORDISEP is
a giant step
towards
zero waste**

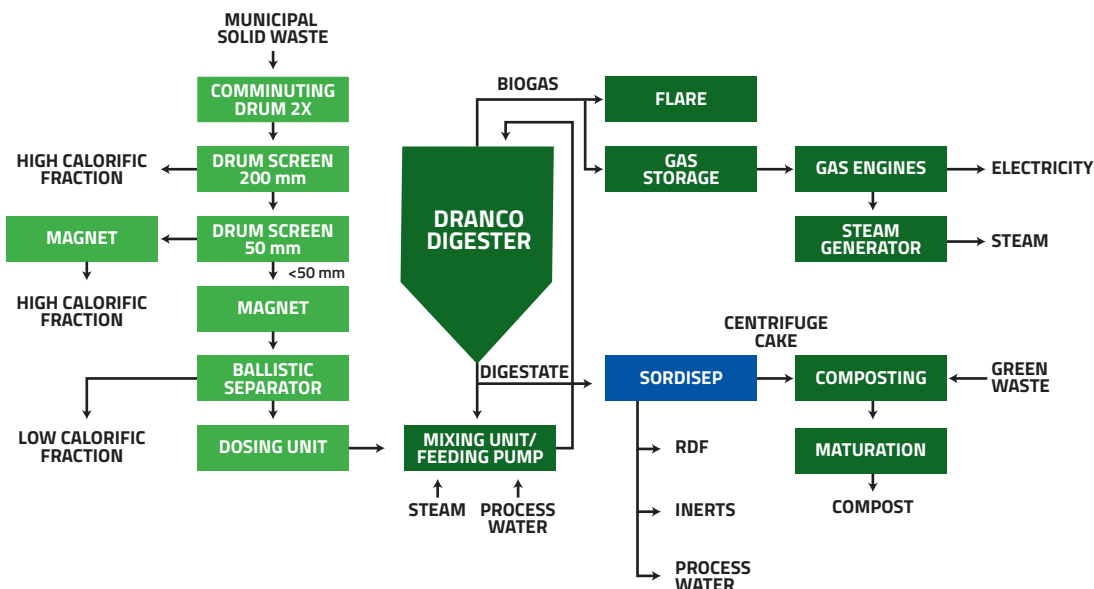


**DRANCO and SORDISEP plant
in Bourg-en-Bresse (France)**



DRANCO AND SORDISEP PLANT IN BOURG-EN-BRESSE (FRANCE): A TRULY UNIQUE PLANT

Each year, about 66 000 tons of mixed waste and 7 500 tons of green waste are treated in this plant. After anaerobic digestion, a wet separation and cleanup process is used to produce **high quality compost** from mixed household waste.



BIOGAS CONSULTANCY & SUPPORT

All-round consultancy, advice and support for startup, continuous operation, optimization and revamping of your anaerobic digestion plant. We offers a portfolio of services that help to **ensure both the efficient design and reliable operation of biogas plants and processes.**

- 65 vessels for aerobic composting
- 120 lab-scale anaerobic digesters
- 1 000 biological testing reactors (biodegradation/composting)



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