

# Bio Oil and sorted household waste (SRF): A perfect combination

## *Waste separation that pays off*

Every year, households in Europe (EU-27) generate on average some 500 kilograms of waste per capita, resulting in 250 million metric tons of household waste per year. Basically there are only three options to deal with this enormous mountain of waste: disposal in landfills, incineration or recycling.

By now, it is commonly accepted that recycling is the best way forward. It is difficult these days to justify the use of landfills both economically as well as ecologically. Waste incineration only unlocks relatively small part of the (caloric) value that is stored in waste.

Recycling allows to fully realize the potential of household waste. In many European countries, separated household waste collection is being used. The collection processes are all oriented towards separation of waste at the source- the households. After collection, the waste materials are preprocessed, dried and further separated. The dried fraction consists for some 20% of inert materials, for 10% of metals and for 70% of a mixture of plastic, paper, wood and organic materials which is called Solid Recovered Fuel (SRF). This SRF is perfectly suited as starting material for the pyrolysis process of Bio Oil Holding NV. In this process the SRF is converted to bio oil.

This bio oil is a clean, renewable energy source, capable of replacing traditional fuels to produce power and heat, in industrial boilers and gas turbines.

By converting household waste into bio oil using fast pyrolysis process, the full potential value can be realized.



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## From waste to... liquid energy



# 1 Collection

Collection of the household waste is done separated: glass, paper, bio-waste and plastics are collected in separate containers at home. Container Parcs are used to collect metal and big size waste.



# 2 Supply

Waste can be supplied both by water, rail and road. The strategic location is crucial to the comfort of neighbouring industries and the easy supply of household waste.



# 3 Preprocess

The waste materials are brought together in the preprocessing bunker, where they are handled by a full automatic crane. Important here is that the overall size of the waste components is reduced. This improves the drying and separation process further down the line.



# 4 Dry

The waste materials are dried in concrete bunkers, which are sealed off airtight. The biological drying process reduces the weight of the waste by 25 to 30%. The whole process is automated and only needs human supervision, there is no necessity for crane drivers or operators.



# 5 Separation

Separation is both manual and mechanic, using shakers, sifts and magnets. Manual separation is limited to hazardous products and batteries.



# 6 Output

The result of this consists of 3 components: inert materials (20%), metals (10%) and SRF (70% - Solid Recovered Fuel). SRF consists of plastic, paper, wood and dried organic materials.



# 7 Bio-oil

SRF can be converted to bio oil via the process of fast pyrolysis. Bio oil is a liquid energy carrier and can be stored, pumped and transported. In the long term, it can also be used as a source of valuable raw materials for chemical industry.



# 8 Energy

Bio oil can be replace fossil fuels in combined heat and power (CHP) systems, as well as replace natural gas in larger scale electricity plants.

