

Datasheet for BPP Bio-refinery

BPP Bio-refinery

Product Description	<p>BPP Bio-refinery converts wood, plastics and others non-recyclable fractions into Poly-Methylal as a technical grade chemical solvent or an additive for fuels.</p> <p>The plant technology is based on hydro-catalytic gasification technology working in a continuous process and assisted by steam plasma torch equipment.</p> <p>The pilot plant consists of two main units:</p> <ul style="list-style-type: none"> - the Gasification Unit, where the non-recyclable bulky waste fraction is converted into a syngas - the Liquid Methylal Production Unit, where the generated syngas is converted into Poly-Methylal
Properties	Nominal values
Bulky waste treatment capacity	50 Kg/h (Maximum capacity)
Syngas flow capacity	100 Nm ³ /h (Maximum capacity)
Syngas average composition (%V)	H ₂ : 45-55%; CO: 25-35%; CH ₄ : 1-3%; CO ₂ : 5-7%; N ₂ : 10-15%; O ₂ : 1-2%; C _n H _m : 0-1%
Methylal production yield	15 Kg/h
Gasifying agent	Water steam
Solid waste – sand type mineral	20% weight of bulky waste treated
Atmospheric Emissions	CO ≤ 20 ppm; NO _x ≤ 50 ppm; SO ₂ ≤ 5 ppm
Installed electrical power	150 KW
Burner thermal power	70 Kw
Plant dimension	4 Skids: 2,50 X 7,00 X 5,00 m (width x length x height)
Plant Weight	25 Tn
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Demonstrator: BPP Bio-refinery



Environmental performance of BPP Bio-refinery

In the LCA analysis:

- the functional unit was 1 kg of methylal produced
- the collection of the mixed bulky waste was included (based on the data from IMOG)
- the fragmentation/separation of the mixed bulky waste was included (based on the data from ECOFRAG/VANHEEDE)
- the pelletization process was not included (as in the industrial processes this step will not be necessary)
- the data on the production process was provided by BPP
- for the treatment of waste coming from technological processes, the data from the SimaPro database were used
- the benefits of recycling were taken into account
- the energy mix for Europe without Switzerland was used

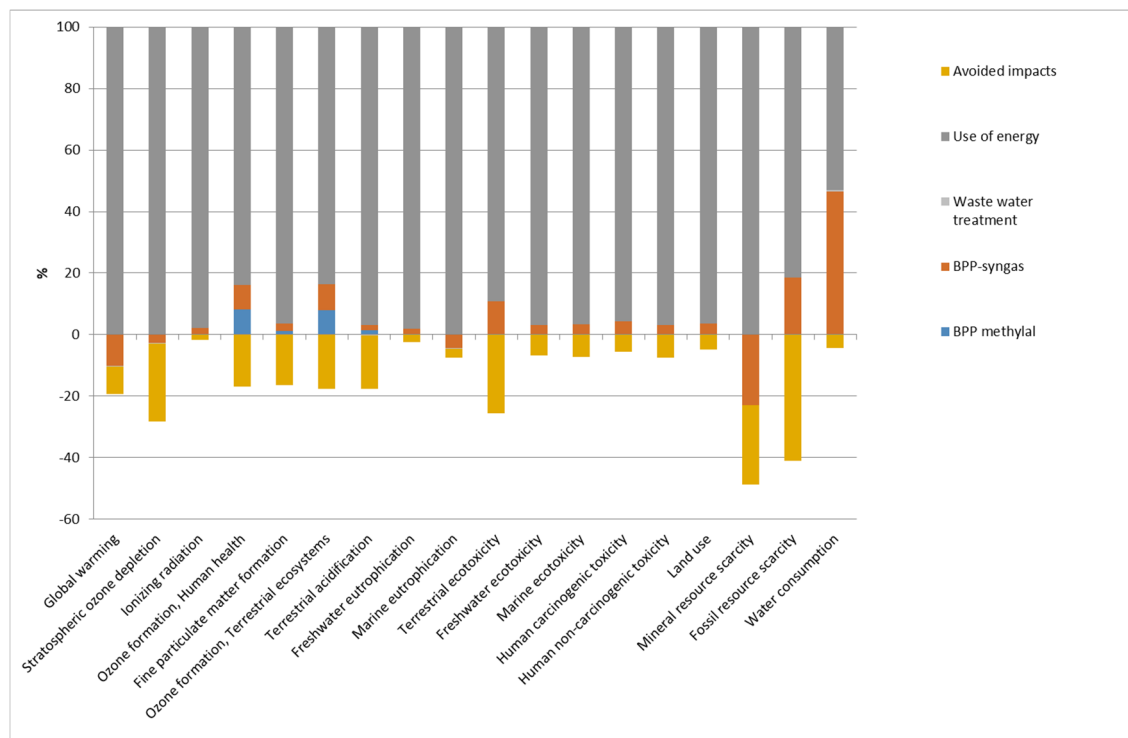


Figure. Results of LCA analysis for 1 kg of methylal

As the BPP technology can be implemented instead incineration also the comparison between production o chemicals in BPP Bio-refinery and incineration in MSW incinerator was conducted.

In the analysis:

- the functional unit was 1 tonne of mixed bulky waste received for treatment in shredding facility and directed for production of chemicals in BPP plant of for incineration
- the transport of the mixed bulky waste to CAS, from CAS to shredding facility, and from shredding facility to BPP plant and incineration plant was not taken into account
- the use of resources during shredding was based on the data provided by IMO
- for the BPP technology the 0.3 litres of final products per kg of bulky waste processed was assumed (worst-case scenario; the yield in industrial process can be higher)
- the use of resources in BPP plant and emissions (to air and water) and waste from the plant was based on the data provided by BPP
- for the landfilling and incineration, the processes from the SimaPro database were used
- the benefits of chemical recycling were taken into account; it was assumed that methylal can be used as a fuel additive (35 vol% blend with diesel fuel, replacing 24 mass% of fossil diesel), and remaining by-products can be used as feedstock in chemical processes
- the avoided impacts of electricity and heat production and the benefits of metals' recycling were taken into account
- the energy mix for Belgium was used

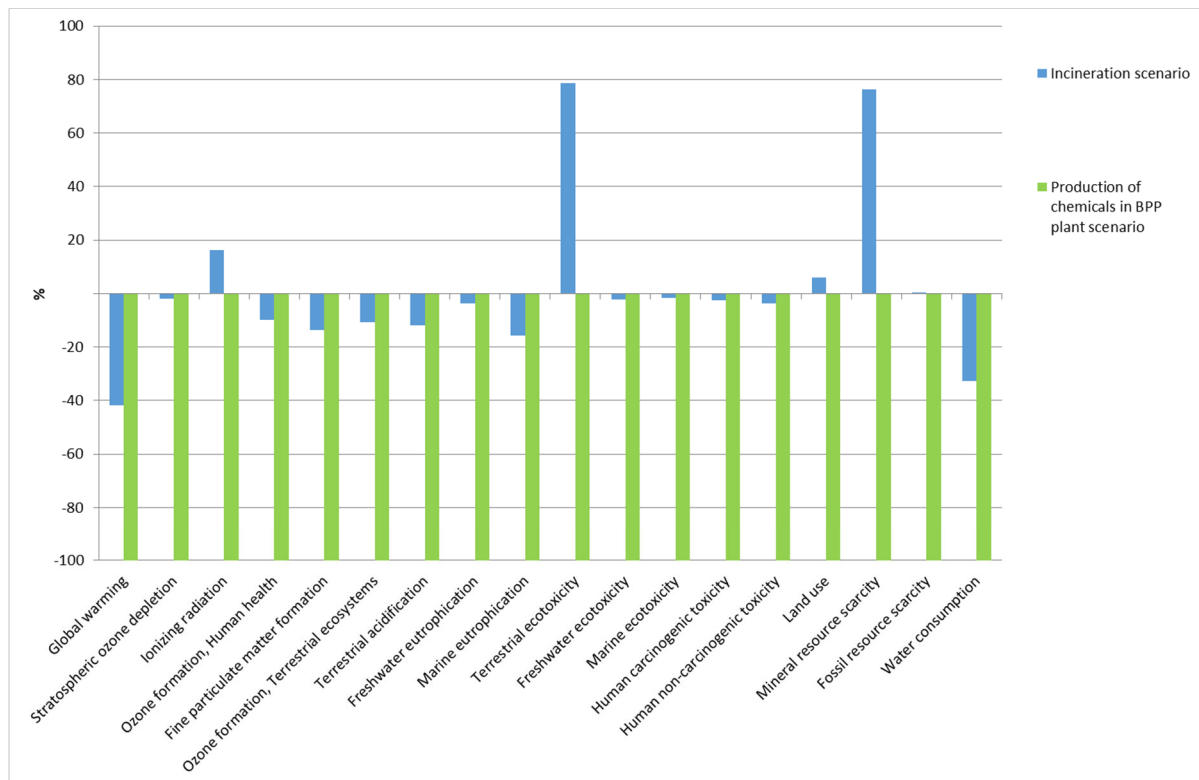


Figure. Comparison of environmental impacts of incineration scenario and production of chemicals in BPP plant scenario for the mixed bulky waste management in Flanders