

PROJECT OBJECTIVES:

The increasing demand for recycled wood to produce particleboard and MDF panels has resulted in the need to improve the cleaning process of post-consumer wood (e.g. pallets/wood packaging material, demolition waste, used furniture), eliminating in a more effective and efficient way plastic impurities. Now MDF panels are mainly obtained from virgin wood and only a small number of producers use post-consumer recycled wood (up to 10%, based on PAL internal studies on the market), because:

- a) the process requires multiple steps of cleaning that are not enough to completely remove impurities
- b) MDF panels are of low quality and not compliant with EN 622-5 and EPF Standard for delivery conditions of recycled wood.
- c) there are not systems in the market capable of achieving a good removal of impurities (see the State of Art paragraph).

LIFE+ PLASTIC KILLER main objective is to set up and demonstrate the viability of an energy efficient pilot plant able to finely separate post-consumer recycled wood from plastics impurities, in order to use it primarily for MDF panels production and secondarily as "purified" biomass.

This project will contribute to:

- pave the way for a new generation of more sustainable and affordable MDF panels produced by up to 60% of post-consumer recycled wood, compliant with EN 622-5 and EPF Standards;
- produce "purified" post-consumer wood that can be also introduced in the EU market as biomass for energy production, reducing the dioxin produced during the combustion;
- limit the use of virgin wood, supporting the non deforestation through the prolonged lifecycle of the recycled wood;
- foster the post-consumer wood recycle approach in the EU, open up new business and jobs opportunities; this also will contribute in the middle perspective to decongesting dumps.
- demonstrate the socio-economic and environmental sustainability, the potentialities of market replication and penetration of the proposed pilot plant.



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GROUP



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**Total Cost: €1.874.423
(contribution LIFE+: 49.78%)**



Partner

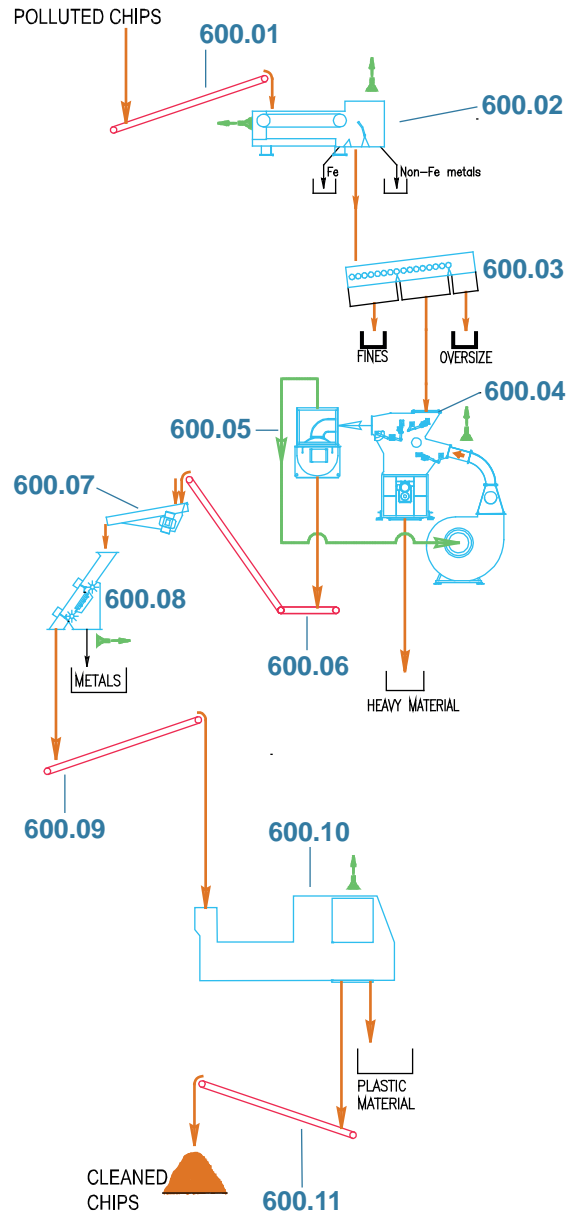


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EXPECTED RESULTS

(OUTPUTS AND QUANTIFIED ACHIEVEMENTS):

1. According to more achievable targets within the new time span, the following estimations are provided: input power of about 58kW maximum, a flow up to 30m³/h of waste (post-consumer wood).
2. If we assume that the pilot will treat 78t/day of waste (post-consumer wood) and that from PAL's experience it's possible to estimate that there are about 0.78t/day of plastic impurities in this waste, 0.741t/day of plastic impurities can be eliminated and further recycled.
3. Considering in a conservative way that 130t/day of virgin wood are needed to produce about 130t of MDF panels, the pilot plant will replace 78 t/day of virgin wood with the purified post-consumer wood, corresponding to avoid the cut of 40 trees per day from local forests. In addition, assuming that i) 0.9t of CO₂ are trapped in 1m³ of tree, ii) 9,600trees/year are not mobilised and transported by truck, iii) an average CO₂-emission factor for road transport operations of 62g CO₂/tonne-km [McKinnon 2011] and iv) an average distance from forest to sawmill of 300km [Le Net. 2011], additional CO₂ savings are possible.
The whole CO₂ trapping and saving amount is about 88teCO₂/day.
4. Under the assumption of the Life+ project time span and treating 78 t/day of waste (post consumer wood) in such demonstrating context, the challenging but realistic targets can be reformulated as follow: the estimated annual savings of water by PLASTIC KILLER are about 9,288m³, corresponding to the annual water consumption of about 46European families.
5. Considering the Life+ time span in a pilot configuration and that the PLASTIC KILLER pilot is going to substitute in weight = 78t/day of virgin wood with the purified post-consumer wood in MDF panels production, there will be enormous economic savings that justify the proposers investment in the project. In fact, assuming the following as average costs (70€t virgin wood or pre-consumer wood; 40€t post consumer wood), the economic savings are about 2,340€/day (503,100€/year)
6. In a pilot configuration, it is expected that using 78t/day of post-consumer wood, the pilot plant will eliminate about 741kg/day of plastics impurities out of 780kg/day, which will avoid the dioxin emission of about 563ng TEQ/day (considering a density of 150kg/m³ and the estimation from Schatowitz, see section B2).



RECY CLEANING TOWER

- 600.01:** BELT CONVEYOR
- 600.02:** INDUCTION GRADING MACHINE
- 600.03:** DYNASCREEN
- 600.04:** AIR RECYCLING CLEANER
- 600.05:** FILTERING VALVE
- 600.06:** BELT BOARD CONVEYOR
- 600.07:** VIBRATING FEEDER
- 600.08:** METAL KILLER
- 600.09:** BELT CONVEYOR
- 600.10:** PLASTIC KILLER
- 600.11:** BELT CONVEYOR

