



Project Information Sheet

Design and construction of a bentonites recycling line for the production of a heavy metal adsorbent (BENTOMET)

Programme area:	CIP-EIP-2013.10.06-Recycling
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Partners:	Ingeniería Navarra Mecánica (Spain) Coolrec BV (Netherlands) Machinefabriek Otto Schouten (Netherlands)
Website:	Under construction.
Benefits (max. 150 characters incl. space):	Production of an added value product line, consisting of the modification and conditioning of bentonites giving rise to a heavy metal adsorbent
Keywords:	Recycling, bentonites, modification, heavy metals removal
Sector:	Recycling
Type of solution	Product and process
Duration:	01/07/2014 – 30/06/2017
Budget:	€ 948.529 (EU contribution: 50%)
Contract number:	ECO/13/630345-BENTOMET

Summary

The project will construct a recycling line for waste bentonites used during clarification processes in wineries, although the solution could be further adapted to clays from different sources. The treatment line will be constituted by two modules: the first one for the purification and chemical modification of the raw material and the second one for its conditioning. The final product will be a bentonite-Fe₃O₄-PEI complex which removes heavy metals from waste water.

The project will develop the first industrial line for the recycling of bentonites, a product generated in great amounts and that nowadays is discharged in landfills or collected by alcohol-producing plants. Furthermore, the developed solution will be applied to remove heavy metals from waste waters from different industrial sectors, reducing a very important environmental problem. An additional advantage will be that, due to the presence of a magnetic particle in the complex, the withdrawal of the adsorbent once the removal of toxic elements has finished can be easily carried out by means of a magnet.

WP1 Management WP2 Fine specifications of every module WP3 Design and construction of Module I: Modification of bentonites WP4 Design and construction of Module II: Conditioning of the product. Assembly of the line WP5 Application strategy, product tests and registry WP6 Exploitation of the results and Business Plan definition WP7 Dissemination activities

Expected and/or achieved results

The main product to be obtained during the project execution is an industrial plant for the recycling of waste bentonites. Modified bentonites resulting from the constructed plant will be incorporated into different treatment systems (such as resins and membranes) able to be implemented into several industrial lines with the aim of removing the contained heavy metals. As a last stage, a simple industrial line including some of the developed systems and easy to be implemented into real industrial processes will be designed and manufactured. So, a range of solutions for the treatment of waste water will be developed during this project, thus giving rise to a range of likely marketable products.



The most important eco-indicators related to this project are the following:

- Reduction of the CO₂ generated in alcohol-producing plants during the treatment of waste bentonites (around 10%).
- Reduction of the amount of bentonites discharged in landfills (around 20% taking into account European consumption of bentonites for clarification processes in wineries).
- Obtaining of a range of heavy metals remover systems very affordable from an economic point of view (average reduction of 37% when compared to current solutions).

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