



CIP Eco-innovation
 First application and market replication projects
 Call 2013

Agreement Number: ECO/13/630345

BENTOMET

**DESIGN AND CONSTRUCTION OF A BENTONITES RECYCLING LINE FOR THE
 PRODUCTION OF A HEAVY METAL ADSORBENT**

Deliverable D.7.3.

Project presentations

Start date of the project: 1st July 2014

Duration: 3 years

Organisation name or lead contractor for this deliverable: Lurederra



Project: ECO/13/630345		
Dissemination Level		
PU	Public	✓
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for member of the consortium (including the Commission Services)	

INTRODUCTION

This deliverable is a result of Work Package 7: Dissemination Activities. The main objective of this WP7 is to contribute to the common dissemination activities of the project results.

The present deliverable D7.3 contains the project presentation showed at the WORKSHOP “New technologies for the water treatment in Lurederra” on February 2017, as part of the execution of project LIFE-PURIWAT (LIFE12 ENV/ES/000684).

DISEÑO Y CONSTRUCCIÓN DE UNA PLANTA DE RECICLADO DE BENTONITAS PARA LA PRODUCCIÓN DE UN ADSORBENTE DE METALES PESADOS “BENTOMET”

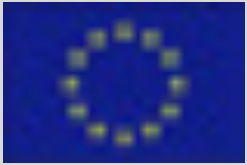
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WORKSHOP

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23/02/2017



Interest

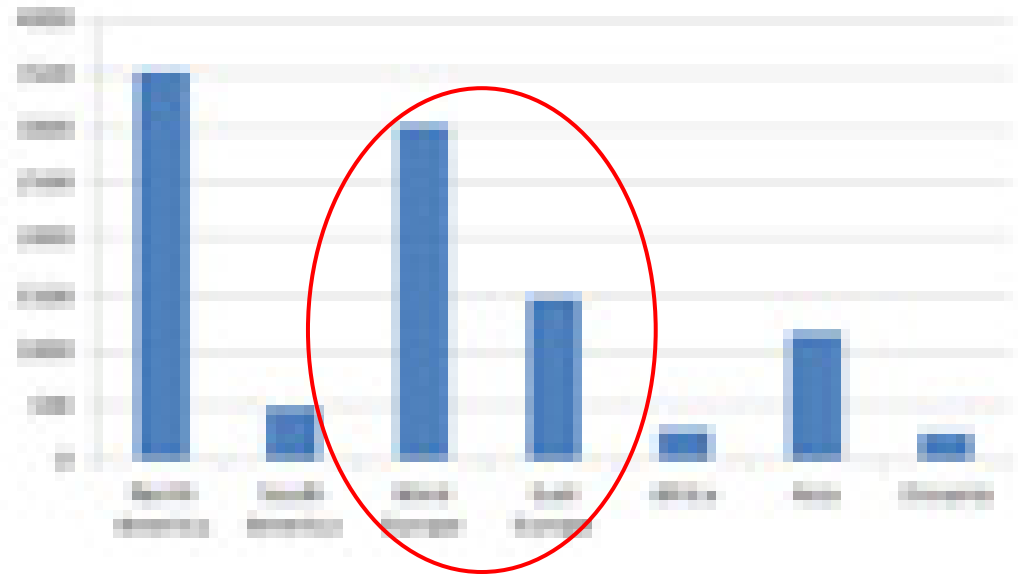


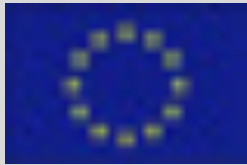
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- 15 million tons of bentonites are extracted from Earth annually.
- Distribution of the consumption of bentonites:





Interest



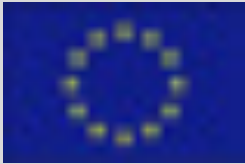
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- 5.000 tons of bentonites are used annually in clarification processes in wineries.





Raw material



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Raw material

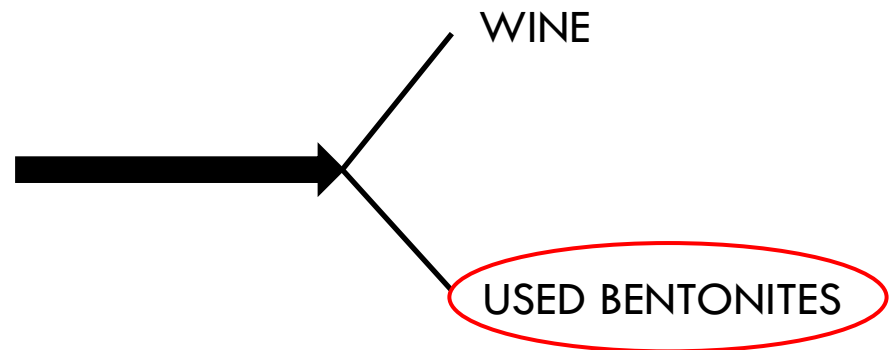


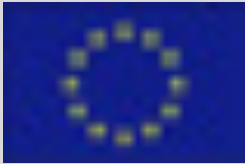
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- **Clarification process:** the wine is stirred with an agent able to adsorb and remove (by coagulation) different undesirable solid particles





Solutions

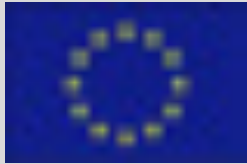


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Objective and scope



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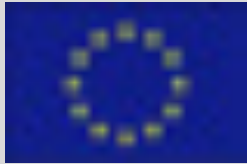
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□ **PROJECT OBJECTIVE**

Design and construction of an industrial line for the recycling of bentonites.

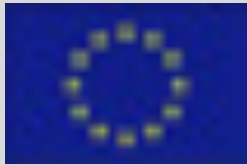
□ **SCOPE OF THE PROJECT**

To design and to develop a continuous and automated recycling line with capacity of 50kg/day.



- **Main environmental advantages:**

- 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% considering European consumption of bentonites for clarification processes in wineries)
- Obtaining of a range of heavy metal remover systems very affordable from an economic point of view (average reduction of 37% compared to current solutions)



Partnership



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COOLREC



- Definition of technical requirements for application of the product in WEEEs recycling lines
- Testing of the efficiency for waste water from this field
- Assessment for the marketing

- Definition of technical requirements for application of the product in machinery construction lines
- Testing of the efficiency for waste water from this field
- Assessment for the marketing
- Design and construction of retention systems incorporating the product
- Design and construction of a simple line including a system



- Coordination and management
- Definition of requirements for industrial line
- Upscaling of the involved processes
- Optimization of the processes parameters
- Evaluation of the obtained products

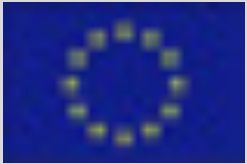
INM



- Design of the industrial line
- Construction of the modules
- Assembly of the modules
- Optimization of the modules

MOS





Processes

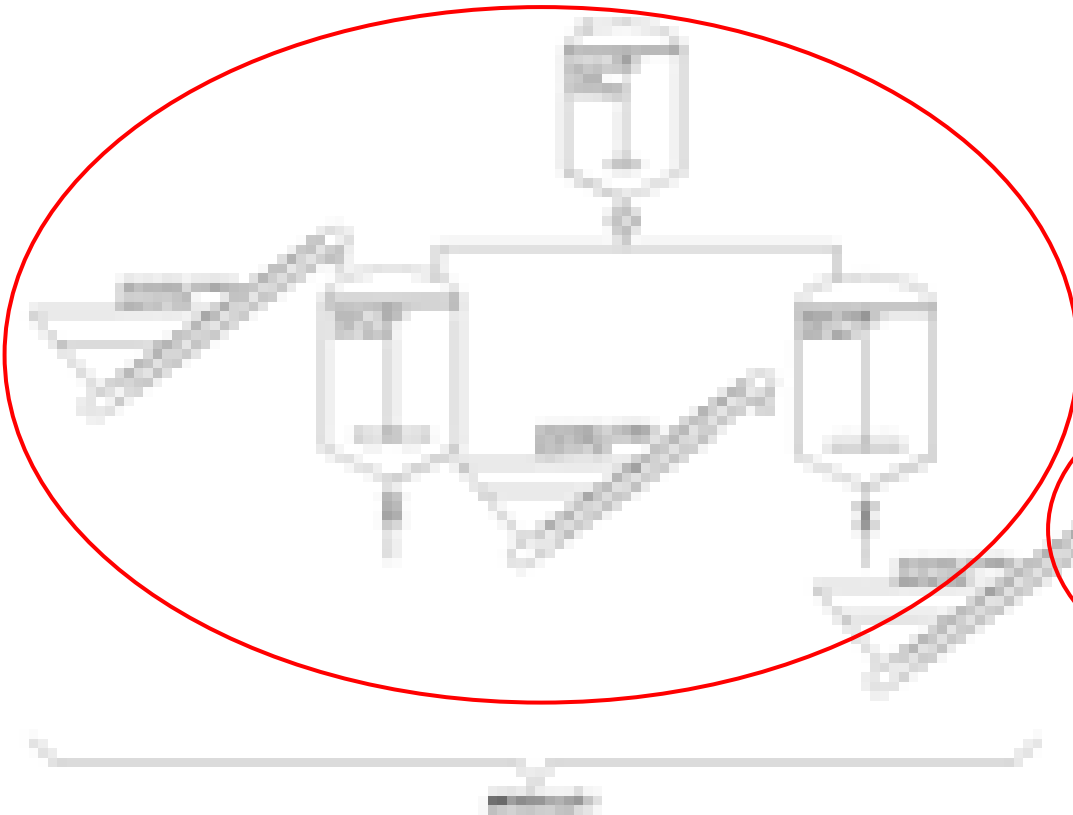


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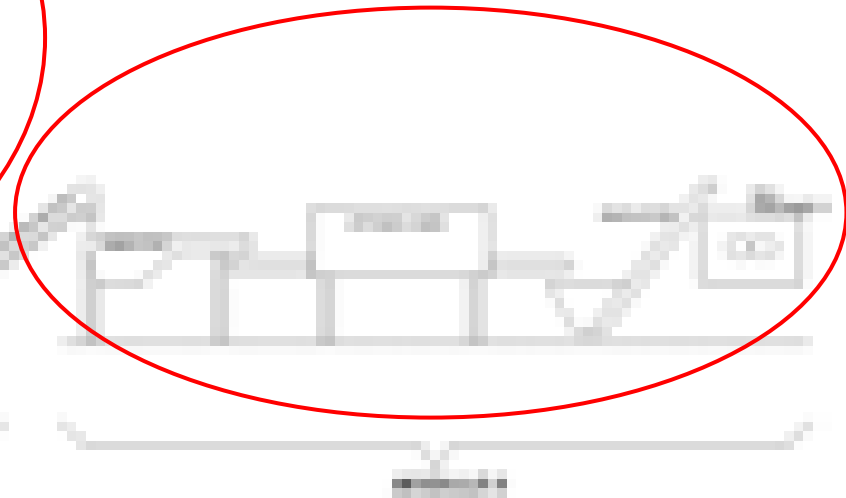
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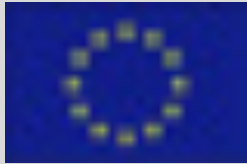
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PURIFICATION AND CHEMICAL MODIFICATION



CONDITIONING





Previous lab scale tests



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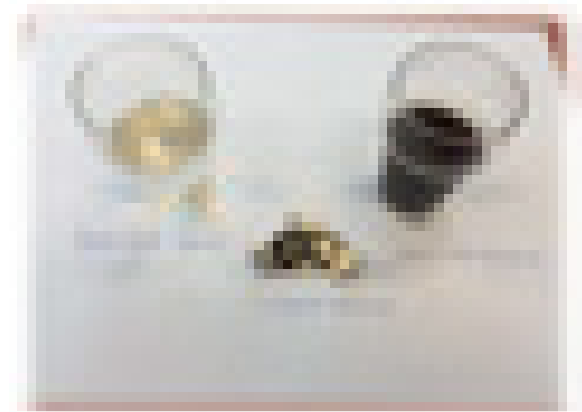
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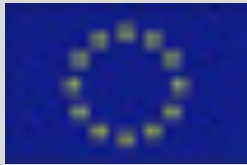
Bentonite - Fe_3O_4 , capable to remove heavy metals from water. It has a grain size between 20 and 75 μm



The obtained product is magnetic; that's the reason of the removal of heavy metals in water.

PERFORMANCE





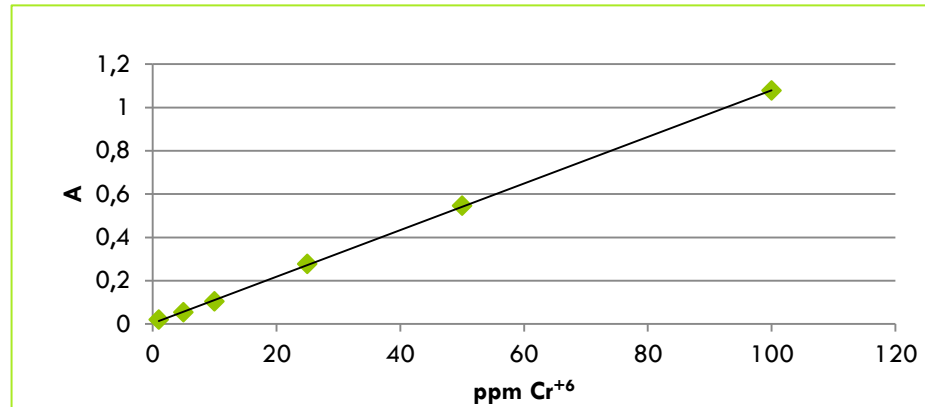
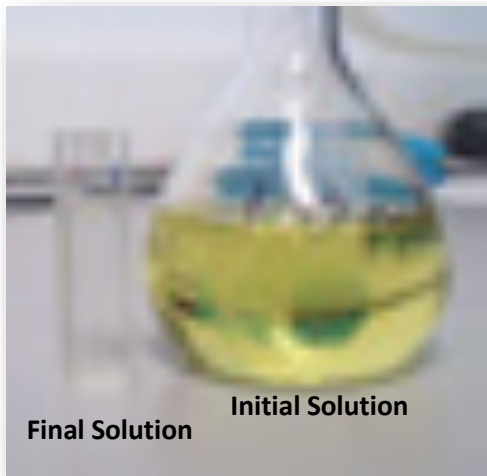
Efficiency tests



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	Concentration	$\lambda = 350 \text{ nm}$
A_{initial}	100	1,007
A_{final}	6.35	0.064

Tests with Cr(VI) solutions:

- ✓ Chromium (VI) solution: 100ppm (yellow solution) and the aspect of the same solution after it was in contact with Bentonite-Fe₃O₄ (transparent solution).
- ✓ 93,65 % heavy metal removal.



— Recommendations of use —



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OPTIMIZATION OF PARAMETERS

- ✓ Reaction time
- ✓ Dosage of bentonite
- ✓ Study of real cases





Demonstration

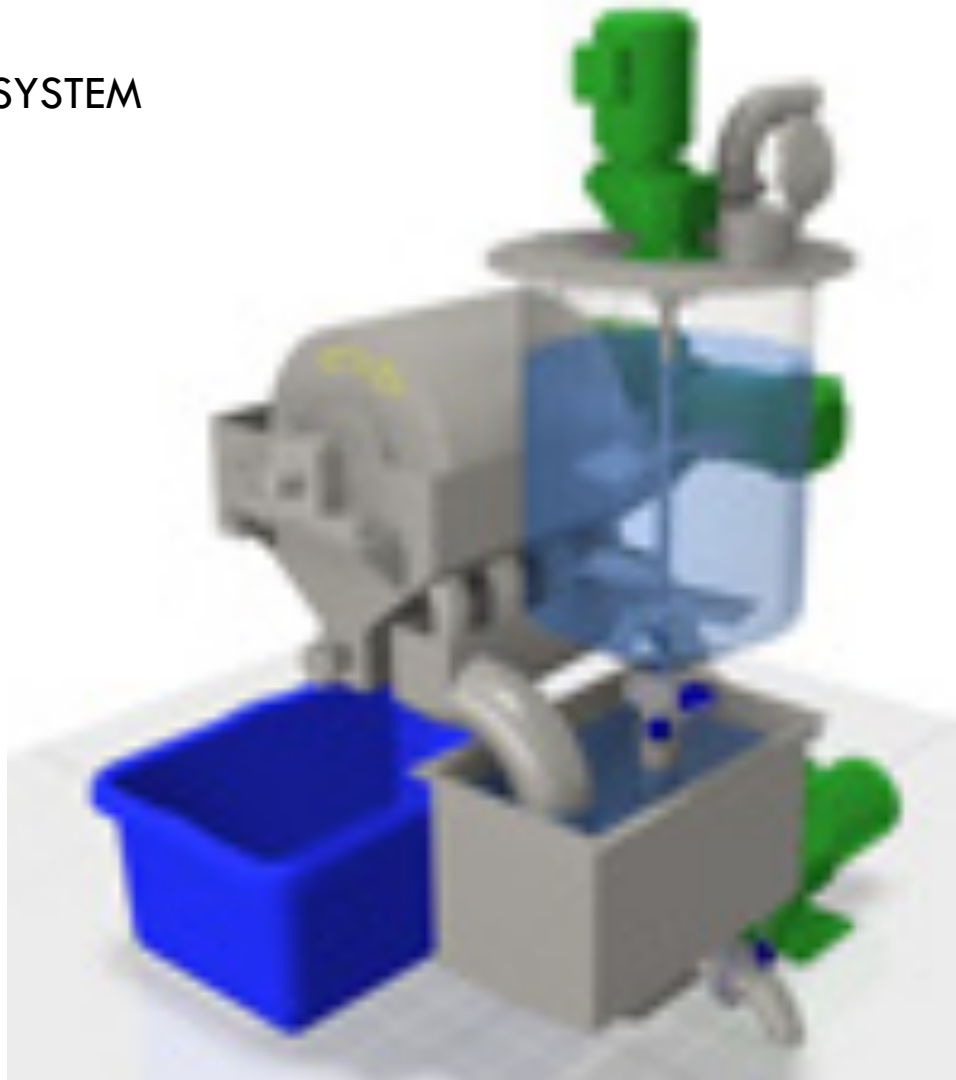


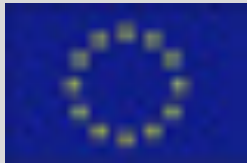
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DEMONSTRATIVE SYSTEM





Dissemination Actions



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- Website of the project : www.bentomet.eu

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