



RESET

Interreg Europe



European Union
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Development Fund

Demonstration of natural coagulant use advantages in physical&chemical treatments in textile industry

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1. ADNATUR LIFE PROJECT



2. INTRODUCTION OF TEXTILE COMPANY

3. DEMONSTRATION OF NATURAL COAGULANT USE

4. MAIN CONCLUSIONS

1. ADNATUR LIFE PROJECT

LIFE/ENV/ES/000265 - ADNATUR

Demonstration of **natural** coagulant use **advantages**
in physical & **natur** treatments in **ad** industry and
urban **waste**



Coordinating Beneficiary:



Associated Beneficiaries:





ENVIRONMENTAL PROBLEM TARGETED

CONTAMINATION OF INDUSTRIAL AND URBAN WASTEWATERS



**REDUCE THE USE OF
CHEMICAL PRODUCTS
DERIVED FROM NON-
RENEWABLE RESOURCES
BASED ON METAL SALTS**

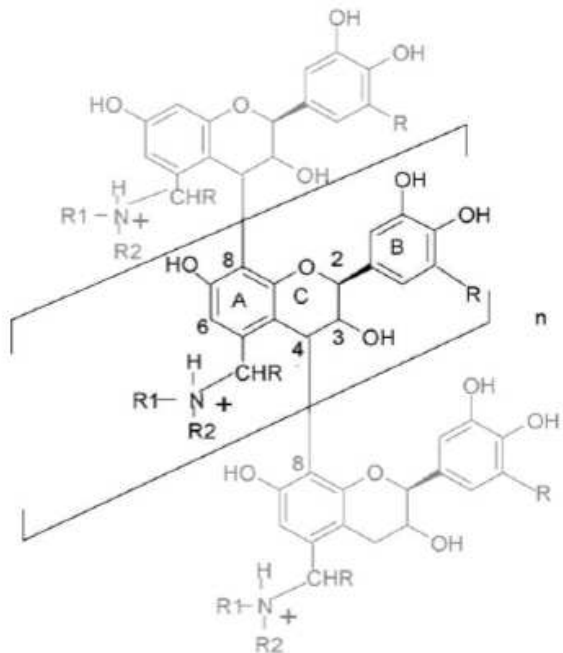
**IMPROVE THE QUALITY
OF THE SLUDGE**



NATURAL COAGULANTS



- Natural organic polymer with **cationic character**.
- Extract from the bark of **Black Acacia** (*Acacia mearnsii* de wild).
- **Coagulating action** treating colloidal systems, neutralizing the charges and bringing together the particles in suspension.
- Provides a rapid flocculation and decantation. Eliminates or greatly **reduces flocculants consumption**.
- Do **not consume the alkalinity** of the medium.
- Its **coagulant efficiency is always optimal** because does not suffer hydrolysis in solution.

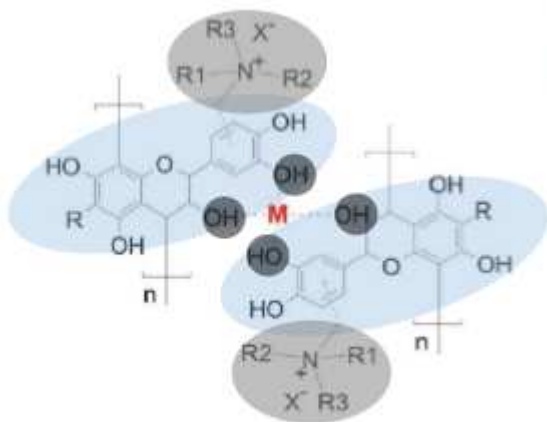




MAIN ADVANTAGES



- It does **not increase the conductivity** of treated water, not adding metals like Aluminum, Iron or anions like chlorides and sulfates.
- It does **not modify the pH** of the water system and, additionally, presents very high efficiency through a wide range of pH, between 4.5 and 9.0.
- Eliminates or reduces almost completely the use of **alkalizing agents** such as sodium or calcium hydroxide.
- **Metallic ions** like Iron, Manganese or Aluminum could be also separated by **complexation** during coagulation.



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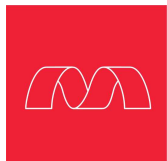
A LONG STORY

For generations, the warmth of MORA has accompanied the best dreams of thousands of families around the world.



50's and 60's

1941 First Steps
1963 Constitution
of Mora,s.a



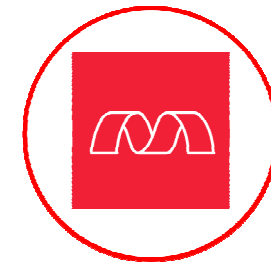
70's and 80's

1972 Introduction
of Raschels looms
in the manufacture
of blankets



90's and 2000

1991 Constitution
of Textils Mora,
s.a.l



2015

Prepared for the
future
Constant
innovation
Investment and
new technology

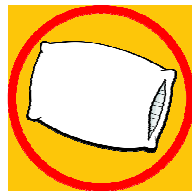
2. INTRODUCTION OF TEXTILE COMPANY

More than 50.000 M2 of facilities

We transfer the MADE IN SPAIN to more than 60 countries



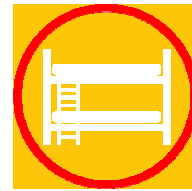
Textils Mora
S.A.L.



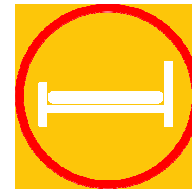
Resting products



Children products

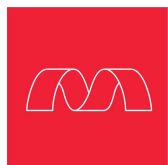


Junior products



Senior products

2. INTRODUCTION OF TEXTILE COMPANY



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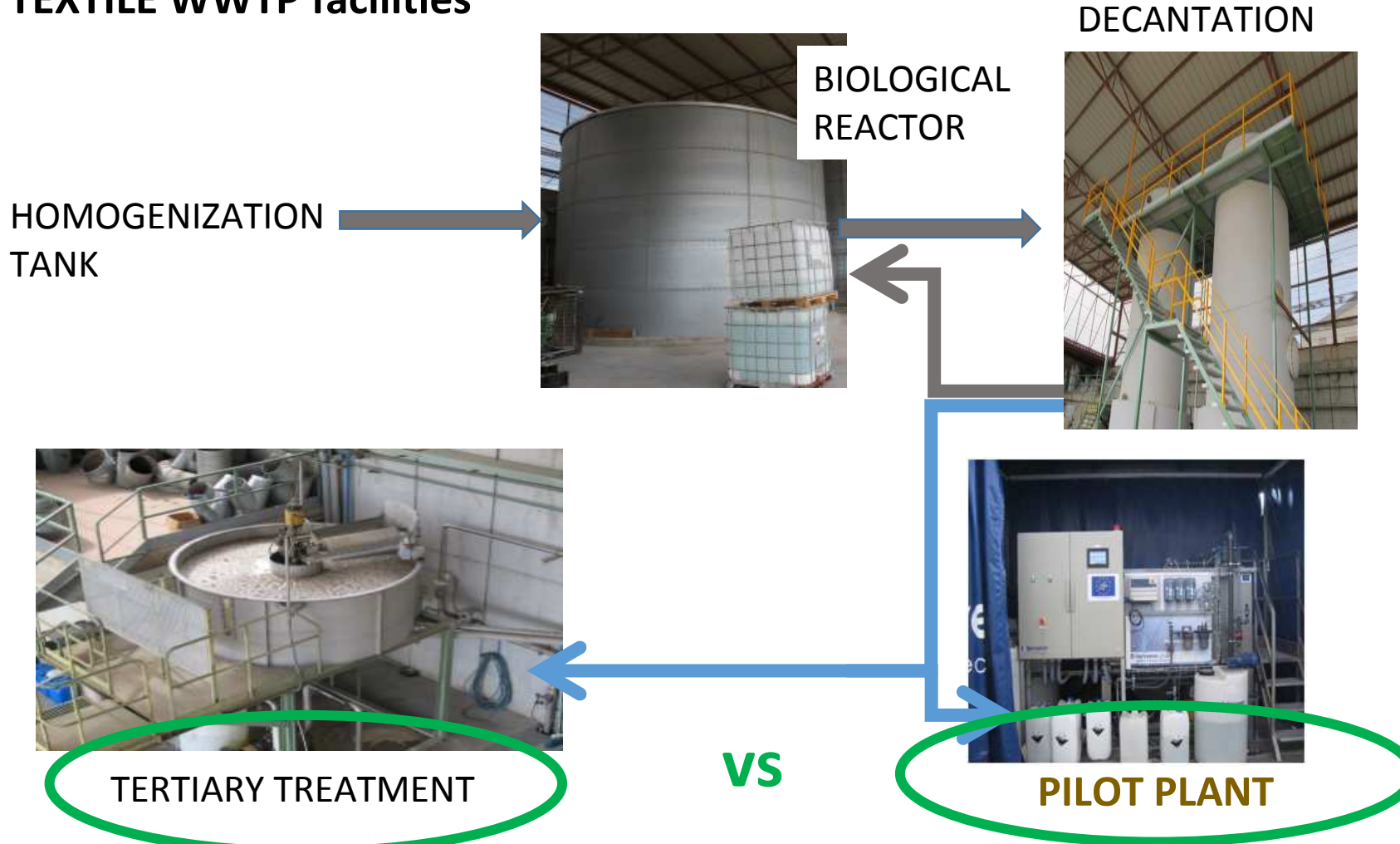
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3. DEMONSTRATION OF NATURAL COAGULANT USE

TEXTILE WWTP facilities



3. DEMONSTRATION OF NATURAL COAGULANT USE

TEXTILS MORA, S.A.L MAIN RESULTS:

Optimizing actions were developed during months of July, September and October 2015

- **COD** reductions: 69-77%
- **TSS** reductions: 85-95%
- **CONDUCTIVITY** increases: 5-0%



COD values always below discharge limit, 1.000 mgO₂/L

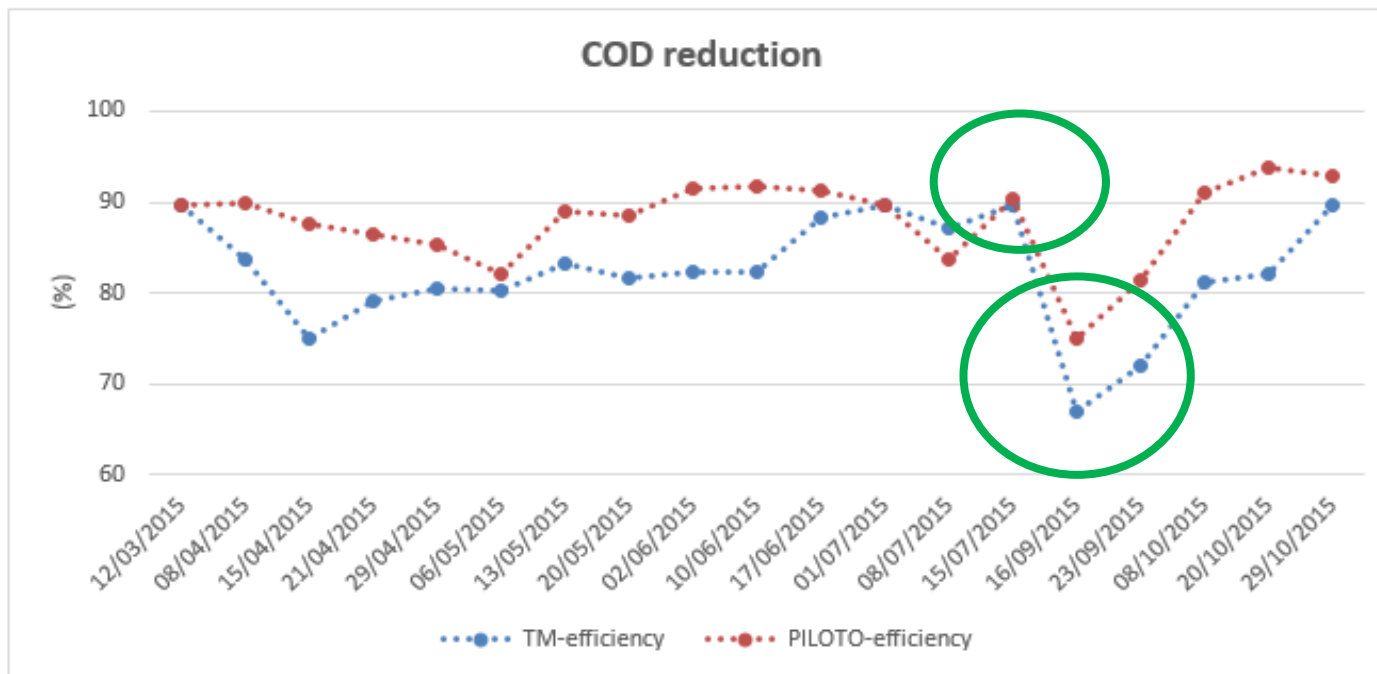
TSS values are always below discharge limit, 500 mg/L

CONDUCTIVITY values always below discharge limit, 3.000 mgO₂/L

3. DEMONSTRATION OF NATURAL COAGULANT USE

TEXTILS MORA, S.A.L MAIN RESULTS:

In the case of COD parameter, it has been studied **the efficiency** of both coagulants. The differences between both treatments in COD reduction values, reaching differences up **13% of reduction more by using ADNATUR** coagulant than aluminium polychloride.



3. DEMONSTRATION OF NATURAL COAGULANT USE

TEXTILS MORA, S.A.L MAIN RESULTS:

- ✓ Collection of information about the control data of water quality in current installations:
- ✓ Products used in physic-chemical treatments and annual consumption:

| | |
|---|-----------------------------|
| COAGULANTS POLICHLORIDE OF ALUMINIUM AT 18% | 4.000 Kg |
| FLOCULANT FLOTATOR OF DERYPOL "ASS 140" | 50 Kg |
| CAUSTIC SOSA AT 25% | 4.000 Kg |
| FLOCULANT CENTRIFUGE OF DERYPOL "DR 4000" | 1.440 Kg |
| VOLUME OF WATER TREATED | 30.000 m ³ /year |

DOSAGE:

350 ppm ADNATUR coagulant
550 ppm Aluminium polychloride

36% of reduction, without optimization process

OPTIMIZED DOSAGE:

200 ppm ADNATUR coagulant
550 ppm Aluminium polychloride

63% of reduction after optimization process

3. DEMONSTRATION OF NATURAL COAGULANT USE

TEXTILS MORA, S.A.L MAIN RESULTS:

- ✓ Costs of treatment per m³

PRIZE of Aluminium polychloride:

- ✓ 0,33 €/Kg
- ✓ 550 ppm (mg/L)
- ✓ Treating 30.000 m³/year

0,18 €/m³ (5.445 €/year)

Same treatment costs

PRIZE of ADNATUR coagulant:

- ✓ 0,90 €/Kg
- ✓ 200 ppm (mg/L)
- ✓ Treating 30.000 m³/year

0,18 €/m³ (5.400 €/year)

Tax reduction!!!

3. DEMONSTRATION OF NATURAL COAGULANT USE

TEXTILS MORA, S.A.L MAIN RESULTS:

✓ Costs of Taxes

$$C_s = (Q_s + Q_c \times V) \times C_c$$

- ✓ Cs: Taxes
- ✓ Qs: supplying total water cost (€/year)
- ✓ Qc: cost of water (€/m³)
- ✓ V: consumption flow (m³/year)
- ✓ Cc: Corrector coefficient

$$C_c = ICV \times IP \times (ICC + ICE)$$

- ✓ ICV: volumen index
- ✓ Rest of parameters are related directly with the contamination

0,1-10

In TEXTILS MORA case, it has implied saves at least of nearly **5.000€/year** depending on the exactly volume poured.

| Resolution Date | Corection coefficient | Volume (m ³) | €/year | Differences (€) |
|-----------------|-----------------------|--------------------------|-----------|-----------------|
| 09/12/2010 | 0,27 | 22.000 | 4.032,00 | --- |
| 01/01/2013 | 0,99 | 30.000 | 14.344,00 | +10.312,00 |
| 27/04/2015 | 0,26 | 30.000 | 3.992,00 | -10.352,00 |
| 24/09/2015 | 0,57 | 30.000 | 8.920,00 | +4.928,00 |

3. DEMONSTRATION OF NATURAL COAGULANT USE

TEXTILS MORA, S.A.L updated CONCLUSIONS:

- ✓ Obtained results with ADNATUR coagulant are much better than Aluminium polychloride
- ✓ Obtained results with ADNATUR coagulant are under the law
- ✓ Quantity of Aluminium polychloride is **350 ppm** more than ADNATUR coagulant
- ✓ ADNATUR coagulant does not modify the CONDUCTIVITY because it does not need neutralizing agent



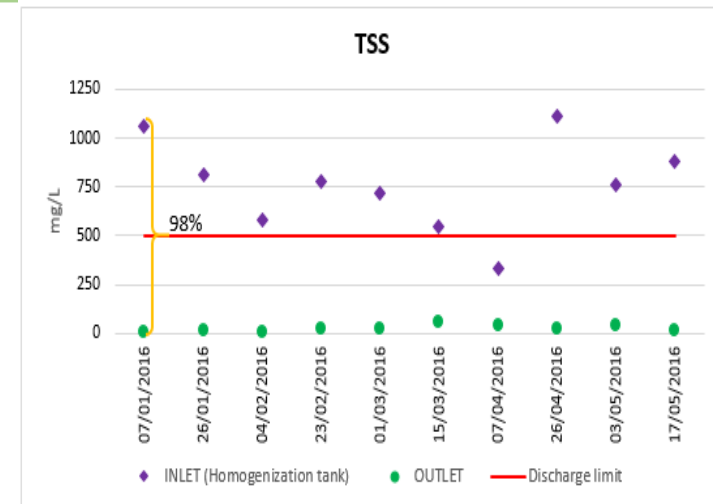
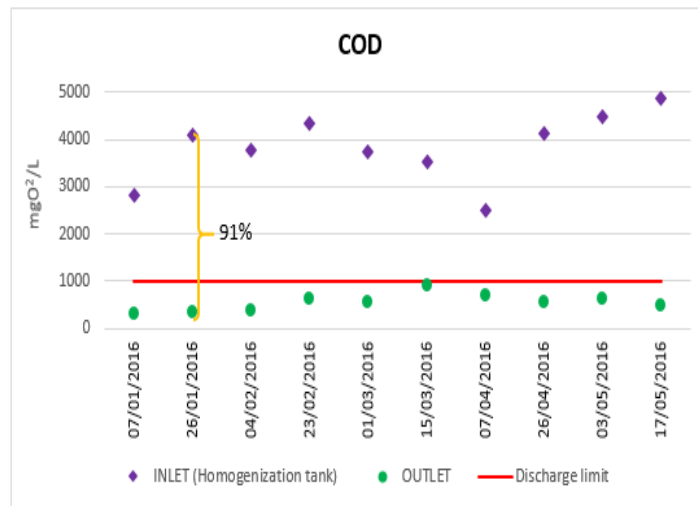
Required dosage of products will be reduced at 60% and neutralizing agent will be completely removed.

TEXTILS MORA changed the Aluminium polychloride by the ADNATUR coagulant in their flotation unit from November 2015 to nowadays

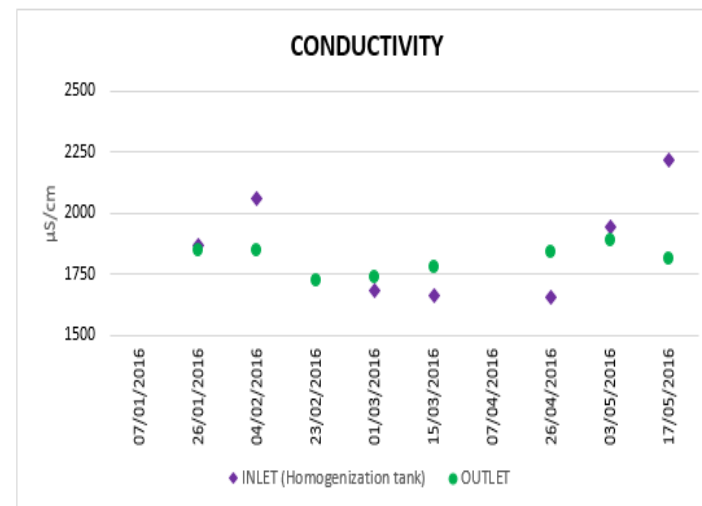
3. DEMONSTRATION OF NATURAL COAGULANT USE

TRIALS RESULTS in REAL/INDUSTRIAL FACILITIES in TEXTILS MORA

TEXTILS MORA has changed the Aluminium polychloride by the **ADNATUR** coagulant in their flotation unit from November to nowadays.



- Required dosage of coagulant has been reduced at 60%
- Neutralizing agent has been completely removed
- COD reductions: 75-91%.
- TSS reductions: 87-99%.
- CONDUCTIVITY increases: 2-0%



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ENVIRONMENTAL CONCLUSIONS

- The differences between both treatments in **COD reduction** values, reaching differences **up 13%** of reduction more by using ADNATUR coagulant than aluminum polychloride.
- Required **dosage of coagulant** has been **reduced at 60%** and **neutralizing agent has been completely removed**.
- Because of successful results in textile company during demonstration action, TEXTILS MORA decided to **change the Aluminum polychloride by the ADNATUR coagulant in their flotation unit**. From November 2015 to nowadays ADNATUR coagulant has been proved in the real facilities in TEXTILS MORA, obtaining very good results, which have been very similar to those, during previous demonstration obtained:
 - ✓ Required dosage of coagulant has been reduced at 60%
 - ✓ Neutralizing agent has been completely removed
 - ✓ COD reductions: 75-91%.
 - ✓ TSS reductions: 87-99%.

ECONOMIC CONCLUSIONS

- Although in the best of cases, the costs per m³ using ADANTUR coagulant are the same than the current ones, it is important to consider **savings associated with taxes reduction, sludge management and maintenance of facilities between 30 and 50%**:
 - ✓ **TAX DEDUCTION** applied for water contamination: in TEXTILS MORA case, it has implied saves **at least of nearly 5.000€/year** depending on the exactly volume poured.
 - ✓ The improvements in the sludge dewaterability imply saves in costs of transport to the waste manager.
 - ✓ **Saves of nearly 90%** avoiding substitution and maintenance of the facilities because of corrosive phenomes.



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Thank you!

Questions welcome



Project smedia
