

THE IDR MODEL

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The leather industry is considered in all the World as a contaminant and dirty industry.

- *Today, this qualification is not right. In a lot of countries, using the best clean technologies there is a big change in our sector.*
- *With the actual improvements we can remark the dignity of our work, and change our image, as a responsible and environment sustainable industry.*

The target of any Leather Industry with long term objectives must to be:

- ***WE PRODUCE HIGH QUALITY PRODUCTS, WITH COMPETITIVE COST, GENERATING LESS CONTAMINATION AS POSSIBLE, WITH LOW CONSUMPTION OF WATER AND RECOVERING OR RECYCLING ALL SUBPRODUCTS OF OUR ACTIVITY.***

Thinking about Pollution:

There are three kinds of contamination coming from the leather and the process of achieving it:

- **AVOIDABLE:** Part of the excessive salt, organic residuals, sand, part of the fats.
 - **UNAVOIDABLE:** Is coming from the leather material, hair, liquid keratin, rests of meat and leather, liquid proteins,... this is the 60% of COD and is organic and with biodegradability.
- ADDED:** Products not well fixed during tanning, in general **we can avoid it.**

According with the anterior explain, the tanner must:

- *Try to obtain the leather with the minimum of avoidable contamination, is the first step for a good environmental management.*
- *Use clean technologies that reduce the unavoidable contamination.*
- *Select the right products and design the right processes for to generate the minimum added contamination.*

Basical conditions for a good depuration of waste water from leather Industry:

- *Is convenient to get an homogenization tank with air contribution during 48 hours for generate a regular flow of and charge.*
- *If we have variations of conductivity up to 15.000 micro Siemens the performances will be reduced.*
- *We recommend to have a supply of additional air to liming water before the homogenization bath.*
- *The biological treatment must be retained during 2-3 days for reduce the size of the bigger organic molecules that produces color in the water.*

Basical conditions for a good depuration of waste water from leather Industry:

- *Is important that the depth of water in the biological tanks achieve minimum 6 meter for to have a good oxygen transference within water and air.*
- *In the primary decantation (with well homogenized water), we can eliminate about 75% of suspended solids and 35-40% of COD.*
- *With centrifugation or press filter (with right polyelectrolytes), the sludge can achieve 28-29 % dryness.*

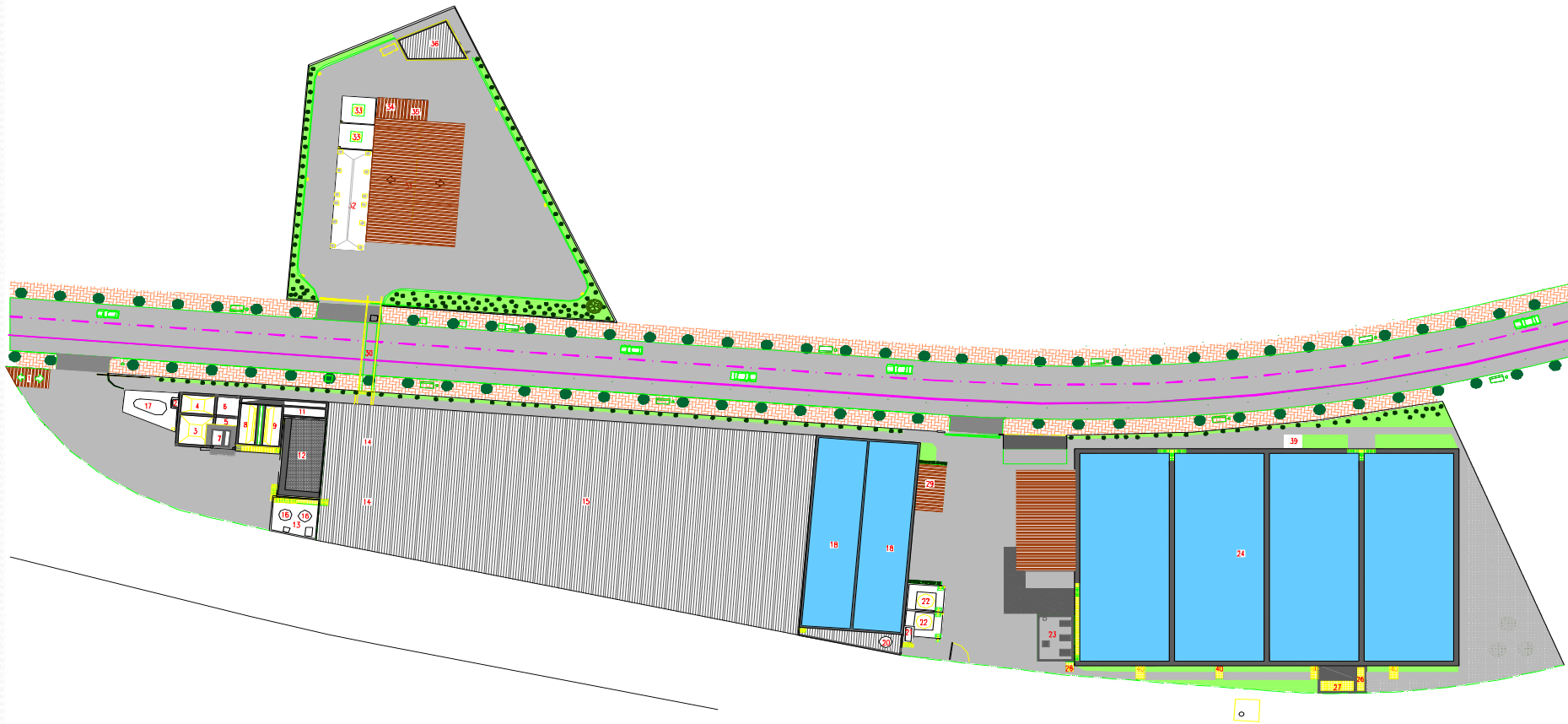
FOR TO IMPROVE THE GLOBAL WATER TREATMENT AND ACHIEVE THE LOW REQUIREMENTS

1. Inform our costumers about low requirements.
2. Teach our tanneries about how to reduce pollution and residues.
3. Give information to our partners about how to implement water saving and tanning products processes.
4. Get an investigation centre for leather innovation in process and environment friendly systems.

THE INVESTMENT IN IDR

- The total investment for land, construction works and equipment expenses was 11.300.000 €.
- The investment before start in 2005 was:
- 27,2 % (3.071.250 €) Tanning companies.
- 1,4 % (161.694 €) Town Council.
- 71,4 % (8.067.056 €) bank financial for 15 years.
- The capital is distribute in 41.448 shares .

DISTRIBUTTION



THE PLANT TREATMENT PROCESS

PRE-TRAITEMENT

- 1 – Raw filtering system.
- 2 – Pumping of industrial and urban wastewater.
- 3 – Fine filter.
- 4 – Sand and fat elimination.
- 5 – Sulphur elimination (convert to sulphate)
- 6 - Homogenization.
- 7 – Air odour elimination of all closed tanks(homogenization) or rooms.
- 8 – Primary decantation.

THE PLANT TREATMENT PROCESS

BIOLOGICAL TREATMENT:

- 9 - Biological treatment.
- 10 - Pumping of primary and biological sludge.
- 11 - Dehydration of sludge with centrifuges.
- 12 – Sludge storage in silos.
- 13 – Air odour elimination of the sludge storage room.

DEPURATION PLANT IDR



FINE FILTERS IDR



SAND AND GREAS SEPARATOR IDR



DESULFURATION TANK IDR



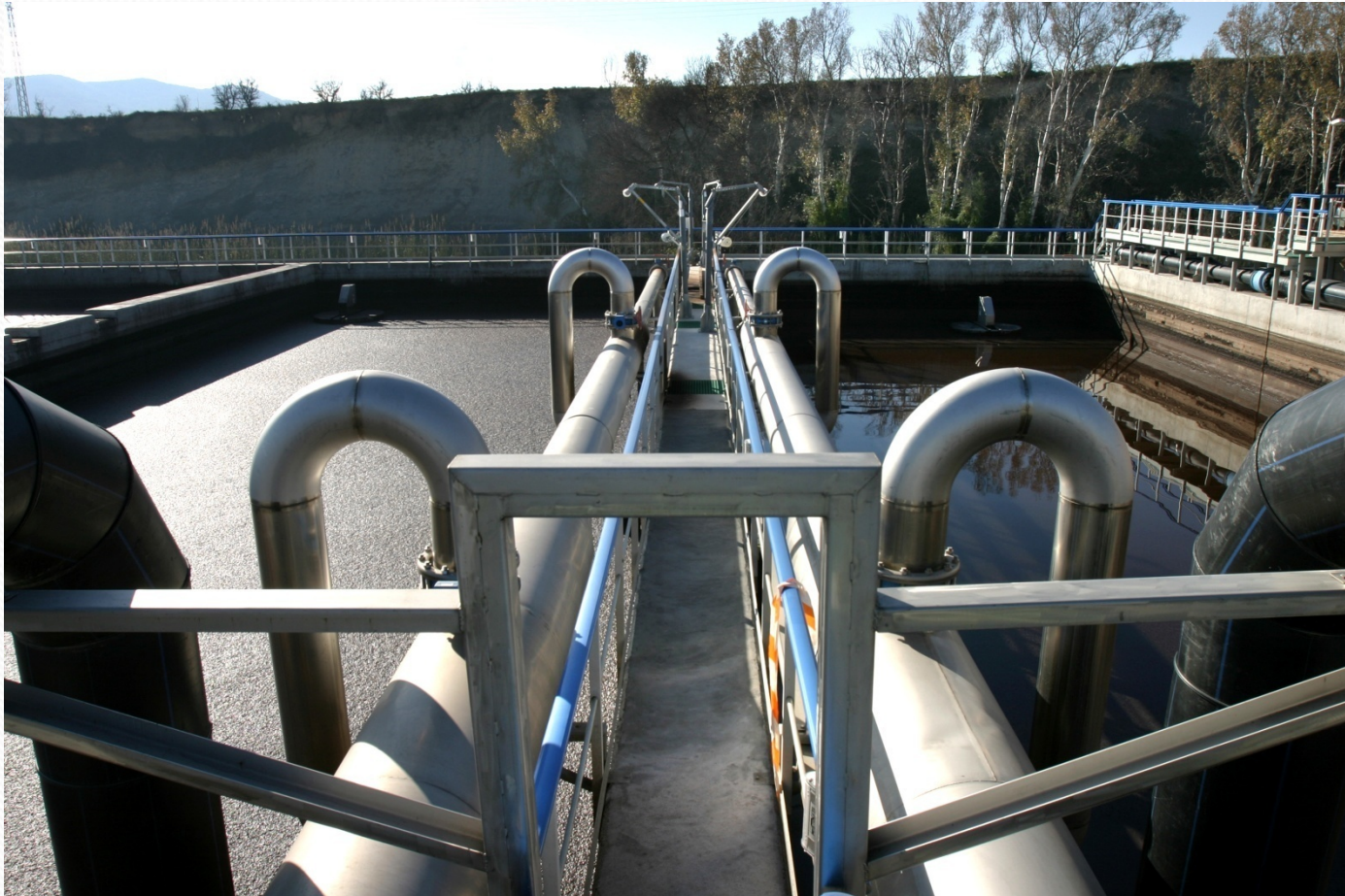
HOMOGENIZATION TANK IDR



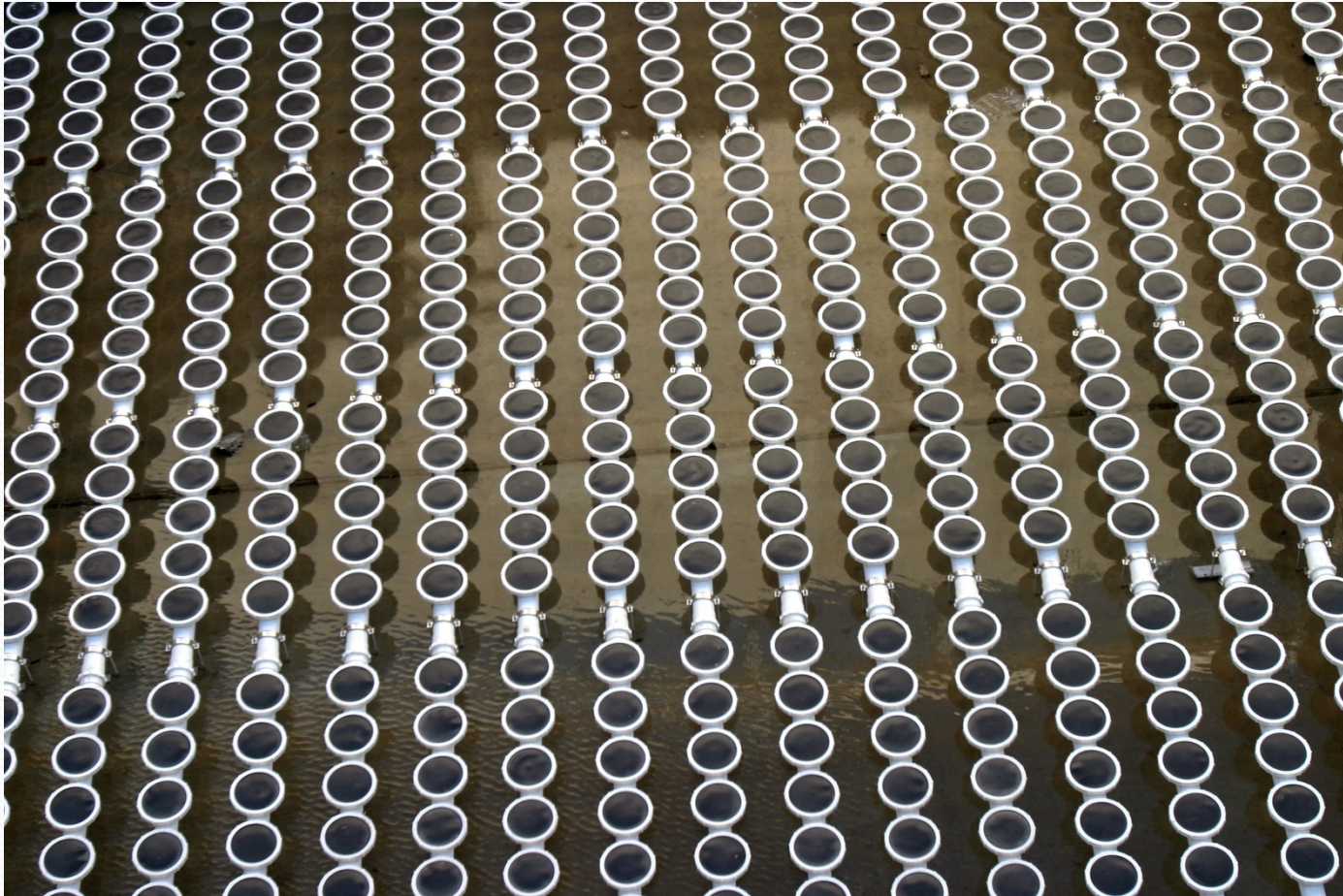
PRIMARY DECANTATION IDR



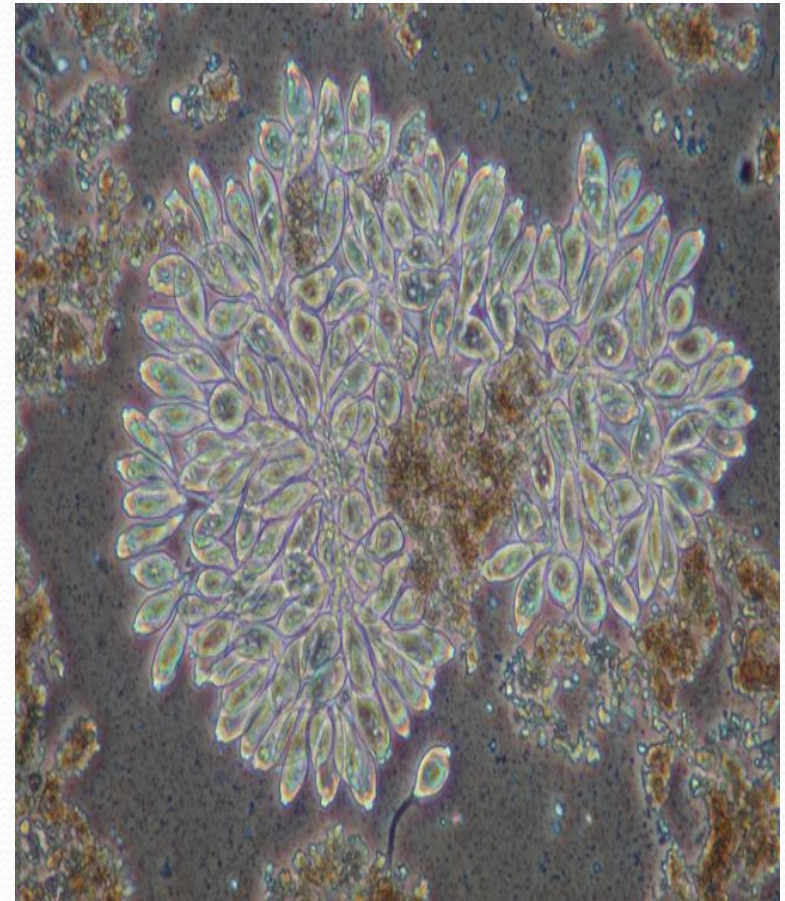
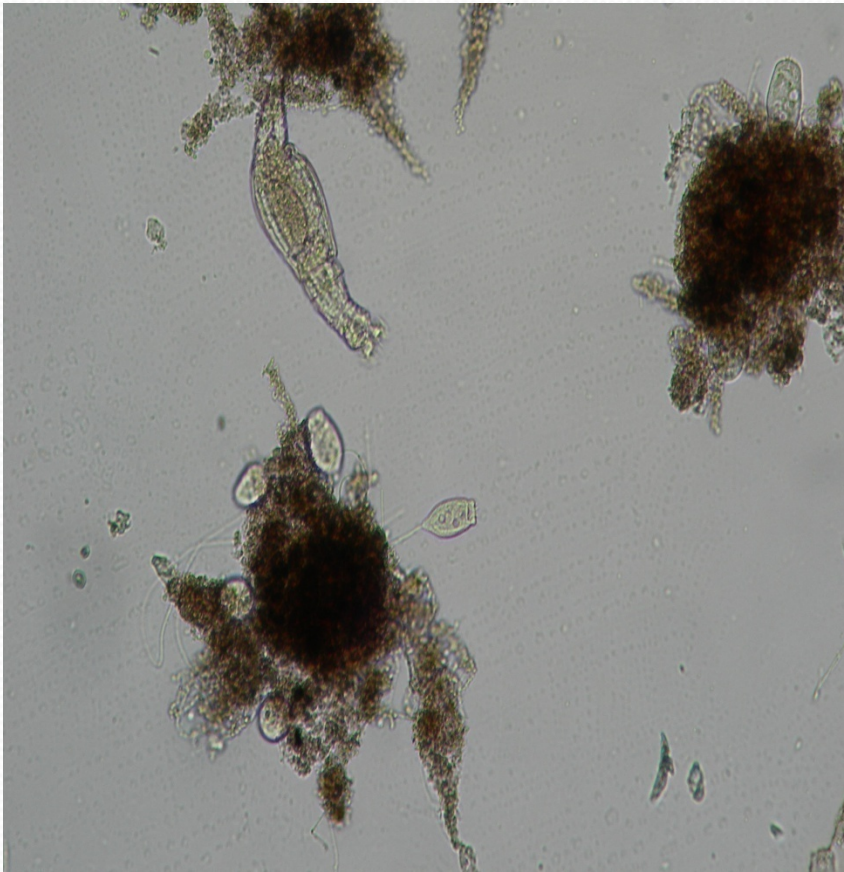
BIOLOGICAL REACTOR IDR



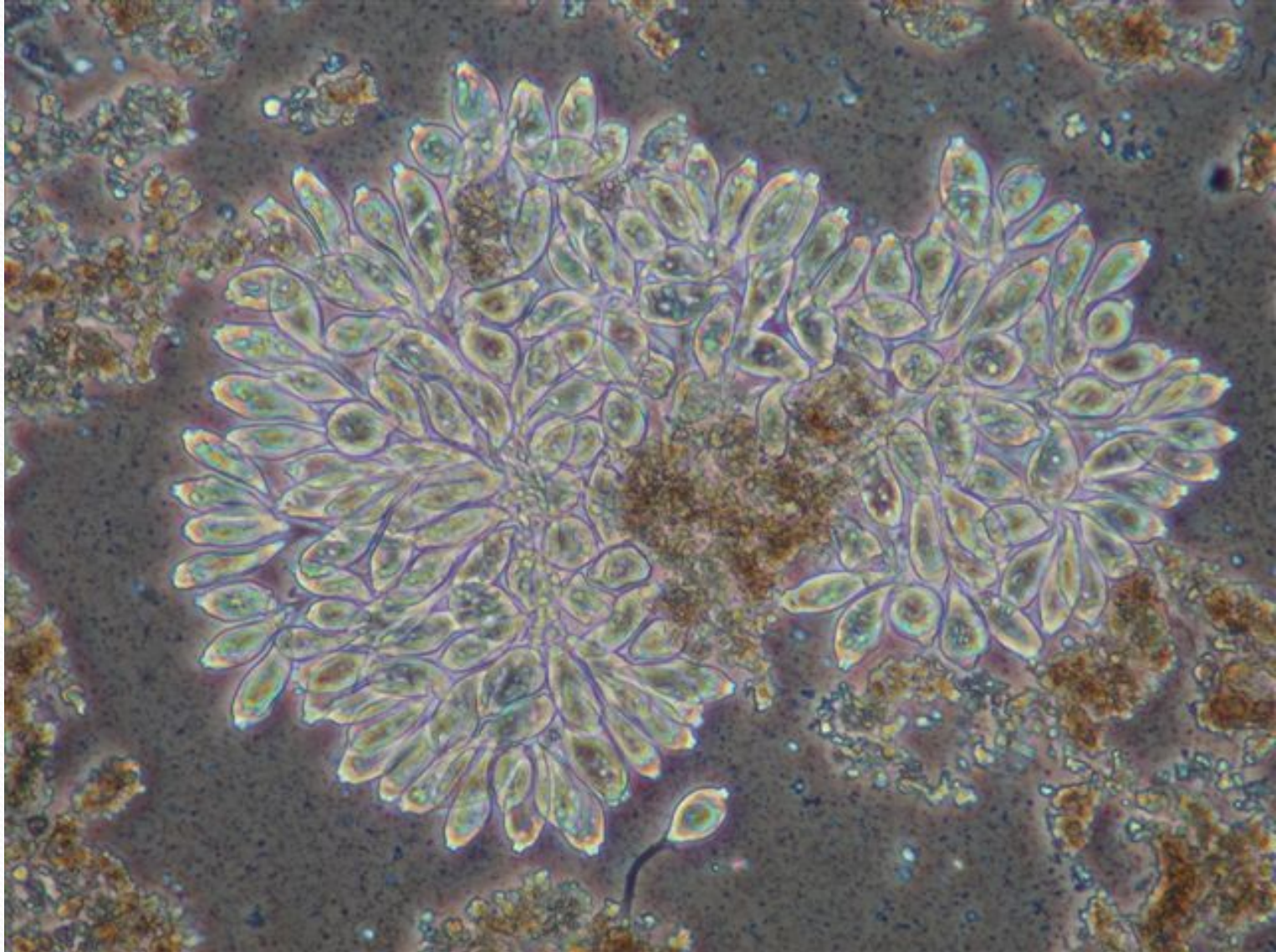
AIRATION IN THE BIOLOGICAL REACTOR



MICROORGANISMS IN THE BIOLOGICAL REACTOR IDR



MICROORGANISMS OPERCULAIRES IN IDR



AIR FLOW GENERATOR ROOM



SLUDGE DEYDRATATION IDR



STORAGE SILOS (SLUDGE)



TOTAL CHARGE PROCESSED

- **Year 2014 :** 350.000 m³ industrial wastewater
600.000 m³ urban wastewater

<u>PARAMETERS</u>	Before traitement	after treatment
S.S.	3.400 p.p.m.	45 p.p.m.
C.O.D.	6.807 p.p.m.	350 p.p.m.
SOL	16.000 mscm.	9.000 mscm.
NITROGÈNE	440 p.p.m.	40 p.p.m.
CHROME III	61 p.p.m.	0,25 p.p.m.

EFFECTIVENESS LEVEL

- The plant effectiveness are :

• Parametre gr./litre	Entry Industrial	Entry Urban	Tratement output	% elimination
• S.S. (Solids)	3,400	0,250	0,045	99,7
• C.O.D (m. organic)	6,900	0,500	0,350	95,2
• Sulfur	0,030	0	0,00015	99,5
• Conductivity. (msi)	16.000	2.700	8.900	4
• Chrome III	0,068	0	0,00025	99,7

CONTROL SYSTEM IN IDR

- Every tanning company have a magnetic flow control
- 24 hours charge control. Every day IDR analyse MES, DQO, SOL, N², Chrome. And the final invoice is in proportion of the real charge of every parameter.

CONTROL SYSTEM IN TANNERY



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OPERATIVE COST IN IDR

YEAR OPERATION COST (2014):

• Produced sludge send for composting plant	7.000 Tm.
• Cost of composting traetment	520.000 €
• Electric energy 3.000.000 Kw/year	330.000 €
• Personnel wasses and insurances	610.000 €
• Reagent (polyelectrolyte, NaOH, Cl_3Fe)	440.000 €
• Wastewater treatment tax	510.000 €
• Maintenance of facilities	242.000 €
• Generaly expenses	108.000 €
<u>Loan finantial cost</u>	<u>1.064.000 €</u>

<u>TOTAL explotation</u>	<u>year 2014</u>	<u>3.824..000 €</u>
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<u>Price industrial water treatment per m³</u>	<u>10,60 €</u>
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Thank you very much