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CASE STUDY

Landfill leachate treatment

PROJECT DESCRIPTION

Customer

- MSW landfill leachate treatment.
- Montoliu County landfill.
- Location & year: Lleida (Spain) in 2010.
- Industrial sector: Waste Management.

The Background

The Montoliu County Landfill, in Lleida, conducts the treatment of liquid waste generated in their own landfill (leachates). The old process started with a biological treatment and was followed by a second step of purification with RO membranes. The water was then purified and sent to public waterways while RO membranes rejection was taken to an authorized disposal.



Raft of the RO permeate

The Problem

The management of this RO rejection involved a high cost to the County Council. It was also expected that the landfill would receive leachates from the neighboring regions, La Noguera, Les Garrigues, and Pla d'Urgell, so the costs were going to be increased in the future.

Summary of the initiative

The County Council awarded Socamex-Condorchem, a new plant for the treatment of the RO rejection. The treatment process consists of the following stages:

Stage 1: Stripping of the effluent (pH adjustment + CO₂ degassing)

Stage 2: Treatment by means of vacuum evaporation with Evidest 600/1 evaporator.

Stage 3: Post-treatment of the distillate obtained by Stripping (pH adjustment + NH₃ absorption)



Evaporator Evidest 600/1

This process significantly reduces the volume of waste to manage and obtains a treated effluent that meets the environmental standards for discharge into public waterways.



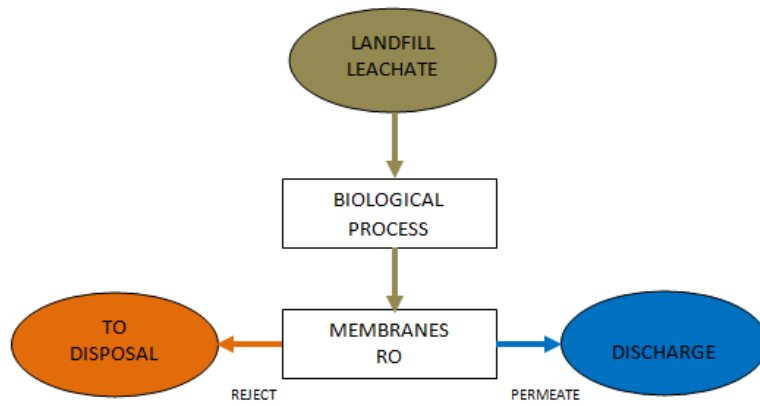
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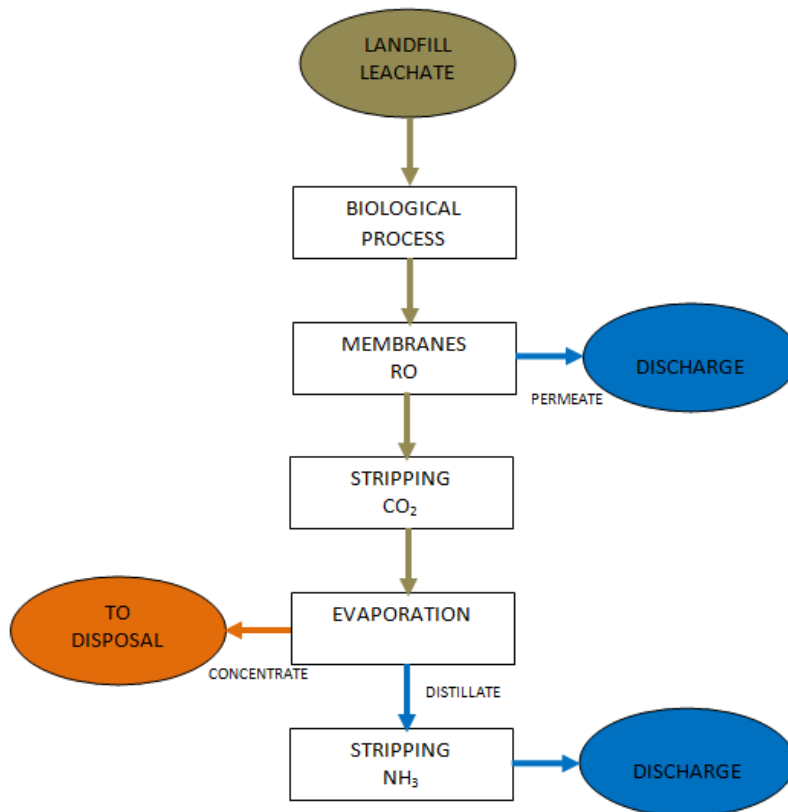
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PROCESS DIAGRAM

Old Process



New Process



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ECONOMIC RESULTS

Regarding the new treatment plant RO rejection:

	Old Process	New Process
Material Balance		
Kw Consumption	0 Kw/day	764 Kw/day
Waste to manage	14,400 Kg/day	3,600 Kg/day
Economic balance		
Energy cost	0 €/day	92 €/day
Waste management cost	2,160 €/day	540 €/day
Consumables cost	0 €/day	106 €/day

Total savings: 1.422 €/day (519,030.00 €/year)

Investment in facilities: 625,442.00 €

Payback: 1.2 years

DATA

EFFLUENT CHARACTERIZATION			
PARAMETERS	UNITS	LIMITED RELEASE	COMPOSITION
Total COD	mg O2-/l	160	8,700.00
pH		9.5 – 5.5	7.8
Conductivity	µS/cm		49,300
NH4+	mg NH4/l	15	147.4
Chlorides	mg Cl-/l	2000	15,200.00
TREATED WATER CHARACTERIZATION			
Total COD	mg O2-/l	160	82
pH		9.5 – 5.5	9.1
Conductivity	µS/cm		500
NH4+	mg NH4/l	15	14
Chlorides	mg Cl-/l	2000	5

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CONCLUSION

Condorchem Envitech achieved environmental and economic improvements in the process significantly by using vacuum evaporation in the treatment plant. Treatment of RO rejection allowed to minimize the volume of waste to be disposed by an authorized agent, with consequent cost savings. Also it provided a treated effluent meeting the environmental parameters within the limits for discharge into public waterways.



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