

Envirogain is the expert for high organic load wastewater treatment solutions and technologies

Applications sectors : agri-food , agriculture, industry and urban

Polipur™ Technology

Polipur™ is an electrochemical process that removes simultaneously :

- phosphorus,
- suspended solids,
- oil and grease
- organic load (BOD, COD, etc.),
- total nitrogen,
- pathogens.

That technology is patent pending. It consists of effluent circulation, continuous or batch, through the electrochemical reactor using the principles of electropurification with or without added chemical.

Polipur™ depuration is based on three principles :

- electroflotation,
- electrocoagulation
- electrooxydation.

G2 Commercial Unit
(Dimensions : 2,0 m x 1,4 m x 1,7 m)



Markets / Applications

Polipur™ was developed, in collaboration with École Polytechnique de Montréal, as a tertiary treatment. It appears from our experience that **Polipur™** can be also positionned before a secondary treatment system, leading to a size reduction of that secondary treatment system. From the results we get **Polipur™** could be used in small and medium capacity wastewater treatment process (flow rate between 10 to 200 m³/day) such as :

- abattoir ;
- meat processing plant;
- dairy operation and cheese dairy ;
- vegetable processing plant;
- storage or compost centre of organic residues ;
- wineries ;
- hog farms or dairy farms ;
- small municipalities.

The international interest we see for **Polipur™** shows that this technology presents important advantages compared to conventional methods of coagulation/flocculation using chemicals.

After a secondary treatment

Tertiary treatment market is growing fast in industrialized countries where regulations get stronger. **Polipur™** allows a simultaneous removal of Phosphorus, Pathogens and other parameters such as Suspended Solids.

About Phosphorus, **Polipur™** can reach level as low as 2mg/l as expected by the **91/271/EEC** rule.

Table 1 : Example of **Polipur™** technology performances for three typical effluents

| | Units | Cas 1 | | | Cas 2 | | | Cas 3 | | |
|----------------|------------|-------------------|-----|-------|-------|-----|------|-------|-----|------|
| | | In | Out | Eff. | In | Out | Eff. | In | Out | Eff. |
| P total | mg/l | 220 | 9 | 96% | 67 | 2,3 | 97% | 32 | 1,7 | 95% |
| TSS | mg/l | 750 | 40 | 95% | 450 | 40 | 95% | 330 | 50 | 85% |
| Colif. | UFC/100 ml | 1x10 ⁶ | 200 | 99,9% | 5 500 | 100 | 98% | 700 | 15 | 98% |

Demonstration Unit at Work



Before a secondary treatment

Biological secondary treatment often causes fears for users, especially small and medium enterprises that don't have enough time or resources to manage it well. After a rough primary treatment, **Polipur™** removal level, without operator, are : TSS (80-90%), BOD and COD (40-50%), NTK (30-45%) and **more in the particular case of Abattoirs**. These removal level allow a final wastewater depuration by a passive aerobic treatment (ex: peat moss filtration or a trickling filter), or discharge to the municipal collection system.

Table 2 : Example of **Polipur™** technology performances for two typical effluents.

| | Unit | Cheese Dairy | | | Wheat Processing Unit | | | Abattoir | | |
|--------------------------|------------|---------------------|-----|------|-----------------------|------|------|----------|-----|------|
| | | In | Out | Eff. | In | Out | Eff. | In | Out | Eff. |
| BOD₅ | mg/l | 1500 | 330 | 77% | 3950 | 2100 | 47% | 2000 | 75 | 96% |
| COD_t | mg/l | 3780 | 530 | 86% | 7320 | 3610 | 50% | 3960 | 390 | 90% |
| TSS | mg/l | 820 | 30 | 95% | 2900 | 500 | 82% | 1200 | 60 | 95% |
| NTK | mg/l | 26 | 15 | 42% | 160 | 90 | 43% | 56 | 20 | 64% |
| P_{total} | mg/l | 22 | 0,8 | 96% | 40 | 1,9 | 95% | 18 | 0,6 | 97% |
| Colif. | UFC/100 ml | 1.6x10 ⁶ | <60 | 99% | | | | | | |

Visual Results on Cheese Dairy Effluents

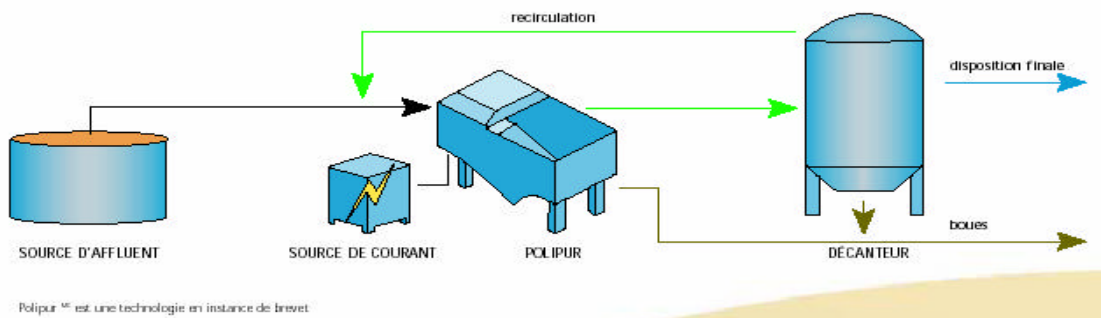


Figure 1 : Example of process scheme

Offered Services

Envirogain offers, on demand, *in situ* tests services with its **Polipur™** mobile unit.

In France, **Envirogain** is represented by the company **ASTRADE**



Mobile Unit installed at a Cheese Dairy

Envirogain, funded in 1999, is a Canadian company located in the Province of Quebec. **Envirogain** employs 12 persons that combine various expertise (engineers, agronomists, chemists, technicians in electronic and industrial automation). The company is specialized in development and commercialization of high organic load wastewater treatment solutions and technologies for the agricultural, agro-industrial, industrial or municipal sector.

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