NACE CODE E37

ANALYTICAL CHARACTERIZATION TO SUPPORT THE WASTEWATER PURIFICATION TREATMENTS

Innovations and Benefits - Broad-spectrum analytical characterization, chemical, microbiological and "eco-toxicological", to support the purification treatments of civil wastewater as well as agro-industrial and zoo-technical wastewater.
The analytical tools and the methods used allow the assessment of the quality of the effluents for the reuse and saving of the water resource and the recovery of materials finalized to the water systems closure.

Uses -

Assessment of degradability, toxicity and biological treatability of wastewater:

- biomethanation potential, BMP;
- respirometric, titrimetric and toxicity tests.

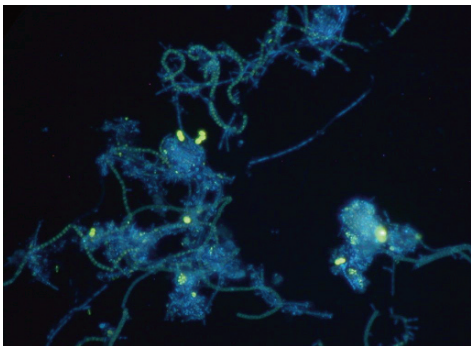
Identification of problems in the biological purification process:

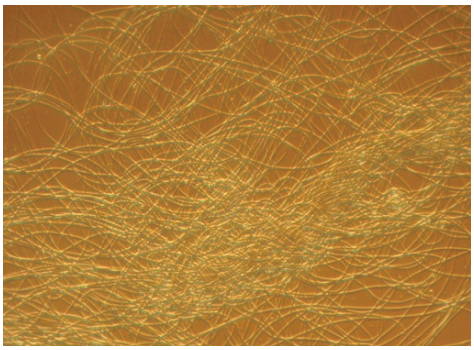
- microscopic analysis of filamentous bacteria responsible for the biological dysfunctions of purification plants;
- analysis of the chemical parameters that govern the progress of the process.

Verification of the effectiveness of the treatment, the removal of pollutants and the possible reuse of the water subjected to the purification processes:

- chemical, microbiological, traditional and bio-molecular analyses (FISH, in situ Fluorescent Identification) and toxicity estimates.

Past and present activities - Optimization of the purification process (microbial populations and biochemical pathways of pollutant degradation) and removal of the organic substance and nutrients:
• Patents: DEPHANOX, treatment system for the biological removal of nutrients from wastewater of civil or mixed origin; Microbial fuel cell for wastewater / waste purification;
• European and international research projects: TELEMAC, AQUAFIT4USE, AGROIWATEC.
• Identification of the main causes of biological dysfunctions (bulking, foaming) of the treatment plants and the resolutions to be adopted (real-scale plants of agro-industrial companies).





RESEARCH TO PROVE FEASIBILITY | TECHNOLOGY DEMONSTRATION | SYSTEM TEST, LAUNCH & OPERATIONS

BASIC TECHNOLOGY RESEARCH | TECHNOLOGY DEVELOPMENT | SYSTEM/SUBSYSTEM DEVELOPMENT

TRL 1 | TRL 2 | TRL 3 | TRL 4 | TRL 5 | TRL 6 | TRL 7 | TRL 8 | TRL 9

TECHNOLOGY READINESS LEVEL

Italian National Agency for New Technologies, Energy and Sustainable Economic Development
www.enea.it

Territorial and Production Systems Sustainability Department
Resource Efficiency Division
Technologies for the efficient use and management of water and wastewater Laboratory
Referent: Carmela Maria Cellamare - carmela.cellamare@enea.it