



EUROPEAN COMMISSION
CALL ICFP501A4PRO3
Action Line (c) (iv)

Project Acronym: **EOLI**
Proposal Number : ICA4-CT-2002-10012

EOLI

Efficient Operation of Urban Wastewater Treatment Plants

WP3



Partners

• POLIMI	40 man-months
• GRADIENT	34
• SPES	14
• UNAM	18
• UU	2
• IBTech	2
• UCL	3

Deliverables

- D3.1 Evaluation on the applicability of existing sensors and biosensors T0+6
- D3.2 Automated DOstat and pHstat titration biosensor for process control T0+24
- D3.3 Simplified low-cost on-line UV spectrometric sensor T0+24
- D3.4 Sensor networks T0+30

Task & Objectives

Progress towards achieving objectives (Outputs)

WP3 Task 3.1 Development of an on-line combined DOstat and pHstat titration biosensor

- **Objectives:**

- Develop an automated combined titration DOstat & pHstat biosensor to be used on-line.

Deliverable D3.2 Development of an automated DOstat and pHstat titration biosensor for process control

- An on-line combined pH-DO-stat titrator (MARTINA) was constructed (POLIMI with cooperation of SPES)
- The on-line MARTINA pH/DOstat titrator is tested on a pilot-scale SBR reactor in Bologna, in cooperation with ENEA, as a subcontractor
- Five modes of operation were defined and a operational protocol was issued and currently evaluated.
- The applicability of pH/DOstat titration was further investigated in the laboratory

Task & Objectives	Progress towards achieving objectives (Outputs)
<i>WP3 Task 3.2 Development of a simplified low-cost on-line UV-spectrophotometric sensor</i>	
Objectives: • Evaluate the performance of a lab-scale commercial UV-spectrophotometric sensor to estimate the behaviours of the SBRs for three different wastewaters • Develop the UV-databases specific to the tested wastewaters. • Simplify the existing on-line pilot-scale sensor to obtain a low-cost adapted sensor to be used with the investigated effluents. • Validate the UV-databases with the on-line pilot-scale sensor.	<i>Deliverable D3.3 Development of an simplified low-cost on-line UV spectrometric sensor</i> • UV sensor was tested using 3 target wastewaters, in cooperation of scientists from UNAM of UU. For each wastewaters, SBRs were successively fed with adapted microbial population. • UV-models were built for each wastewater with the off-line spectrophotometer • A commercial on-line spectrophotometer was purchased with external fundings • For the OECD and the UNAM wastewaters, the commercial on-line UV sensor is currently adapted, based on the off-line results, in cooperation of the SECOMAM company. The first prototype of an affordable sensor will be available in December 2004

Task & Objectives	Progress towards achieving objectives (Outputs)
<i>Task 3.3. Implementation of the on-line biosensors on pilot plant</i>	
Objectives:	<i>Deliverable D3.3 Development of an simplified low-cost on-line UV spectrometric sensor</i> Final implementation will be achieved on the LBE-INRA SBR reactor, during the last year of the project

Scientist exchanges

- Leonardo Jimenez, from UNAM, at Polimi during 3 months
- Gloria Moreno, from UNAM, at Compiègne during 6 months
- Alejandra Benitez, from UU, at Compiègne for during 3 months

Social new

UU

Manolo

Flora

UNAM

Unnamed

GRADIE

Gaston

Manolito

Unnamito

*RNA analyses
under way*

Anita

Martina



Future works

POLIMI and ENEA have been planned the following programme: tests of the on-line titrator at the ENEA's pilot-scale SBR plant at Trebbo (Bologna), before shipping it to INRA (Narbonne) for the completion of the programme of other WPs (WP5 and WP7, not included in WP3 activities); tests at the lab-scale SBR plant at POLIMI (Milan) to complete denitrification tests and to operate with a dairy-like influent, artificially made to simulate the dairy wastewater that is used at INRA (Narbonne).

GRADIENT will focus during the last year of the project : improvement of the deconvolution models with the first order derivatives of the spectra, and with use of other deconvolution techniques than the polynomila deconvolution, in collaboration with LBE-Narbonne; tests at the lab-scale the on-line spectrophotometer with the LBE-INRA wastewater, before its implementation on the bioreactor in Narbonne.

Lectures

- Polimi
- SPES
- Gradient
 - General
 - INRA-LBE
 - G. Moreno (UNAM) & A. Benitez (UU)
- UNAM