



AquaFit4use

# Optimisation of wastewater treatment plants

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## DESCRIPTION AND SPECIAL FEATURES

Operational problems in wastewater treatment are usually the result of complex relationships between wastewater composition, process technology and operating conditions. A systematic approach makes precise targeted measures possible for successful and efficient troubleshooting and the minimisation of energy and operating costs.

## SELECTION OF LABORATORY AND PILOT PLANTS

Independent, impartial and competent process development from laboratory trials to full-scale implementation by PTS specialists using extensive know-how.

## ANAEROBIC DEGRADATION

Anaerobic wastewater treatment is widespread in the paper industry. Several problems, like a loss of degradation performance or a change in sludge properties, which occur during the treatment process may be examined using anaerobic lab tests in batch or semi-continuous operation:

- Troubleshooting by identifying problem-causing water streams
- Evaluation of anaerobic sludge activity
- Impact of water composition on anaerobic degradation performance
- Influence of additives on anaerobic degradation performance and sludge properties
- Evaluation of biogas generation and composition

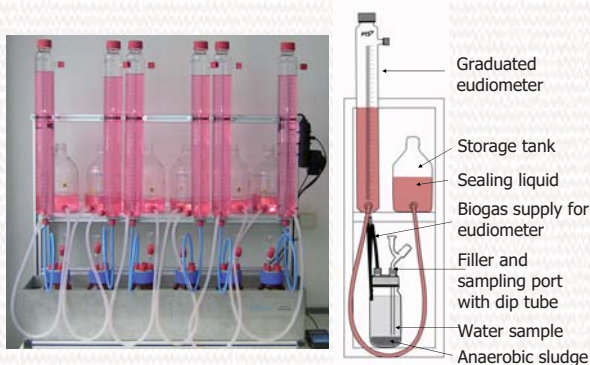


Figure 1.- Anaerobic test design

## MEMBRANE TECHNOLOGY

Membrane filtration is used in a wide range of applications including the paper industry. PTS offers expertise, consultancy, lab & pilot trials in the following fields:

- Ultrafiltration/nanofiltration
- Membrane bioreactor MBR (also thermophilic)

Furthermore PTS conducts R&D projects on innovative aspects of membrane use in the pulp & paper industry:

- Anaerobic MBR/thermophilic MBR
- Ceramic membranes for special applications



Figure 2.- Lab scale membrane plant

## OZONE

- Ozone treatment – either alone or in combination with biological stages – offers efficient solutions to meet growing demands
- Main effects: reduction in COD and colour, increasing biodegradability of recalcitrant COD
- Trials with PTS laboratory ozone plant, if appropriate combined with biological degradation tests, to examine applicability and economic efficiency (profitability study) of ozone treatment

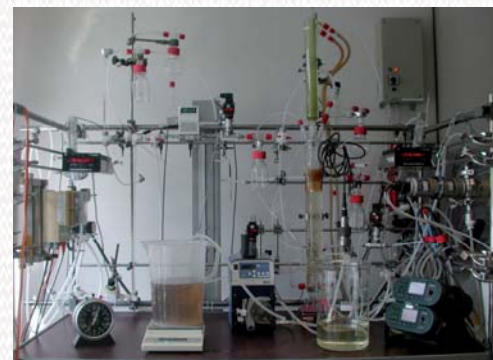


Figure 3.- Laboratory ozone plant

## INDEPENDENT CONSULTANCY BY PTS EXPERTS

Wastewater treatment costs depend mainly on elimination performance and related discharge fees. Failures in the wastewater treatment system may have adverse effects on production, whereas optimised treatment processes ensure stable operating conditions and avoid possible sanctions due to non-compliance with legal limits.

Consulting services of PTS comprise:

- Confidential and independent plant survey and inspection
- Analysis of operational data
- Diagnosis/identification of weak points
- Troubleshooting of operational problems
- Variation studies
- Laboratory and pilot plant tests
- Introduction and application of innovative technologies
- Independent and impartial consultancy for optimised plant configuration
- Checking the possibilities for offsetting investments against discharge fees
- Assistance in negotiations with the authorities
- Expert assessments
- Training and education

## COMPETITIVE ADVANTAGES

- Reduction in water consumption and effluent costs
- Minimisation of material losses discharged together with effluents
- Reuse of treated effluents
- Guarantee of stable operation of the wastewater treatment plant



Project funded through the 7<sup>th</sup> Framework Programme of the European Community for research and technological development

knowledge transfer and dissemination

SP 6

DISSEMINATION AND training