



**TECNIA**

**Masters  
of Engineering  
Integration**

## **Zeoreactor© Technology**

The Zeoreactor© technology is based on a kit for new and existing wastewater treatment plants. This system improves wastewater treatments through process optimization and minimizes environmental impacts. It is an environmental friendly and cost effective treatment technology. Additionally, it reduces the amount of generated sludge.

Zeoreactor© consists in a technology for upgrading existing small, medium and large scale sewage treatment plants by means of zeolites and oxygen enriched aeration.

The implementation of this system will:

- Reduce the investment costs for nitrogen and phosphorous removal by at least 50% compared to traditional solutions.
- Increase the degradation efficiency especially for nitrogen in the wastewater will increase up to 70%
- Reduce the generated sludge up to 40%

Zeoreactor© uses the **unique properties of zeolites to improve the performance of existing treatment systems and/or to reduce capital expenditure on new treatment systems.** This technology is applied to aerated systems, namely activated sludge systems. The unusual properties of zeolite are, among others: highly porous with an incredible surface area; high cation exchange capacity; ability to absorb heavy metals, ammonium, odors organic and other toxic substances found in water.

The implementation of Zeoreactor© technology to the activated sludge systems will:

- provide greater effluent quality by reducing nutrients in the effluent
- reduce odors and gases and improve ambient air quality
- attract dispersed particulates and filaments thereby increasing sedimentation
- reduce chemical costs (i.e. alum and polymers)
- Increase biomass concentration
- Improve sludge dewatering
- generate and increase in treatment plant capacity
- reduce or eliminate capital expenditure of new treatment systems
- provide higher quality sludge for better resale value



**TECnIA**

**Masters  
of Engineering  
Integration**

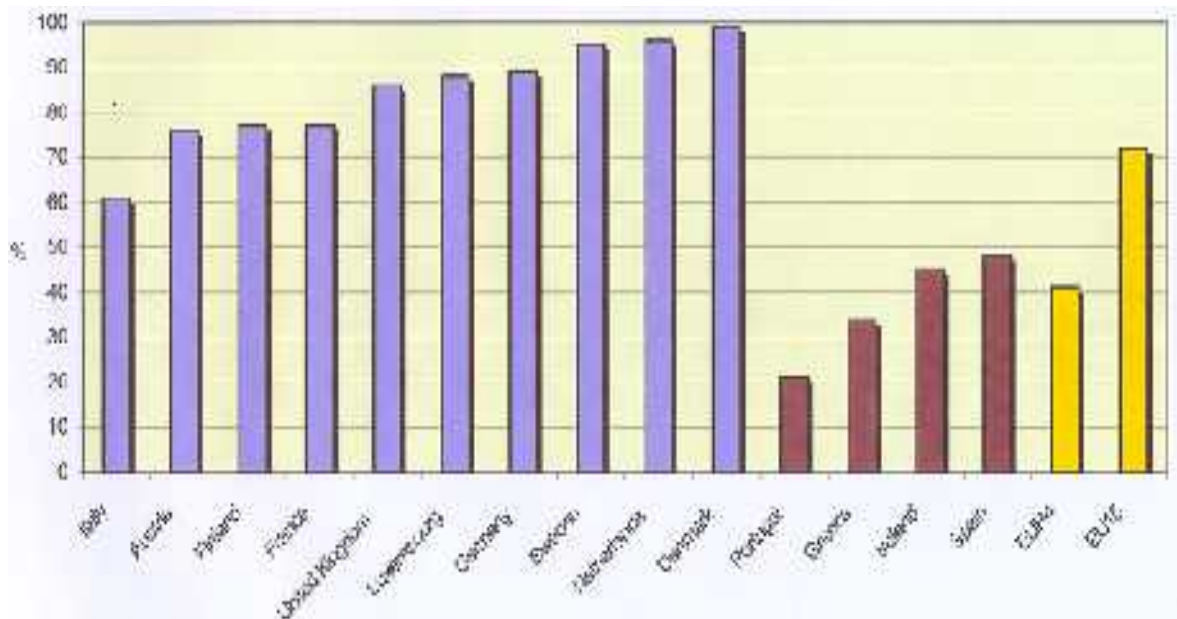
Case studies have revealed that the treatment plant has doubled its capacity while providing cleaner effluent. Therefore, **Zeoreactor© provides a significant enhancement of the activated sludge sewage treatment process.** It is important to note **these advantages are not limited to municipal systems and they are equally applicable to many industrial applications.**

In the Zeoreactor© technology, zeolite is added to the influent water or directly into the aeration basin of an activated sludge basin. If desirable, it could be added also in the recirculated activated sludge. The zeolite increases the ammonium removal efficiency and the decomposition rate of the organic matters as well as improves the settling characteristics of the activated sludge, namely the sludge volume index (SVI) and the floc size.

### European Situation

- 6.5 Mil. tonnes of sludge are generated inside the EU each year
- ~40.000 sewage treatment plants are in need to be built / renewed by the end of 2005/2006

### **Population connected to wastewater treatment system**



Guidelines are becoming more and more stringent in order to protect the environment and human health and existing operations are increasingly challenged to meet these new targets.

**Wastewater treatment facilities are becoming overloaded and costly new infrastructure and land development is required.**

**New technologies are emerging to improve existing operations. One such technology is zeolite. This is a simple and inexpensive solution. Zeoreactor© technology provides dramatic results for wastewater treatment without increases the size.**