

DUTCH MBR DEVELOPMENT ENTERS NEXT PHASE

# Co-operation and innovation for a sustainable and safe living environment

Within the Dutch wastewater sector the national MBR development programme has grown into a classic example of co-operation and innovation, where fundamental research organisations, suppliers, consultants and water boards have been involved. With the official opening of the demonstration installation at Varsseveld on May 3, the second phase of the Dutch development programme shall commence. Here, amongst others, an intensive research programme will be carried out to address scale up issues. It has been seen that co-operation in the Dutch wastewater sector is of great importance and should be copied for other developments within the water sector.

As an introduction to the official opening of MBR Varsseveld, the third H<sub>2</sub>O MBR special has been created. After the first and second MBR specials in 2001 and 2003 this edition will effectively close the first MBR development phase, which dealt with the possibilities of the MBR technology for the specific Dutch wastewater situation. The realisation of the MBR Varsseveld represents the beginning of the second phase of the national MBR development, which will demonstrate all the facets of scale up.

MBR Varsseveld can be seen as a product of a combined effort from the Dutch wastewater sector. Since the year 2000, fundamental scientific organisations, suppliers, consultants and water boards have all been involved with the development of the technology, and a positive spin off is that this has spread beyond the Dutch borders. In recent years the Dutch contribution to the MBR development has received worldwide

recognition, and through this third edition of the H<sub>2</sub>O MBR special, the initiators, water board Rijn en IJssel (WRIJ), the Foundation for Applied Water Research (STOWA) and DHV Water BV (DHV) hope to give an increased impulse to the technology. We are proud to present you this H<sub>2</sub>O MBR Special and wish you pleasant reading.

## MBR technology

The MBR technology is based on the combination of the activated sludge process and membrane filtration in one treatment step, where the separation of the activated sludge and effluent is achieved with the help of membranes. The MBR technology maintains the good performance and flexibility of the conventional activated sludge process, but also has two major advantages:

- The required space is small as secondary clarification is not necessary and the

sludge concentration in the aeration tank is two to three times that of conventional systems;

- The effluent quality is significantly better as all the suspended and colloidal material is removed. Furthermore extra removal of heavy metals, micro contaminants, bacteria, viruses and colour is achieved and sludge disturbances no longer cause poor effluent quality.

Especially in Holland where almost all wastewater treatment plants are of the activated sludge type, where space is limited and the quality of surface waters must be strongly improved, the MBR technology has great potential. Until now, the Dutch have focused on possible improvements in the effluent quality and the space saving was considered less important. However, the MBR technology offers potentially compact solutions where space saving can offer advantages. The latter, particularly in situations where the treatment works is located in or nearby large cities where innovative solutions with MBR can be feasible.

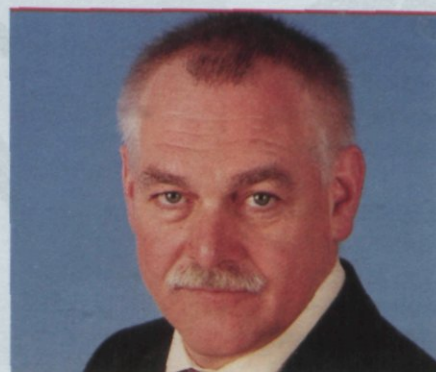
## National development

The national MBR development in the Netherlands began in 2000, and five years later can be considered to have pushed the technology to new levels. The now worldwide famous pilot research at the treatment works Beverwijk was the starting point of the first phase of the Dutch MBR development. During an extremely short period of seven months the MBR technology had to be proven viable for the specific Dutch municipal wastewater characteristics and give reliable data for scale up. Water board Hollands Noorderkwartier and DHV in co-operation with four membrane suppliers and a number of foreign parties initiated this challenge, and within the first

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