

## **Treatment of winery and distillery wastewaters in a membrane bioreactor (MBR)**

A Lourens\*, W vd Merwe

\*Proxa (Pty) Ltd, PO Box 43, Paarl, 7646; Tel: (021) 872 0089; Fax: (021) 872 7299; e-mail: [alana@proxa.co.za](mailto:alana@proxa.co.za)

Wine production and distilling activities is seasonal, and thus the wastewater flow and its chemical oxygen demand (COD) concentrations greatly vary during the vintage and non-vintage periods. Due to this seasonal high variability in terms of organic matter load, the use of membrane biological reactors (MBR) could be suitable for the treatment of such wastewaters. MBR offers several benefits, such as rapid start up, good effluent quality, low footprint area, absence of voluminous secondary settler and its operation is not affected by the settling properties of the sludge. The pilot scale MBR system consisted of a bioreactor and external tubular UF membranes operated in cross-flow mode. During the trial period different feed water sources were evaluated and the COD content of the influent ranged between 2000 and 40 000 mg/L, with the average being above 10 000 mg/l. In less than 20 days after start up, the system showed a consistent COD removal efficiency. After the start-up phase, the COD elimination percentage was consistently higher than 98.5%, except when only distillery effluent was fed to the reactor. The biomass concentration in the reactor increased to as much as 23 g MLSS/L, during which time the suspended solids concentration in the effluent was negligible and 98% plus COD removal rates were achieved.