PRESS RELEASE:- *Avista Advisor* Optimisation Software Reduces Whole-Life Membrane Project Costs

Membrane technologists can now easily optimise their reverse osmosis (RO) systems using the new *Avista Advisor* software package. Released by the independent global membrane experts, Avista Technologies, the software allows accurate prediction of scaling potential in membrane systems by calculating required chemical dose levels at optimal product water recovery rates. Utilising the *Avista Advisor* software can substantially reduce whole-life membrane project costs.

The software is aimed at both OEM's (original equipment manufacturers) and end-users involved in a diverse range of membrane separation applications, within market sectors including municipal water and wastewater treatment, desalination, brewing, power generation, oil production and general industry. Based on Avista's detailed knowledge of water chemistry and membrane technology the *Avista Advisor* enables the user to select the required anti-scalant chemical from Avista's range of specialist products. Avista's experienced engineers are available to review computer projections produced to offer process-specific advice and ensure cost-effective solutions are implemented.

With a global turn-over in excess of US$ 3 Million, Avista have focused their responsive service-support network in the field of membrane separation by providing a complete range of complementary services and products in addition to anti-scalant chemicals. This total capability ensures that the membrane technologist is able to minimise the operating cost and maximise the life of their membrane system, reducing significantly the whole life costs of a project.

Avista will trouble-shoot system problems and enhance process operation by undertaking membrane autopsies (incorporating flat cell, vacuum and dye tests), specialist cleaning trials, off-site membrane cleaning and restoration

work and analysis of process streams. In addition to anti-scalants, membrane cleaning chemicals, biocides and coagulants will be supplied where required.

As Avista are not tied to a specific OEM or a specific application, an impartial and effective assessment of customer requirements is guaranteed. Avista are able to support membrane technologists with initial feasibility studies through the provision of membrane pilot plants and associated specialised research and development support.

Based on Avista's background of expertise in the field, a growing number of membrane technologists in expanding markets around the globe now utilise Avista's products and services. Systems have been proven to benefit from Avista's advice. One example is an RO system installed by ACWa Services Limited (part of the international contracting CCC Group) at an Anglian Water Services Limited site in the United Kingdom. Avista's products and back-up support were used to optimise this plant, resulting in reduced operating costs and increased reliability. The system continues to operate efficiently through ongoing utilisation of Avista's anti-scalant, membrane cleaning and biocide chemicals, and their advice and support to ACWa and Anglian Water regarding system optimisation. Avista's support has been retained following a recent substantial expansion of the system.

Anglian Water's RO plant initially comprised three streams of identical RO technology each rated to produce 82 m^3/h of pure water. Recently, four additional RO streams have been added in addition to a mixed-bed ion-exchange demineralisation system. To minimise bacteriological growth and possible fouling of the high-rejection membranes Avista's non-oxidative biocide RoCide DB5 is dosed into the feed of each RO stream during shutdown flushing. Whilst on-line, a continuous dose of Avista's Vitec 5000 anti-scalant is dosed to minimise scaling of salts and reduce the potential for organic fouling within the RO membranes.

Dosing of Avista's anti-scalant is vital as the contaminants present in the feed-water are concentrated into 20% of the feed flow. This 'reject' flow is formed as the feed is pumped into the membranes at high pressure to overcome the natural osmotic pressure in the feed-water. The feed pressure causes reverse osmosis to occur within the membranes and 80% of the feed supply permeates from the RO system as the treated 'permeate' with over 95% of the dissolved contaminants transferred into the reject flow and discharged to drain. The Avista anti-scalant retains contaminants in solution throughout the RO plant and prevents the rapid scaling and fouling that would otherwise occur in the reject flow.

Gradual fouling and scaling of RO systems will occur despite optimal dosing of Avista's biocide and anti-scalant chemicals. This results in the need to clean-in-place (CIP) the membranes. On the Anglian Water project, a CIP procedure is undertaken approximately once per quarter for each of the three RO streams. Anglian Water's fully integrated and installed CIP system utilises Avista's acidic cleaner RoClean L404 and alkaline cleaner RoClean P111, diluted with permeate and heated to 40 ^{o}C. Solutions are recirculated automatically through the membranes using specialist equipment and the SCADA based control system.

By monitoring the operation of systems such as Anglian Water's RO plant and investing resources in research and development, Avista have been able to develop their software package. They are confident that the *Avista Advisor* will provide the membrane technologist with an essential tool that will enhance and optimise membrane systems. A copy of the *Avista Advisor* software on CD-ROM and / or additional information regarding Avista's products and services can be obtained by contacting:-

Mike Jefferies, Avista Technologies (UK) Limited, Waterside House,
Edinburgh EH14 5ZL, United Kingdom.
Tel + 44 (0) 131 449 6677, Fax. + 44 (0) 131 449 5599
E-Mail sales@avistatech.co.uk.