Project Landlord – The Synfuels Water Purification Project

Without water, there is no life. Without water, there can be no economic or social development. Those facts are implicit in the name of an innovative project – Project Landlord – in terms of which Sasol Synfuels treats an existing effluent stream by means of softening, ion exchange and membrane technologies for re-use as high-purity boiler feed in the factory.

Dr Magan Govender, chief scientist at Sasol Synfuels, explains: “We decided to use the term ‘landlord’ because without high purity water, the Synfuels Catalytic Cracker (SCC) could not operate. The SCC is the ‘tenant’, with its operation dependent on the water purification process.”

The treatment process is as follows: Cooling tower blowdown water undergoes initial cold lime softening to reduce the hardness and silica components. From the softening process the water is directed to the submerged Zenon ultrafiltration submerged membranes after pH correction. Here, by means of a vacuum process the permeate is produced with suspended solids removed by a backpulsing and air scouring process. Magan likens the process to what happens when you suck on a straw when drinking a milkshake: “All the suspended matter gets stuck onto the straw and the liquid permeates the straw.”

The water is then treated with ion exchange softeners, to reduce the residual hardness, before going through spiral reverse osmosis membranes. This removes the majority of dissolved solids from the water. Final purification is provided by the mixed bed demineralisation process. The water is then re-incorporated into the plant's processes, saving approximately 20 million litres of water a day.

Project Landlord was the overall winner of the 2009 Department of Water affairs water conservation and demand management sector awards in the industry mining and power sector category.

Impressive though it is, Magan points out that Project Landlord is just one small part of Sasol’s strategic approach to water. “Going forward, we are ensuring that water considerations are being incorporated into business decision-making particularly in the design and planning for new projects.”

Last updated: 13 March 2014