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Technology

Pigging used to clean intake pipes

To maintain more consistent quality feedwater, SWRO intakes have moved further offshore to deeper water, where suspended solids levels are usually lower, and where it is less likely to impact marine life. And, with an increased movement away from chlorinating SWRO feedwaters, several alternative methods are being used to keep the intake lines (relatively) free of biofouling.

Israel's Palmachim Desalination Plant was constructed by ViaMaris Desalination Ltd – a Global Environmental Solutions (GES) and Tahal Group consortium – in two phases, with the first 110,000 m³/d (29 MGD) of capacity commissioned in May 2007 and an additional 40,000 m³/d (10.6 MGD) commissioned in April 2010. In the three years that it has been in operation, the plant has used pigging to clean its intake pipeline.

'Pigging' refers to the practice of using water pressure to push swabs, or pigs, through a pipeline to scrub biofilm accumulations from the inside diameter of the pipeline. The process' rather curious name refers to its early use in the oilfield when the metal on metal action of cleaning a pipeline made a squealing noise like a pig.

The Palmachim's 1.4km (0.84 mi) intake line originates at the plant and projects outward to the sea from the intake pumping station. Although most of the pipeline is constructed of HPDE pipe with an inside diameter of 1.48m, the initial portion is made of concrete and was pipejacked under a dune that lies between the plant and the beach.

Gilad Horn, the head of new technologies for GES, explained the plant's pigging process to *WDR* and noted that the process begins on the beach, on the opposite side of the sand dune from the plant. "A backhoe is first used to uncover a pier buried beneath the beach on which the pumps are mounted and from where the pig can be launched into the pipe to flow outward to the sea," he said.

The pig is made of coated alloys with polyurethane scrubbers on its periphery. It is launched at a pressure of approximately 1 bar (14.5 psi) and 40 tons of driving force. The process usually involves pigging the line once, although it can be done twice in one day, if necessary, after which the line is flushed for two hours.

Horn said that pigging is usually done two to four times a year and the plant has never chlorinated its intake, noting, "With a clean intake line, the water level in the intake pumping station is at an elevation of approximately -2.5m (8.2 ft), and cleaning is usually scheduled when the level drops to -6.0m (19.7 ft). The initial concrete portion of the intake line [from the beach to the intake well] consists of a 2.2m (7.2 ft) diameter pipe and is cleaned manually, on a separate occasion."

