

Case Study

A Saudi Challenge

AES Arabia's Asad Khan talks about how his firm successfully overcame some particularly difficult challenges during a project in Riyadh



Since 1985, water and wastewater specialist AES Arabia has tackled a large range of logistical and technical problems on projects around the Middle East region. With water supplies such a critical issue in this part of the world, the need for the expertise of firms like AES is very evident. Here, Asad Khan tells UME how the firm undertook a particularly challenging project in Riyadh.

"The project was in the middle of the desert, where the water was a mile deep and very salty. Our client wanted to produce 5,650m³/day for irrigation and potable water from his 5,750m³/day limited well water source. This sounded like mission impossible. To add to the challenge, the

client wanted to recover all of the filter backwash water, floor drains, and spent regeneration chemicals so that the discharge from the plant was at an absolute minimum. Furthermore, we were presented with a water analysis that, on its own, would scare the most daring adventurer. The water had it all - hardness, silica, iron, suspended solids and, above all, was boiling hot."

On investigation of their client's facility, the firm's engineers found an existing RO plant producing some 1,550m³/day from a feed of 2,200m³/d, with the remainder lost as brine and filter backwash.

"With this 650m³/day, we had 6,400m³/day to work with. First, the well water was directed to a set of cooling towers, which cooled the water

down and saturated the water with oxygen so that it was easily oxidised. This meant the client would no longer need to use expensive chemicals to oxidise the iron. Two-day retention storage and equalisation tanks were constructed to collect the well water.

"The water was then brought to a flash-mixing chamber followed by a slow mixing chamber. Accurate measurements of flocculant and coagulant are metered into the water, so they help form just big enough flocs to be captured by subsequent media filtration."

Khan says that the filters - 'a piece of art on their own' - yielded 'exceptional' water quality where the use of downstream micron filtration was not absolutely necessary. The water was