Case Study at Game Park facility in Gauteng

Hard water build-up on geyser elements and kettles

PURESAN©

Bulk Water Treatment with Puresan Pro

Document compiled by Amanda Colling - 2018

Background Information:

Puresan was informed by the Operations Manager that they are replacing geyser elements and kettles in their accommodation every single month.

The limescale build-up was causing the elements in both geysers and kettles to require monthly replacement, at a very high cost.

Methodology using Puresan Pro to “soften” the water:

We started dosing Puresan Pro at 1 Part Puresan Pro to 60,000L of water during June 2018.

The customer was advised to install a sand filter to remove the solid limescale fragments from the water, but they decided not to do this. The result was that within a month the shower heads were blocked with solid limescale pieces coming off the piping network.

The shower heads were removed and cleaned out. This was the only incident during the past 8 months of treating their bore hole water with Puresan Pro.

Feedback from Customer:

The hot water system worked more effectively as before the water had to run for a long time before it got hot. Now the hot water flows almost immediately when the tap is opened.

Conclusion on Proof of Concept:

- The customer reported the following:
- Cost saving on electricity
- Less water usage as hot water comes from the taps almost immediately once opened
- Cost saving on replacement of equipment (kettles and geyser elements)

South African study done to prove our findings:

Impact of water hardness on energy consumption of geyser heating elements

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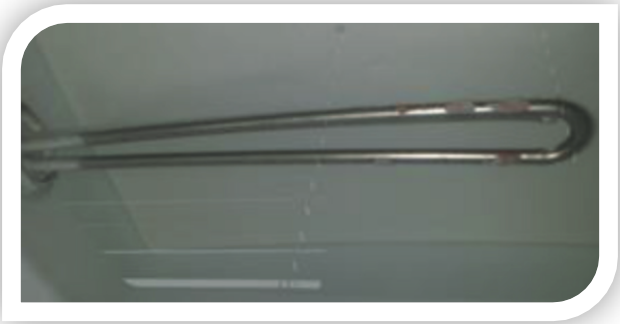
"The power industry is exploring treatment technologies that reduce scale deposit formation caused by high mineral content in water (Dobersek and Goricanec, 2007). Dobersek and Goricanec (2014) explain that scale deposits in hard water are due to the decrease in solubility of calcium carbonate with increasing temperature. Subsequently, energy is lost because of the precipitated scale with very low thermal conductivity on the heat-transfer surfaces (Dobersek and Goricanec, 2014). Dobersek and Goricanec (2014) showed that energy consumption of electrical heaters increased by more than **15% as a result of scale deposits of a 1 mm layer**. "

Element after using Puresan P for 3 months.



Element after one month of using Puresan Pro

Remarkable scientific findings:

It was established that for every 1mm of hard water scale buildup 15% more electricity is required to heat the water.