

Report about the prevention and removal of scale with the aid of the “**Scalewatcher**™”

The company

In one of the wastewater treatment plants (North End Sewage Treatment Plant) of Winnipeg, a city with 600,000 inhabitants, the sewage sludge has its water removed in a number of de-watering centrifuges. After that, the water is purified further and then discharged, while the sludge is removed.



The process

The purification of the sewage sludge occurs in the sludge de-watering centrifuge, in which the centrifugal force separates the sludge from the water. This is possible because sludge is heavier than water.



The problem

Struvite, a hard crystalline deposit that consists of magnesium and ammonium phosphate typically forms and covers the inside of the sludge de-watering centrifuge. These mineral components are found in all sewage slurries containing water. The struvite will form a solid deposit when the sewage sludge is de-watered, as the solubility limit of the magnesium is reduced. The manager of the plant, Mr Jim Main, explained that the struvite problem existed for more than five years. After every 800 hours of operation (approximately two months) the centrifuge had to be stopped and cleaned. This took two people one day with chemicals, hammer and chisel.



Struvite

The solution

On 14 September 1995, the **Scalewatcher**™ test was started. Centrifuge number 5 was chosen for the test. A **Scalewatcher**™ Industrial unit was placed at the centrifuge with an induction cable around the 6" supply mains. When the treated centrifuge was opened during the first inspection on 6 December 1995, it appeared that the wall was only covered with a minimal deposit of softened struvite. On 31 January 1996 the centrifuge was opened and inspected again. The same result could be seen, except that this time the difference was that the wall was even cleaner.



After treatment

On 1 February 1996, it was decided to run two centrifuges simultaneously, one treated with **Scalewatcher**™ and one untreated. On 15 March 1996, both centrifuges were opened for inspection and both were clean. Another inspection was done on 15 May 1996 with the same results. To be completely sure that the **Scalewatcher**™ had solved the struvite problem, it was decided to switch off the **Scalewatcher**™ and in this way check whether the struvite deposit would return. In the middle of June 1996 it was observed that the struvite deposit had indeed appeared on the wall of the centrifuges again. After that the **Scalewatcher**™ was switched on again and since July 1996 no more deposit of struvite has been observed.

The reason both centrifuges were kept clean in the above test is because the centrate (liquid discharge from centrifuge) is recycled creating a closed loop. So in effect by treating one centrifuge, all centrifuges were treated.

Conclusion

Thanks to the application of a **Scalewatcher**™ Industrial unit, the continuity of the wastewater treatment process with regard to the struvite deposits has been guaranteed and the maintenance costs have been reduced dramatically.

Source

Edge Electrical Ltd, Canada