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3E EVOLU-TECH LTD LTEE
Mag-O-Pure

At the Square Angus Apartments complex in Montreal the Mag-O-Pure water treatment system wipes out costs led by lime scale deposits.

Figure 1 – Angus Square Apartments (2015)

According to *Régie des Bâtiments du Québec (RBQ)* rules and regulations, it is compulsory to limit maximum water temperature at 43 °C (110 °F) at the bath faucet's and shower head's outputs using a mixture of cold and hot water to prevent residents from getting scalded or burned by excessively hot water in private senior citizens' residences, hospitals, rehabilitation centres, residential and long-term care centres (*CHSLD*), and other health care institutions and care occupancies. Installing a thermostatic valve between two block valves for maintenance purposes is the proposed solution for preventing residents, both autonomous and with decreasing independence, from contracting scalds or burns in these institutions.

"Although the Angus complex was relatively new (2012), the problems arising from lime scale deposits at the hot/cold water mix temperature control unit had become a headache and an emergency," reports Mr. Jean-François Vibert, Maintenance Manager for the past five years or so.

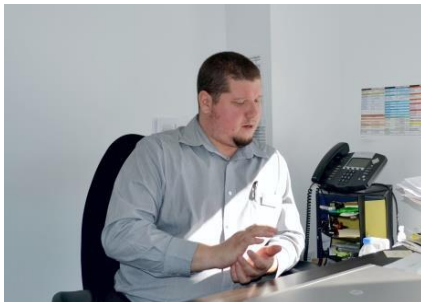

Figure 2: Mr. Vibert in His Office

"We had to commit 24 man-hours per week to acid-cleaning the block valves and replacing defective thermostatic cartridges; and each cartridge replacement cost us $136."

Only a few years after Angus Square Apartments opened at 3200 Omer-Lavallée, lime scale deposits were noticed as the first few complaints regarding excessively hot water began to creep in.

Figure 3: Defective Thermostatic Valve

"These malfunctioning thermostatic valves worried us for our residents' safety."

Figure 4: Piston Seized in Lime Before Installation of the Mag-O-Pure Catalyzer.

"Because the municipal feed water for the building shows a hardness level between 7 and 9 grains (120 to 150 mg/l), plumbing consultants advised us to install a softener at the water inlet."

"This would have been unliveable, with large amounts of salt to handle, in light of peak flow estimated at 250 gpm on a

75 mm (3-in) pipe," points out Mr. Vibert.

Not to mention the size of the softeners needed for the treatment, which, to Mr. Vibert, seemed unworkable, even with the Camus boilers.

In 2015, Mr. Vibert requested help from the engineering consulting firm Blondin, Fortin & Associates, which had produced the original drawings and specifications at the outset, and recommended Evolu-Tech's Mag-O-Pure approach. "I have to admit this approach seemed like very near magic to us. But Mr. Philippe Grenier, design engineer for the original installations, was convinced of its effectiveness. After I gathered documentation and read up on the subject, then released all the information, we felt motivated to take this route unknown to us in Montreal and to our head office in St. Boniface, Manitoba.

"The management (CCSM) approved purchase of a 300-gpm Mag-O-Pure catalyze. At the time, we could obtain about 100 complaints out of the 149 apartments, mostly 3 ½ and 4 ½ units, that make up the Angus complex."

Figure 5: Mag-O-Pure Catalyzer with an Anti-Lime Treatment Capacity of up to 300 gpm

"A few weeks after installation of the catalytic system back in June, 2015, the number of complaints dropped by 98%. The few remaining complaints take root at the poor leak-proofing capacity of certain valves that had been acid-cleaned or worn out by the rubbing action to eliminate the lime.

"In early 2016, the three electrically heated Camus boilers that produce the building's hot water were inspected. It was easily identified that the water heating pipes' inner walls were impeccable, showing not a single trace of any lime scale deposit." This must have surprised the inspectors!

If Mr. Vibert had not switched methods and opted for the Mag-O-Pure catalytic system to take the lime scale deposit bull by the horns, the need for the internal plumber and his fringe benefits, 24 hours per week, for each year, would have required an annual maintenance expense of at least $50,000.

Therefore, this amount represents the minimum savings generated by the catalytic system. Add in cleaning the Camus boilers; all the problems created by shut-off, down time and start-up; rubbing and washing off the lime scale deposits built up over time at the valves and within the piping, and all the damages that follow quicker than normal.

Astonishingly, Mr. Vibert pointed out a major change in laundry product behaviour following installation of the Mag-O-Pure catalyzer.

Figure 6: Mr. Vibert appreciates the washing machine's cleanliness – all mineral stains and spots have been wiped out.

"I had to modify the recipes initially implemented by **the** laundry products supplier, because the hot and cold water seemed to behave more like softer water since the catalytic system's commissioning.

Figure 7: The Various Laundry Products Used at the Laundry Department.

"The water tended to produce more suds. Thus we saved even more on laundry washing products by lowering quantities in the pre-programmed recipes."

In conclusion:

Installation of a **Mag-O-Pure catalyzer** has eliminated all lime scale depositing:

- in the thermostatic and check valves;
- in the hot and cold water piping;
- in the Camus boilers, whose softeners have been disconnected.

And it has reduced:

- complaints by 98% regarding water temperature from the thermostatic valves;
- the need to change these thermostatic valves;
- the demand for laundry products;
- building maintenance costs (**over $50,000 per year**).

It has increased:

- the water network's energy efficiency while maintaining clean, spotless piping.

Text approved by Jean-François Vibert, Maintenance Manager, as compliant with the interview given by Evolu-Tech.