

## PORTABLE VORTISAND®: A WISE CHOICE FOR COMMERCIAL BUILDINGS

### MAJOR PROBLEMS

In 1993, the building operations manager of the 1000 de la Gauchetière office building in downtown Montreal had to face the facts: the heating and air conditioning systems showed signs of major problems after only 2 years of operation. Disturbing and frequent pipe noises, fouling of coils and valves, and restricted flow were detected. In addition, the water was very dirty, showing signs of corrosion.

It was necessary to react quickly to avoid having to replace several thousand feet of pipes and hundreds of coils and control valves due to premature wear.

### IMPRESSIVE BUILDING'S HEATING AND AIR CONDITIONING SYSTEM

There are two machine rooms, one on the 1st and the other on the 45th floor, as well as four 7,500 gallon loops, namely 30,000 gallons in all. Moreover, there are 10,000 coils, as many valves and thousands of feet of piping.

### INSUFFICIENT CARTRIDGE FILTERS

Theoretically, closed loops should remain very clean, but we often see a very different situation. In this case,

chilled and hot water systems became contaminated with corrosion suspended solids and micro-organisms. Cartridge & bag filters are less efficient and must be continuously monitored and changed out. This creates an ongoing labor and material cost.

### THE SOLUTION

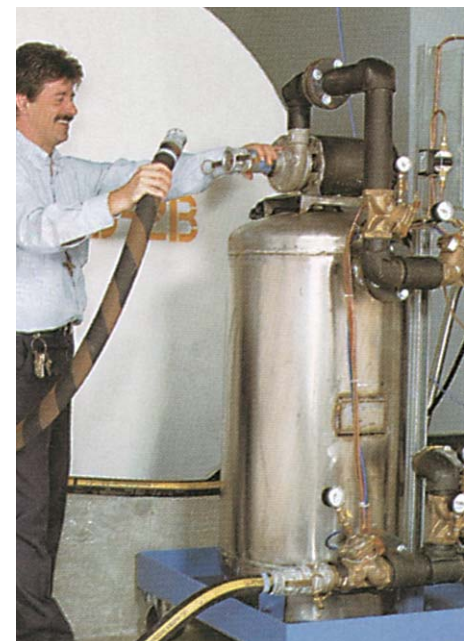
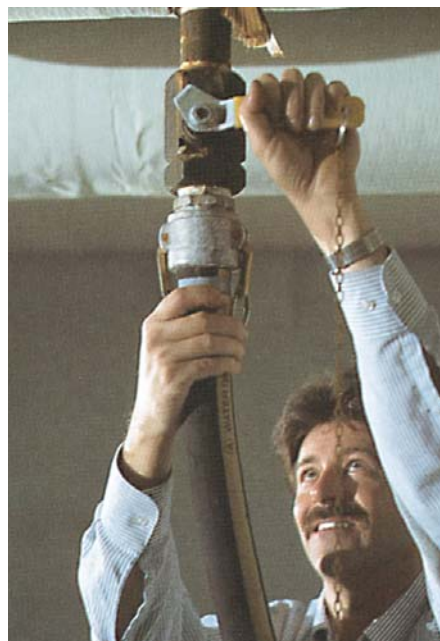
The building operation manager decided to seek advice from a water treatment specialist. Water analysis were performed and showed the majority of suspended particles were between 2–8 micron in size requiring special attention. The specialist finally recommended the addition of an iron oxide dispersant to work with a 0.45 micron Vortisand® filter.

### VORTISAND®

**A filter that works in conjunction with chemical treatment to optimize the performance of your equipment.**

The Vortisand®'s unique design combines vortex separation with ultra fine sand to filter down to 0.45 micron size range on a nominal basis. The overall suspended solids reduction is greater than 90% as compared to traditional filter designs of lesser efficiency.

Rather than full flow filtration, the Vortisand is a properly designed sidestream filter that ensures a constant positive pressure flow in the building cooling / heating loops. This design allows for more compact footprints for easy installation.



## AN ECONOMICAL CHOICE

It was not feasible to install a separate Vortisand® filter on each loop. As a result, Sonitec proposed a portable filter capable of working on one loop and of being transferred to the next loop once water has been filtered.

The portable Vortisand® was installed for 6 weeks on one loop of the building. The level of iron which measured 45 ppm on October 20 was brought below 2 ppm by December 15. Dispersing agents had to be added to precipitate the dissolved iron during the treatment.

These very positive results made it possible to go from dirty, brown-colored water to clear water, to the full satisfaction of the building operations manager. The portable Vortisand® is rotated and reinstalled on one of the building's three other closed loops. Today, the portable Vortisand® is periodically installed on each loop for about 2 months.



## A PROFITABLE INVESTMENT

The Return On Investment turned out to be excellent. The portable Vortisand® paid for itself in less than 2 years. The payback calculation did not include energy savings achieved on heating and cooling costs or the potential cost of having to replace piping, valves, etc...

Vortisand® portable filter is an inexpensive year-round solution to the problems associated with closed loops. As it is portable, it can easily be connected to multiple cooling / heating loops.

## SPECIFICATIONS MODEL AWC1-20-SI

- **Filtration Flow** : 60 gpm
- **Vessel**: 1 vessel 20" diameter stainless steel 304, 175 psi ASME, Sec.III, Div.1.
- **Control panel**: Nema 12 with microprocessor (PLC) and Operator Interface Unit (OIU) including differential pressure switch, stager and backwash counter.



The advantages of clean water are undeniable. It prevents fouling on heat exchangers, piping and control valves. It eliminates the effects of abrasion on pump seals and wear ring surfaces while reducing friction as it relates to energy savings on pump motors. Similarly, design flows and efficiencies are maintained with clean water circulating through the building systems. The cleaner water also results in a more efficient chemical treatment system while reducing the amount of chemistry required. Finally, a clean system reduces the risks of corrosion and of deterioration of equipment. Maintenance is thus reduced, saving both time and money.

