

# APPLICATION NEWSLETTER

## **PROBLEM:** Monitoring Air Conditioning Condensers in Large Buildings

The building engineer for every high rise building of ten or more stories is concerned with the refrigeration machines (chillers) and condensers in the air conditioning system. It is important that maximum efficiency be maintained at all times since the energy costs typically run into the thousands each month. Cooling efficiency can drop significantly due to scaling and corrosion in the condenser tubes. A 0.06 inch thick scale build-up can result in as much as a 50% increase in energy cost.

**SOLUTION:** One simple way of testing the heat exchanging efficiency is to measure the differential pressure across the condenser. Scale build-up in the condenser inhibits water flow through it. As the scale builds up inside the condenser, the differential between

upstream and downstream pressure increases.

Equipment commonly used to measure the differential is a 30 inch model 30EBX25WM using mercury indicating fluid, with a 942KW50 float check valve and a 943AS300 3-valve equalizing manifold installed. The differential pressure taken is compared against the pump curve to determine if the tubes need cleaning.

One note of caution: The pump curve normally specifies inches of Mercury dry. The correction for manometer measurements made using Mercury under water is usually applied after the reading is taken. While special manometer scales can be provided with this correction already applied to the scale, it is not normally done in this application since these manometers are used in other applications (not Mercury under water) as well.

The building engineer can be contacted at the building itself or at the building management company.

