



A Mill for a New Century



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Francis Luerssen III
Facility technician
The Flour Mill

(Pictured with Avista Commercial / Industrial Engineer Bryce Eschenbacher, on left.)

When Francis Luerssen III took over as facility technician at the Flour Mill, the building was something of a time capsule.

Beginning with the outside, the building’s 120-year-old brick exterior was from a whole different era: gravity-designed, it was larger at the base and held up with old growth fir beams and columns.

Inside was a mishmash of machinery and equipment, old and new. Beginning in the 1970s with the environmentally themed world’s fair, Expo ‘74, the building had undergone a number of renovations, including adding spaces for new tenants. It seemed to Luerssen that updated technology had been cobbled together with existing works and fittings each time. Air conditioning units had been jammed in windows, and some were run all winter long. Equipment timers were simply broken. Components of the HVAC system hadn’t been touched in 30 years.

Luerssen found himself in the middle of it all, and he was prepared to take the beloved, if aging, facility into the 21st century — with some collaborative help from Avista among others. He had his work cut out for him. But as an ex-Navy man, he was used to getting things in shipshape condition.

Over time, he’s swapped out traditional lighting for LED and compact fluorescent bulbs, upgrading to T8 lamps and electronic ballasts in the common areas. Light sensors and timers were mounted outside and in restrooms. Insulation was installed. Walls penetrated by pipes were sealed with expanding foam. Weather stripping fastened to all the entrances.

But the aging HVAC system was Luerssen’s primary focus, and he began his work with a thorough top-to-bottom investigation. Valves and damper actuators were stuck open or closed. Steam traps, some of which appeared to be of original vintage, were rebuilt.

He discovered that numerous equipment timers weren’t functioning. The motor controllers were either set to hand operation, not in auto, or the start-stop pins hadn’t been installed on the timer wheel. He correctly aligned all the belt-driven machinery, causing a drop in load.



A rebuilt steam trap.

A Mill for a New Century *continued*

Yet the biggest change within the HVAC system came with the installation of an Alerton® direct digital control system (DDC), a \$20,000 investment. The building operating management system was installed by ATS Inland Northwest of Spokane.



The Alerton® direct digital control system

"It's really helped everything," Luerssen says of the DDC. "If you have to heat the building up faster, you can raise that temperature. It gives you a lot of control as far as when it starts up, when it turns off. It also lets me see if there's a problem from a remote computer."

Where before it was just handset thermostats on the wall, the building is now ruled by an always thinking, always monitoring digital brain. This is the DDC system, which governs when boilers, pumps and chillers turn on and off. It regulates the temperature of the hot water circulating from the first floor to the fourth floor. The DDC helps keep the Chocolate Apothecary and its easily perishable goods at a cool 70 degrees while warming shoppers in the Kitchen Engine to a comfortable 73 degrees. The amount of control allowed with the DDC was extraordinary, but Luerssen wanted more.

"I requested extra control to be allowed within the DDC program, such as the ability to program the hot water circulating pumps to turn off based on temperature, not boiler

pressure," says Luerssen. "This allows the building to maintain heat for over an hour after the boiler has cycled off."

It's energy control relative to temperatures. As it gets colder outside the DDC raises the boiler water temperature so it's not running hotter than it has to and wasting energy.

Another encouraging aspect of the DDC upgrade is the lengthened lifespans of the building's machinery. Where fans were continually running 24 hours a day before, now they're on for just half the time.

"You might be able to get 50,000 hours out of a bearing," says Luerssen. "That might have only been eight years [before], now it's going to be 16." A longer life goes the same with the boiler, which used to run nine hours a day in the winter, but now runs just four and a half, with the DDC giving Luerssen the option to control the boiler's two separate fan coils.

"It's going to make your equipment last longer so you're not going to be spending as many man-hours going in and replacing," he says.

Electrical upgrades have also made a difference, and much of it came down to simply changing light bulbs.

"Right outside ... there used to be 175-watt metal halide and we had that changed out to a 26-watt LED. It's a better light quality, it's instantaneous and I'm never going to have to mess with it again. ... There are lights in the outside parking lot that are LED also. Those have like 35,000 light-hours," says Luerssen. "We had just about every single exit sign in this building replaced with an LED. The amount of energy those saved us is fantastic."

It's costly to upgrade a building. But for many of his upgrades, from lighting to motors, Luerssen was able to take advantage of rebates from Avista. And the added efficiency should make everything worthwhile.

Luerssen estimates the boiler upgrades alone will result in significant savings. The Flour Mill's natural gas costs were reduced by 50 percent. Electrical costs were also cut by ten percent, while adding more load to the system. In the end, these savings can be passed on to tenants through competitively priced square footage by the building's property manager, Kiemle and Hagood.

Even with all this work, Luerssen looks forward to future projects. He's going to install better windows and upgrade the elevators. He'll replace aging RTU air handlers.



The boiler upgrades alone will result in significant savings.

He wants to re-pipe or replace chiller units and finally connect floors five through seven into the building system.

With help from Avista, Luerssen has transformed a leaky old building cobbled together over the years into a 21st century facility — the envy of any building owner looking to save some money on energy bills. He says any company can do the same.

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