"Above All, Do No Harm"

How Vacuum Plumbing Protects the Flow of Patient Care

When you own commercial real estate, you own a working asset. But if your building is not occupied, it does not generate lease fees, and your asset sits stagnant or on life support. What happens when your working asset is exclusively devoted to healthcare delivery? Any interruption in tenant occupancy or facility access can compromise patient care.

Sutter Health serves the patient and family needs of more than 100 Northern California cities and towns. Its mission is as simple as it is complex: To advance health care quality and access.

Sutter's Medical Network represents tens of dozens of California's top-performing physician organizations and hospitals dedicated to cardiac care, cancer care, orthopedics, services for women and children, and advanced patient safety technology. Sutter constructs and maintains millions of square feet of facilities for its direct needs and those of its affiliated healthcare tenants.

No Interruptions

In 2008, Sutter Health's Novato Medical Clinic found itself in a precarious situation. The time had come to convert an existing and partially occupied three-story office building to an out-patient surgical center on the ground floor with medical suites on the second and third floors. Boulder Associates, the architectural firm awarded the renovation design contract, is a seasoned designer of healthcare facilities.

The structural foundation presented the first challenge to the renovation design. Boulder's project architect, Douglas Whiteaker explains, "as-built drawings of the original construction could not be located. Only the original architectural concept existed from 1992 when the design was completed. The team went back to the city and, as luck would have it, a plan checker remembered the job from years before. The team now knew it had to drill and core into the slab to learn exactly what type of foundation supported the building."

Out of the Question

Results of the coring confirmed a structural foundation. That meant a standard gravity drainage system was out of the question because the construction crew could not trench the slab foundation, a typical solution. Any cutting of the floor would crack the foundation slab and render it unstable.

Tom Minard, Sutter's Project Manager, recalled a presentation from two years earlier where he learned about AcornVac and the flexibility of its vacuum plumbing system. The system offers an advanced alternative to underslab gravity drainage system by way of a carefully engineered overhead network of drainage piping. System components include "Vac Central" which houses vacuum pumps, waste collection tanks and system controls, as well as a series of interface valves which allow waste to be transported from wherever made into and through the vacuum system.

Tom referred the Boulder team to AcornVac. But time was slipping away. Renovations had to be scheduled for the second and third floors, and that meant the ground-floor surgical center needed to come on line immediately.

Urgent Care

Unfortunately, many of us have seen the inside of a surgery room, full of frighteningly exotic equipment that we hope won't be used on us. How well that life-saving equipment performs depends directly on the waste systems' ability to process varying rates of flow and temperature extremes.

Whiteaker called an emergency conference in Sacramento with his team, Axiom Engineers, AcornVac, and a medical equipment designer and HELP Int., the equipment planner. Everyone needed to fully grasp the scope and sensitivity of the work. Even though, AcornVac was relatively new to the unique needs of medical facilities, customized engineered solutions are well travelled territory.

One of the key pieces of equipment in the surgical theater is a 20-gallon washer disinfector, which discharges four to five times more waste water than a typical sink or basin, and at the high temperatures required for disinfection. The challenge for AcornVac was to design and provide a system capable of efficiently and effectively processing high volume and high temperature waste flow for immediate processing by the vacuum waste system.

Whiteaker was so conscientious about achieving a positive outcome that he decided to assemble, install and test the performance of the newly engineered drainage system with the specialty medical equipment at AcornVac's manufacturing facility in the City of Industry, California. Hand claps all around. To everyone's credit, the design and performance surpassed expectations. The system worked perfectly. Soon, it was disassembled and shipped to Novato for final installation. "We had never used vacuum plumbing before AcornVac. We took a risk, but we ended up heroes. Now we have more to offer our clients and look forward to working with Acorn again," says Whiteaker. But wait. There's more.

Water-Use Cuts by 66%

Champions of water conservation, Sutter and the City of Novato were motivated to achieve LEED Certification in every way possible. In fact, the North Bay Regional Surgery Center achieved 33 points overall and was granted the prestigious LEED-CI v2.0 Gold certification from the USGBC (US Green Building Council). The presence of AcornVac made a humble contribution to achieving this distinction.

The AcornVac system led to ½ point credit each under Sustainable Sites Credit 1 Option J and Option L, netting 20 percent and 30 percent water reduction, respectively. What's more, another two points were earned because Sutter upgraded all building toilets to AcornVac vacuum flush toilets and conventional water saving faucets. These water efficiency credits, which are determined by the Energy Policy Act of 1992 (EPACT 1992), ultimately led to a 66 percent reduction in water usage for overall building water-use. That's an amazing 47 percent more efficient than code.

At 0.5 gpf (gallon per flush), AcornVac's vacuum flush toilets in combination with other water-efficient fixtures further enrich the contribution to the water-use reduction for the project. "Even the plumbing fixtures installed for this project save approximately 170,000 gallons of water annually," assures Kristi Ennis, AIA, Sustainable Design Director and LEED Accredited Professional at Boulder Associates.

Healthy Prognosis

The 9,700 square foot North Bay Regional Surgery Center First was brought on line in October 2008 with installation by Westside Mechanical and, most importantly, with no interruption in patient care or tenant occupancy. The tenant spaces above the surgical center were renovated and completed by Peterson Mechanical. What's more, a second building on the same site was renovated with AcornVac as lease agreements for existing tenants expired or were re-negotiated.

In patient care, physicians, and the healthcare field as a whole, honor the Hippocratic oath—"above all, do no harm." At Sutter, this venerable oath took on new life in the unassuming persona of a vacuum plumbing system.

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About AcornVac

AcornVac Inc. is a subsidiary of Acorn Engineering family of companies, continuing the 50-year tradition of setting industry standards with innovative products and systems. AcornVac designs, manufactures and maintains reliable, economical alternatives to gravity plumbing for the transport of waste water.

Acorn Engineering is committed to environmental sustainability and social responsibility in manufacturing processes to benefit the environment and reduce landfills. By conserving earth's resources, the company proudly delivers the highest standard products under the latest code requirements.

For more information on AcornVac and the full range of Acorn Engineering products and services, please log onto **www.acornvac.com** or **www.acorneng.com**

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