

## Turbo blower cuts energy costs

### Problem

The Little Cedar Bayou Wastewater Treatment Plant in La Porte, Texas, treats about 4 mgd and aerates its basin and tanks with two 25 hp positive displacement blowers. “I figured that it cost a minimum of \$6,500 per year to maintain them,” says Billie Brooks, senior operator. The city looked for ways to minimize expenses and improve energy efficiency.

### Solution

The city purchased a **Frame 2 high-speed turbo blower from HSI**. The pre-engineered system included compressor, motor, variable-speed motor starter, pressure relief valve, expansion joint, and control cabinet. The HSI blower line is rated at up to 10,000 cfm/25 psi. Each impeller vane configuration matches its own specific volute to optimize aerodynamic efficiency. Impellers at both ends of the shaft counterbalance thrust load in the axial direction to reduce stress or twisting and enhance stability. As the shaft rotates at high speed, the air film formed between it and the bearings achieves friction-free flotation, eliminating the need for lubricants.

The fully enclosed blower does not exceed 85 decibels, and the compact cabinet saves space. No special foundation support is required, and the design offers easy access without overhead cranes. The integrated controls can be upgraded to communicate with all remote operation and monitoring protocols.



### RESULT

“The new unit replaced the other two blowers and reduced our maintenance to just changing an air filter,” says Robert Banks, plant supervisor. After one year, the unit lowered annual energy cost by almost 35 percent. Based on those savings, the city should realize payback in two to three years. **800/725-6409; [www.hsiblowers.com](http://www.hsiblowers.com).**

## Bypass pumps enhance efficiency

### Problem

Metro Vancouver was demolishing a 46 mgd concrete sewer interceptor in Coquitlam, B.C., and needed to bypass the vaults between nine manholes, a distance of 2,800 feet. The project managers contacted Rain for Rent for help.

### Solution

**Rain for Rent provided two DV-600c 30- by 24-inch Power Prime pumps as primary units and two DV-400c 18- by 16-inch pumps as backups**, joined by dual lines of 24-inch fused HDPE pipe 1,800 feet long. The lines split into three runs of 24-inch pipe for the remaining 1,000 feet to reduce friction loss, head pressure, and flow velocity.

Rated at 28,000 gpm, each primary pump produced 96 feet of head, lifted 28 feet, handled 5.25-inch solids, and ran at 87 percent efficiency, saving substantial fuel. The high-flow capacity of the primary pumps allowed the entire setup to fit in a 170-square-foot footprint under an overpass. The 430-gallon integral fuel tank on the primary pumps provided a 22-hour run time. Rated at 16,000 gpm, each backup pump produced 200 feet of head, lifted 28 feet, handled 4.5-inch solids, and had a 100-gallon fuel tank.



### RESULT

The pumps' compact design and high capacities meant fewer pumps on the small job site. The bypass system pumped nonstop as Rain for Rent personnel monitored the operation. **800/742-7246; [www.rainforrent.com](http://www.rainforrent.com).**

## Right-angle speed reducer

### Problem

The 35 collector drives for settling tanks at Donald C. Tillman Water Reclamation Plant in Van Nuys, Calif., had maintenance issues that included high-speed-pinion-related failures. Pritpal Jhaj, mechanical supervisor, and Victor De La Rosa of Applied Industrial Technologies in North Hollywood, consulted the engineering department of Sumitomo Drive Technologies.

### Solution

**Sumitomo engineers** reviewed the critical dimensions of the double-extended output shafts on the existing gear motors, then **selected model LHHJS-3B12DBTK-Y1-956:1 Cyclo Bevel Buddyboxes** with cycloidal gear reducers and a single-stage right-angle spiral bevel gearbox in a shaft-mounted design. To eliminate time-consuming motor alignment hassles with the existing motor scoop arrangement, Jhaj and Rosa opted for self-aligning NEMA C-face adapters. They also provided transition bases to adapt the units to the standard foot dimensions.

### RESULT

The first six units are in operation, and 20 more are ordered for the next phase of the retrofit. **800/762-9256; [www.smcyclo.com](http://www.smcyclo.com).**