

# Central vacuum systems suits printing operation

The Brown Printing, Co., headquartered in Waseca, MN, is one of America's major magazine, catalog and insert printers. Brown's seven manufacturing divisions depend heavily on vacuum equipment - as almost every printer does - to move individual sheets of paper and hold them down during printing and binding operations.

In January 1990 at Brown's web-off-set operation in East Greenville, PA, a triplex central vacuum system replaced five older reciprocating vacuum pumps that operated three stitchers and a binder at that time. Today, the plant has grown, but the same central system operates nine saddle stitchers, a binder and five tippers. These machines normally would have required 16 individual vacuum pumps.

The new central vacuum system, provided by Busch, Inc., Virginia Beach, VA, consists of three identical rotary-vane vacuum pumps direct-coupled to individual TEFC electric motors in a complete, ready-to-run, automatically alternating lead/lag<sub>1</sub>/lag<sub>2</sub> pump arrangement. The modular designed, oil-recirculating vacuum pumps are air-cooled, compact and direct driven.

Other components in the system include an ASME-coded receiver, isolation and in-line check valves, flexible connectors, vacuum gauges and a sophisticated electrical control center.

The controller selects one pump to be the lead pump and operates it to supply normal system demand. The second (or lag<sub>1</sub>) pump is

brought in for peak demand conditions. The third (or lag<sub>2</sub>) pump serves as a backup for emergencies and is available whenever the others are out of service for maintenance or repair. The controller automatically rotates the leading or lagging roles of the three pumps so they wear evenly.

Before installation of the Busch triplex vacuum system, each piece of print equipment has its own vacuum



*Central vacuum system site is mezzanine level above printing floor. Controller at left selects among 3 pumps to serve as lead, peak and backup unit, later alternates functions so pumps wear evenly. Centered behind pumps is large cylindrical reservoir.*

pump. The cost per year to maintain the five original pumps - including oil changes, labor, in-house repairs and an occasional rebuild - was \$14,300. Had Brown Printing not installed its central system, today they would have to maintain a total of 16 vacuum pumps, with a potential yearly cost of \$45,760. The maintenance cost for the Busch vacuum system is less than \$4700 per year.

Besides impressive savings on maintenance costs, the central vacuum system has several other performance advantages:

- lower electric utility costs. The average horsepower use for 16 pumps would be 48; the central system averages only 34.5 hp. At \$.05/kW hr, the yearly savings on energy can be more than \$4000

- reduced noise levels in the work area after removing the individual pumps from the main plant floor. The triplex system operates on the mezzanine level, well away from the personnel operating the printing equipment

- very little downtime or loss of production due to lack of vacuum because a backup pump always is immediately available to go on line automatically

- all vacuum-generating equipment is accessible for maintenance in a single location, and

- should the plant eventually go to the size that requires additional vacuum capacity, the present vacuum system can be expanded with easy-to-install mechanical and electrical modules.

During a typical 24-hour production day at Brown Printing, the lead and lag<sub>1</sub> vacuum pumps together operate for a total of 30 to 40 hours. This is still considerably less than their full capacity - and the lag<sub>2</sub> pump is waiting in the wings on call. Replacing the individual vacuum pumps with the Busch central system has resulted in substantial savings in maintenance and production costs, enabling the new system to pay for itself in less than a year and a half.