## Compressed Air Challenge: Efficiency Loss Due To Lack Of Maintenance

Written by By Ron Marshall, for the Compressed Air Challenge Friday, 14 December 2012 16:57



When times are tight, it can be tempting to skimp on the maintenance associated with your compressed air system. Replacement of parts and consumables associated with compressor lubrication, filtration and belt-drives are items that are sometimes put on hold if budgets are stretched. Ignoring maintenance on your compressors, dryers and filters, however, can cost you more than you think.

The Compressed Air Challenge's comprehensive Best Practices for Compressed Air Systems Manual

discusses this subject, indicating that, like all electro-mechanical equipment, industrial compressed air systems require periodic maintenance to operate at peak efficiency and to minimize unscheduled downtime. Inadequate maintenance can have a significant impact on energy consumption through lower compressor efficiency, air leakage or pressure variability. This can also lead to high operating temperatures, poor moisture control and excessive contamination of any product that comes in contact with wet, contaminated compressed air. Fortunately, most problems are minor and can be corrected by simple adjustments, cleaning, parts replacement and elimination of the adverse conditions. Compressed air maintenance is similar to that performed on automobiles: filters and fluids are replaced, cooling medium inspected, belts adjusted and leaks identified and repaired.

All equipment should be maintained in accordance with its manufacturer's specifications. OEMs provide inspection, maintenance and service schedules that should be followed strictly. In many cases, it makes sense from efficiency and economic standpoints to maintain equipment more frequently than the intervals recommended by manufacturers—which are developed primarily to protect the equipment.

One way to tell if a system is being well maintained and operating properly is to periodically baseline it by tracking power, pressure, flow and temperature. If power use at a given pressure and flow rate goes up, the system's efficiency is degrading. This baseline will also let you know if the compressor is operating at full capacity and if the capacity is decreasing over time. On new systems all appropriate measurements should be initially recorded once the system is set up and operating properly to establish a reference against which all other baselines can be compared.

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Proper maintenance is essential for compressed air system efficiency and reliability. The key is for compressor operators to be trained on the specific requirements for each piece of equipment, necessary resources and maintenance scheduling based on manufacturer recommendations and trend analysis of recorded data. All observations and meter readings should be recorded for compressors, dryers, filters and any other important components within the compressor room. A combination of equipment control-panel data backed up by frequent inspections and log sheets is mandatory for avoiding unscheduled system shutdowns and leveraging best-practice preventive and predictive maintenance. It's critical to record the dates of all maintenance and repairs and to include a list of all parts that are replaced and/or all services that are performed.

An example of the cost of poor maintenance involves filter differential. On a typical system with a continuously operating 100 hp compressor, it would cost about \$1500 per year in additional energy to overcome an extra 4 PSI of main-filter differential caused by poor maintenance. **MT**