



Inappropriate Uses of Compressed Air



Office of Industrial Technologies

Compressed Air Systems Fact Sheet #2

Compressed air is probably the most expensive form of energy available in a plant. Compressed air is also clean, readily-available, and simple-to-use. As a result, compressed air is often chosen for applications in which other energy sources are more economical. Users should always consider more cost-effective forms of power before considering compressed air.

Many operations can be accomplished more economically using alternative energy sources. For example, plants should:

- C Use air conditioning or fans to cool electrical cabinets instead of compressed air vortex tubes;
- C Apply a vacuum system instead of creating a vacuum using compressed air venturi methods that flow high pressure air past an orifice;
- C Use blowers instead of compressed air to provide cooling, aspirating, agitating, mixing, or to inflate packaging;
- C Use brushes, blowers, or vacuum systems instead of compressed air to clean parts or remove debris;
- C Use blowers, electric actuators, or hydraulics instead of compressed air blasts to move parts;

- C Use low pressure air instead of compressed air for blow guns, air lances, and agitation; and
- Use efficient electric motors for tools or actuators (although electric tools can have less precise torque control, shorter lives, and lack the safety of compressed air powered tools).

Other improper uses of compressed air are unregulated end-uses and supply air to abandoned equipment, both of which are described below.

Unregulated End-Uses

A pressure regulator is used to limit maximum end-of-use pressure and is placed in the distribution system just prior to the tool. If a tool operates without a regulator, it uses full system pressure. This results in increased system air demand and energy use, since the tool is using air at this higher pressure. High pressure levels can also increase equipment wear, resulting in higher maintenance costs and shorter tool life.

Abandoned Equipment

Many plants undergo numerous equipment configuration changes over time. In some cases, plant equipment is no longer used. Air flow to this unused equipment should be stopped, preferably as far back in the distribution system as possible without affecting operating equipment.

Using Compressed Air

As a general rule, compressed air should only be used if safety enhancements, significant productivity gains, or labor reductions will result. Typical overall efficiency is around 10%.

If compressed air is used for an application, the amount of air used should be of minimum quantity and pressure and used for the shortest possible duration of time. Compressed air use should also be constantly monitored and re-evaluated.