



AIR SUPERIORITY™ NEWS



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VORTRON MEETS THE COMPRESSED AIR CHALLENGE

If you are not familiar with the Compressed Air Challenge, take a few minutes to log on to www.compressedairchallenge.org and introduce yourself. What you could learn from this organization may save your plant literally thousands in energy costs per year; costs which could pay substantial dividends right to your bottom line.

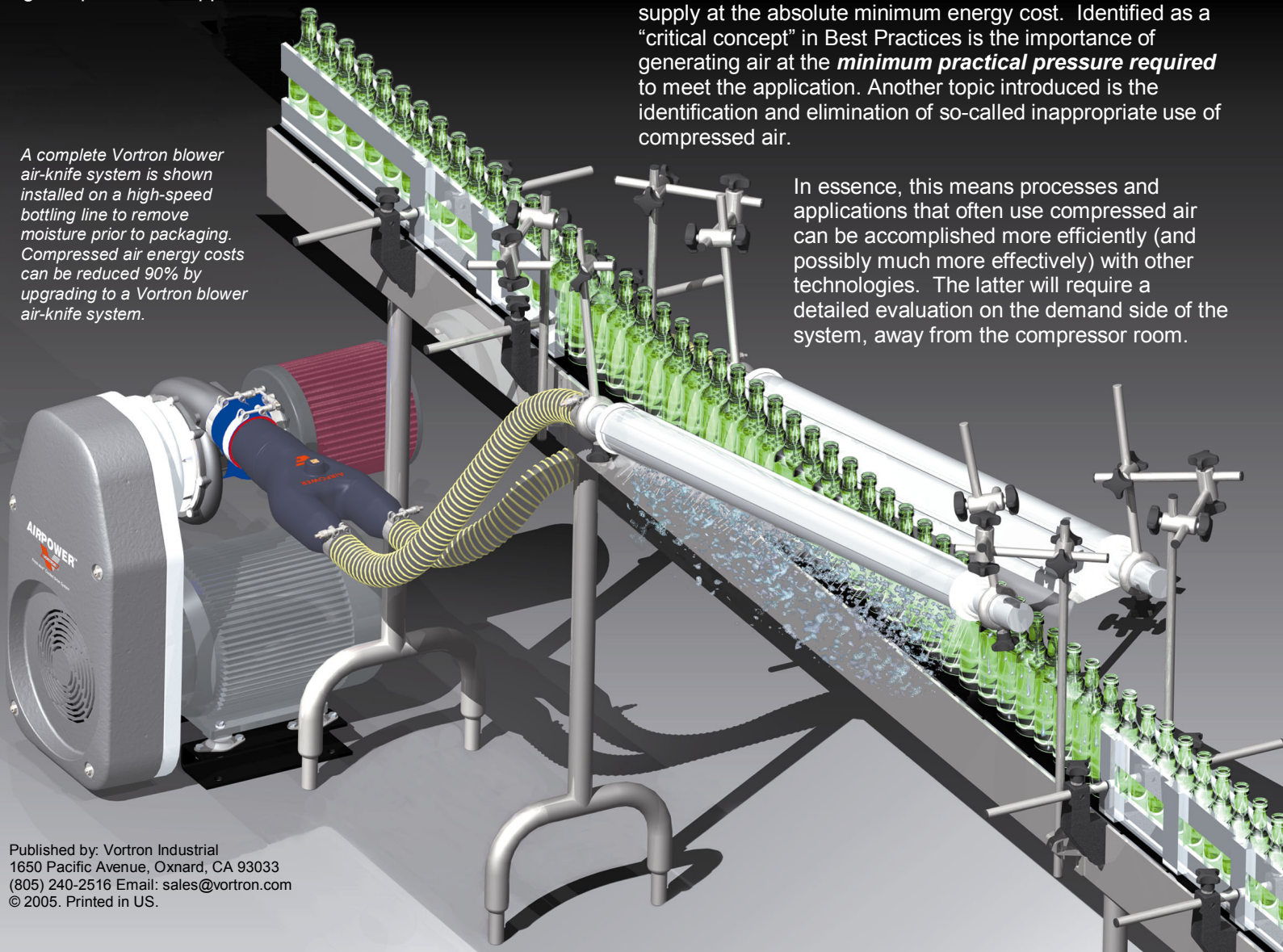
If you are familiar with the Compressed Air Challenge, then you know that one of the primary tenets for the efficient use of plant air is to employ the lowest pressure practicable for a given process or application.

In many cases, use of a blower or vacuum pump could well obviate the use of high-pressure plant air, at far lower energy cost. In addition, by taking "inappropriate uses" of plant air off-line and accomplishing those functions with better suited technology, the compressor room benefits with reduced maintenance burden, less wear-and-tear, and greater availability of the expensive high-pressure air for where it is truly needed.

The Summary of Best Practices published by the Compressed Air Challenge contains a wealth of information, hints and tips on how to get the most from your plant's air supply at the absolute minimum energy cost. Identified as a "critical concept" in Best Practices is the importance of generating air at the **minimum practical pressure required** to meet the application. Another topic introduced is the identification and elimination of so-called inappropriate use of compressed air.

In essence, this means processes and applications that often use compressed air can be accomplished more efficiently (and possibly much more effectively) with other technologies. The latter will require a detailed evaluation on the demand side of the system, away from the compressor room.

A complete Vortron blower air-knife system is shown installed on a high-speed bottling line to remove moisture prior to packaging. Compressed air energy costs can be reduced 90% by upgrading to a Vortron blower air-knife system.



In many plants, high-pressure air is inappropriately used for processes such as cooling, drying, general blow-off, and the like. More too often, we see the “drilled-pipe” manifold set up on a process line and used for blow-off. Not only is this amongst the worst kind of inappropriate use, it violates the aforementioned Critical Concept as blow-off can be accomplished not only much more effectively, but at much lower pressure and drastically reduced energy cost. The solution is to employ a high-efficiency blower and engineered nozzle or air knife system instead. Believe it or not, a ten-to-one (or more!) energy savings can be realized by making this simple switch in technology. But the story doesn’t end there, as in many cases dramatically improved performance is attained with a well-engineered blower system. This, then, provides the adjunct benefit of process improvement resulting in better product quality and/or increased throughput.

An air audit will quickly identify inappropriate uses of air and often make specific recommendations regarding use of alternative technologies to employ lower pressure sources and reduce energy consumption. Fortunately, identifying inappropriate uses related to blow-off is quite obvious, and any astute Plant Manager can make such an assessment. In essence, if it is a blow-off process and it uses high-pressure plant air, then it is suspect at minimum, and most likely will be replaceable by an appropriately designed blower – nozzle system at substantial energy savings. For the energy and hence cost-conscious Plant, these are “low hanging fruit” opportunities. Here are some examples of inappropriate compressed air use that can be supported by a low-pressure blower system:

- General purpose blow-off
- Product or part cooling
- Product or part drying
- Particulate removal
- Conveying bulk solids
- Open blow-guns or lances
- Personnel blow-off (dust or particulate removal)
- Sparging
- Hold-Down Tables

But, you may ask, “...what of the so-called “fan” nozzle air-bars, “super” air knife, and similar products – don’t these operate from lower pressure and hence follow in the spirit of the Compressed Air Challenge?” The answer is a qualified “NO”, but some explanation is in order. First, while it is true that these devices do generally operate at 40 – 60 psi, air invariably is sourced from the 100 – 110 psi plant system, and regulated down. The Compressed Air Challenge, therefore would identify such a practice as inappropriate and not in keeping with using the lowest “pressure generating source” to do the job. In other words, it is quite wasteful to generate 110 psi air only to regulate it back down to 50 psi at the point-of-use. Further, as a blower-based system would operate in the 2 – 5 psi range, even this reduced pressure is still an order of magnitude higher than it really needs to be. Note further that together with somewhat lower operating pressure, these devices also make use of very tiny aperture openings and/or slot dimensions, to control flow. Even so, such systems will generally consume 4 to 5 times the energy of a blower-based system.

Lastly, the performance of these plant-air nozzle products deserves some comment as they simply cannot match the blow-off effectiveness of a well-designed and executed blower/nozzle system. The reason is their very small apertures or narrow slots result in air jets of very small cross section, but relatively large surface area. This leads to a very rapid mixing and diffusion (meaning slowing down) of the original high-velocity jet immediately after leaving the nozzle. So, at any appreciable distance, velocity and hence kinetic energy of the jet is all but lost. The much larger aperture sizes employed in the blower-based air knife and nozzle systems result in high velocities maintained for much greater distances. This results in a much more effective blow-off process in virtually all cases.

Vortron to Exhibit at Michigan Trade Show

Vortron will be exhibiting its new and improved Mobile Aire System at the Kerr Pump and Supply booth at the Michigan Plant Engineering & Facilities Maintenance Show (MIPE), March 23-24, 2005, at the Novi Expo Center in Novi, MI.