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Can Counting Carbs Help in Your Compressed Air System?

By John Ball, Application Engineer

Have you ever counted the amount of carbs that you eat? People typically do this to lose weight, to become healthier, or for medical reasons like diabetes. Personally, I like to eat cereal in the morning. I will pull a box of cereal down from the cupboard and look at the Total Carbs field. One morning, I looked at a box of gluten-free rice flakes and compared it to a peanut butter nugget cereal. I noticed that the carbs were very similar. The rice cereal had 23 grams of total carbs while the peanut butter nuggets had only 22 grams of total carbs. Then I looked at the serving size. The rice cereal had a serving size of 1 cup while the nuggets only had a serving size of ¾ cup. So, in comparison, for one cup of nugget cereal, the total amount of carbs was 27.5 grams. Initially, I thought that they were similar, but the peanut butter nugget was actually 20% higher in carbs. This same "misdirection" occurs in your compressed air system.

Just like cereal–not all air nozzles are rated equally.

Here is what I mean. Some manufacturers like to use a lower pressure to rate their products. This lower pressure makes it seem like their products will use less compressed air in your system. But, like with the serving sizes, it can be deceiving. It is not a lie that they are telling, but it is a bit of misconception. To do an actual comparison, we have to compare the flow rates at the same pressure (like comparing the carbohydrates at the same serving size). For example, MfgA likes to rate their nozzles at a pressure of 72.5 PSIG. EXAIR rates their nozzles at 80 PSIG, as this is the most common pressure for point-of-use equipment. You can see where I am going with this.

To compare nozzles of the same size, MfgA nozzle has a flow rate of 34 SCFM at 72.5 PSIG, and EXAIR Model 1104 Super Air Nozzle has a rating of 35 SCFM at 80 PSIG. From an initial observation, it looks like MfgA has a lower flow rating. To do the correct comparison, we have to adjust the flow rate to the same pressure. This is done by multiplying the flow of MfgA nozzle by the ratio of absolute pressures. (Absolute pressure is gage pressure plus 14.7 PSI). The ratio of absolute pressures is: (80 PSIG + 14.7) / (72.5 PSIG + 14.7) = 1.09. Therefore, the flow rate at 80 PSIG for MfgA nozzle is now 34 SCFM * 1.09 = 37 SCFM. Now we can compare the flow rates for each compressed air nozzle.

Like adjusting the serving size to 1 cup of cereal, the MfgA will use 9% more compressed air in your system than the EXAIR **Model 1104 Super Air Nozzle**. This may not seem like much, but over time it will add up. And, there is no need to waste additional compressed air.

EXAIR Super Air Nozzles are designed to entrain ambient air with the compressed air supplied. This will save you on your pneumatic system, which in turn will save you money. The other design features give the EXAIR Super Air Nozzles more force, less noise, and the ability to meet the OSHA standards and CE safety requirements.

If you want to run a healthier compressed air system, it is important to evaluate the amount of compressed air that you are using. To do this correctly, you always want to compare the information at the same pressure. If you would like assistance with the comparison, please contact EXAIR. By using the EXAIR Super Air Nozzles in your compressed air system, you will only have to worry about your carbs, not your pneumatic system.

EXAIR's Efficiency Lab Tests and Compares Blowoff Products

EXAIR's Efficiency Lab was recently recognized by *Environmental Protection* as the 2016 Product of the Year for Green Technology. The Efficiency Lab has been designed to help companies evaluate the efficiency of their current blowoff. Companies can ship these items to EXAIR where one of our qualified engineers will perform tests using calibrated, NIST traceable testing equipment. The performance of the supplied product (air consumption, effectiveness, noise levels and efficiency) will be compared to that of the appropriate EXAIR product. The results will be published in a report that includes a cost savings analysis. There is no charge for this service. Contact EXAIR for more details or go to **http://www.exair.com/05/efflab.htm**.

Application Spotlight:

Improving Your Process and Saving Money at the Same Time

Application Goal:

To remove moisture from a galvanized steel part after roll forming, but before stacking, to prevent white oxidation from forming on the material during storage.

The Problem:

Manufacturer was using two plastic nozzles, normally used for liquid coolant, on the end of 11 inch flexible tubing to blow the water into the air and a vacuum to remove the moisture. Pressure was limited because the nozzles would move out of position, when the air pressure was supplied. The process was hard to use and only removed 35% of the water from the product. This excess moisture caused a white oxidation to form on the galvanized parts, which led to quality complaints from the customer. This setup used 74 SCFM of compressed air when fed with 80 PSIG.

The Solution:

This customer installed two **6" (152mm) Super Air Knives**, one for the top and one for the bottom surface of the galvanized material. The setup was repeatable and prevented readjustment. The EXAIR Super Air Knives were able to remove 80% of the water from the surface of the parts, and their customers were no longer complaining of quality defects. Two 6" (152mm) Super Air Knives use 34.8 SCFM of compressed air when fed with 80 PSIG. This has cut the air use in half and removed the oxidation problem from the process.

Editor's Comment:

By installing two Super Air Knives, the roll former made their process easier to use, more reliable and produced better results. By using an engineered Super Air Knife instead of nozzles designed for liquid coolant, the customer was able to maintain a high quality product through to their customer and to the end user, while using less than half of the air of the original blow off station. The EXAIR solution uses 18,816 fewer standard cubic feet per 8 hour shift and recovers $1,177.50 per 250 day work year in compressed air savings. A simple ROI of 62 work days!

EXAIR unconditionally guarantees its cataloged products for 30 days.

If you are not satisfied for any reason within that time, you may return the product for full credit with no restocking charge.

New Application Checklist

For decades, EXAIR's products have solved many common industrial problems. Call our Application Engineering Department at (513) 671-3322 or email them at techelp@exair.com for help with yours.

- An aluminum smelting plant needed to clean a cabinet inside a motor control center (MCC). The room was covered in a carbon black pitch mixture that would cling to just about all of the surfaces in their cabinet. First, the MCC was cleaned with the **Model 6199 Heavy Duty HEPA Vac**. The HEPA filter was able to contain any powdered carbon black, and the powerful Heavy Duty Dry Vac removed the heavier pitch material. After cleaning the cabinet, the maintenance department installed a **Model 4280 NEMA 12 Dual Cabinet Cooler System** - 5,600 Btu/hr - Continuous Operation to cool the cabinet and create a positive pressure to push out any future dust. With the Cabinet Cooler System installed, the maintenance department removed the fans that had been pulling in the carbon black, allowing the cabinet to remain clean and cool for years to come.
- A medical components manufacturer is making small parts of a very low durometer PVC and had a difficult time capturing the parts during ejection. The parts are very bouncy and eject erratically. A **Standard Air Knife** is being used to create an air barrier and direct the parts into a chute. This simple solution has saved the company $42,500 a month in lost parts/scrap.

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Here's your best opportunity to try our vacuum products. Receive a free Vac-u-Gun with your purchase of an EXAIR compressed air powered Reversible Drum Vac, High Lift Reversible Drum Vac, Chip Trapper, High Lift Chip Trapper, Chip Vac, Heavy Duty HEPA Vac, or Heavy Duty Dry Vac. These vacuums are specially designed to suit your industrial vacuum needs.

If you purchase one of these industrial vacuums by May 31, 2017, you will receive a free Model 6492 Vac-u-Gun!

To learn more go to: www.exair.com/05/vacpromo.htm

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