

COMPRESSED AIR: AT THE HEART OF ALUMINUM CANNING LINES

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When throwing back a cold one or grabbing a can of soda on a warm summer day, you may not realize compressed air is vital to aluminum can manufacturing. Compressed air is used in nearly every step of the manufacturing process.

One of the biggest energy users in a metal beverage plant is compressed air equipment. Let's break down the steps of how compressed air is used.

Aluminum cans are incredibly lightweight, so it might be hard to believe they're made from a huge roll of flat aluminum sheeting. Sometimes these sheets can weigh up to nine tons, with each roll making up to 750,000 drink cans.

Step 1

The sheet is fed into a punch press that punches out round pieces, which are formed into cans. The punch press performs two operations: punching out a disk and forming it into a cup. The remaining metal gets sent back to a facility where it is recycled into new, flat rolls.

Either oil-flooded or oil-free compressed air is used to control the clutch, brake, and to eject the cup. Typical demand is 100-500 scfm at 95-100 psi, but is based on the size of the cupper and manufacturer requirements.

Steps 2 and 3

The cup then goes into a machine called the Draw Iron & Trimmer, which draws out the aluminum and forms the body of the can.

The Draw Iron & Trimmer uses either oil-flooded or oil-free compressed air to eject the can and control the clutch and brakes. The trimmer uses compressed air to control the actuated cylinders. The trimmer also uses a vacuum to hold the can down on the chuck for trimming walls.

Typical demand for the draw iron process is 50 scfm at 95-100 psi, while the vacuum demand is typically 15 scfm at 95-100 psi.

Step 4

The aluminum cans then move along the conveyer belt, upside down, to the washer. The washer performs a six-stage cleaning process.

Either oil-flooded or oil-free compressed air is used on the washer to control the valve actuators. Typical demand in the process is 45-50 scfm at 100 psi.

Step 5

The exterior of the cans are then printed – with some manufacturers printing up to 1,800 cans per minute.

Oil-free compressed air is used to control the clutch, brake, and pneumatic cylinders. Typical demand is 35 scfm at 95-100 psi. A vacuum is used to hold the can on the chuck for printing, with typical demand being 120 scfm.

Step 6

The insides of the cans are then coated to serve as a barrier between the liquid and the metal, because nobody wants their drink to taste like metal!

Either oil-flooded or oil-free compressed air is used to control the pneumatic cylinders. Typical usage is around 50 scfm at 95-100 psi. A vacuum is used to hold the cans on the chuck for the interior coating spray, with typical

demand around 145 scfm.

Step 7

A die necker machine then performs an 11-step process to form the neck of the can.

Oil-free compressed air is used to support the can during the die process and to control the clutch, brake, and pneumatic cylinders. Demand can be anywhere from 500-2500 scfm based on the number of banks tied together.

A vacuum is used to hold the can on the die for the flanging process. Vacuum demand is around 5-10 scfm.

From there, the aluminum cans go through a vision system to look inside of each can to ensure standards are met. If the standards are not met, the deficient cans are sent to recycling. If they do meet the standards, they're then packed and palletted and sent to beverage companies to fill with the beverage and install the pop top.

No two systems are alike in the metal beverage industry, due to number of lines, size of cans, and speed of manufacturing. Therefore, it is always best to consult your compressed air expert to ensure your canning operation produces aluminum cans – not can't's.

Summary

When throwing back a cold one or grabbing a can of soda on a warm summer day, you may not realize compressed air is vital to aluminum can manufacturing. Compressed air is used in nearly every step of the manufacturing process. We'll break down how compressed air is used, and its general air demand, in this important industry we all rely on.