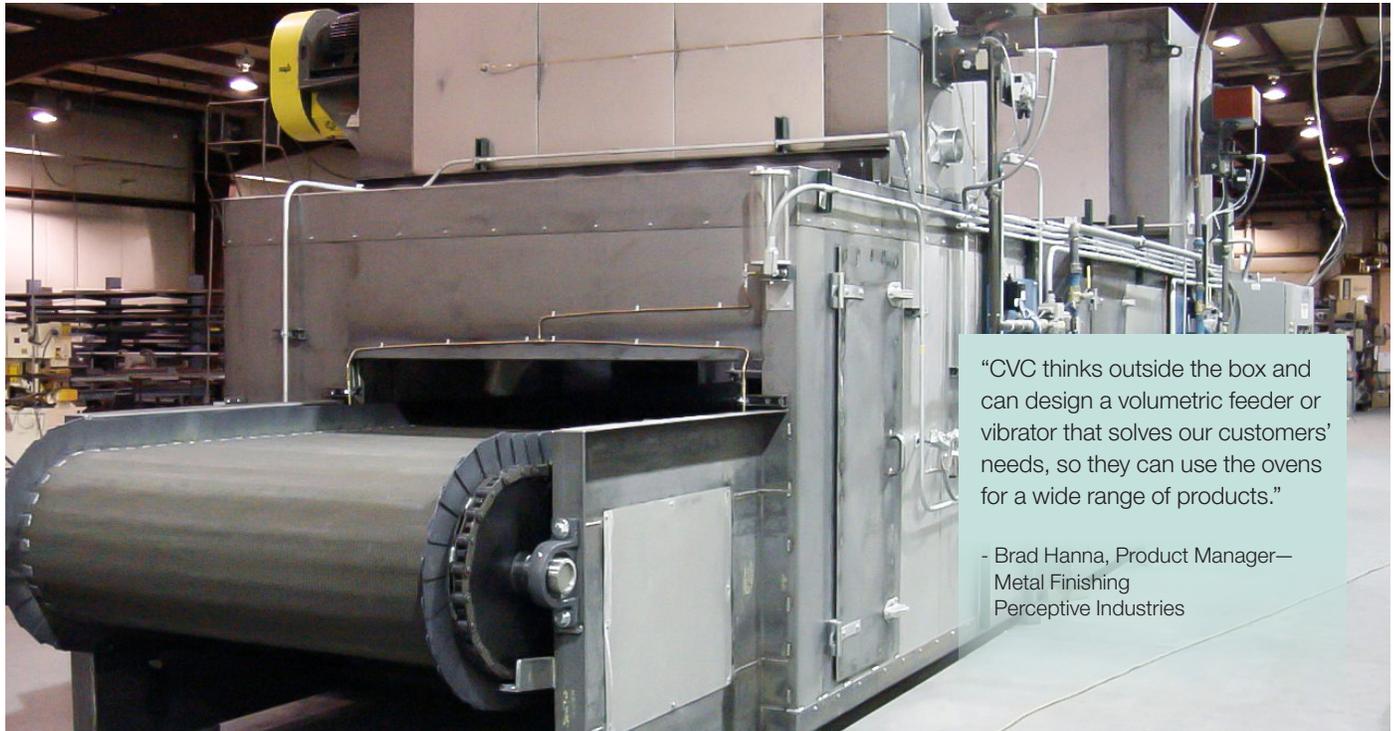


APPLICATION REPORT : MANUFACTURING INDUSTRY

Perceptive Industrial Ovens Perform with Two Cleveland Vibrator Solutions



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- Brad Hanna, Product Manager—
 Metal Finishing
 Perceptive Industries

CHALLENGE

When manufacturers from aerospace to automotive need an industrial oven, they often turn to Perceptive Industries and the company’s line of cure ovens and hydrogen embrittlement relief ovens. The Perceptive ovens are used for curing, baking, drying, treating and other applications requiring circulation of heated air. Specialized components are needed to create a uniform and consistent flow as customer parts are conveyed through the oven. The components are critical to keep parts from sticking together after a coating has been applied and before the curing process.

SOLUTION

Perceptive works with a number of oven component manufacturers, one of which is Cleveland Vibrator Company (CVC), supplying RFM volumetric vibratory hopper feeders and 1200 VMRAC EP air-cushioned pneumatic extended piston vibrators. These components help re-orient and move parts between the pre-cure and curing zones. The CVC products also prevent the parts from sticking to each other and also to help level the load.

FEATURED PRODUCTS

RFM Volumetric Vibratory Hopper Feeder & 1200 VMRAC EP Vibrator



SPECS

Volumetric Feeder

- 3 TPH (6,000 lbs/hr) @ 0 degrees down slope
- Fasteners & Stampings, 100 lbs/ft³
- All-in-one unit for low maintenance

VMRAC-EP

- Piston weight: 3.5 lbs (1.59 kg); piston diameter: 2” (5.1cm)
- Frequency: 2700 VPM @60 psi; 4.1 bar
- Air consumption: 9.0 cfm; 255 lpm; @60 psi, 4.1 bar

Industrial Ovens from Perceptive Integrate Volumetric Hopper Feeders and Air Cushioned Piston Vibrators

The majority of heavy-duty ovens that Perceptive designs and builds are made-to-order from customers that have specific requirements based on volume, material type, product bulk density, throughput per hour and other factors. Perceptive, based in Plainwell, MI, expanded its facilities last year to accommodate the uptick in projects in its core markets as well as food/dairy, metal finishing and heat treatment.

“The relationship between Perceptive and CVC dates back to 2002,” says Brad Hanna, Product Manager---Metal Finishing for Perceptive. “We don’t make standard, off-the-shelf ovens; each one is unique depending upon the customer and application. CVC engineers think outside the box and can design a volumetric feeder or vibrator that solves our customers’ needs, so they can use the ovens for a wide range of products.”

Smaller parts such as fasteners and brackets are typically processed through the Perceptive ovens according to Hanna. The cure ovens are capable of conveying 20,000 pounds of material per hour. “In some cases, our customers use these ovens seven days a week, 24 hours a day,” says Hanna.



The RFM volumetric vibratory hopper feeder is a compact, self-contained unit featuring a bulk supply hopper with a vibratory feeder.

“When designing an oven, we take the specifications from the customer, including the type and density of product, cycle time, throughput per hour and many other requirements,” he says. “Cleveland Vibrator then provides the vibratory equipment which helps re-orient and move parts between the pre-cure and curing zones. This is all done to prevent the parts from sticking to each other and also to help level the load.”

CVC products are typically used in two stages in a Perceptive-designed oven. The RFM volumetric vibratory hopper feeder is filled with approximately 2,000 pounds of the customer’s material (fasteners or brackets, for example). The feeder, which

has load cells included under the base support structure, then precisely doses the material into square bins, which measure 2’ x 2’ x 4’ and hold between 400-500 pounds. Once the correct amount and weight of product is metered into the bin, the next bin moves into position under the feeder.



Material at the unloading station is completely knocked out of the bins by a CVC 1200 VMRAC extended piston (EP) air-cushioned pneumatic vibrator.

The bins containing the loose material are conveyed through the pre-cure and curing stages, then enter the unloading station. The bins are rapidly bumped by a CVC 1200 VMRAC extended piston (EP) air-cushioned pneumatic vibrator which ensures that all material is completely knocked out of the bins.

Extended Piston (EP) vibrators have threaded, extended pistons for rapidly knocking a medium to which the vibrator is not directly attached. These particular vibrators are used as a flow or discharge aid on bins and hoppers, and are also useful on feeders, conveyors, alignment tracks, screeners and compaction tables. The VMRAC EP unit operates at 3,050 (2,700) vibrations per minute (VPM) and frequency at 60 psi while only consuming 10 cfm.

“The vibrator is only on for few seconds, but it’s enough to shake the whole bin around and knock all the material out,” notes Hanna. “Since customers use their bins for different applications, it’s important that the entire product is removed. The bins then go back completely empty, ready to be filled again.”

ABOUT THE CLEVELAND VIBRATOR COMPANY

The Cleveland Vibrator Company has been driving innovations in materials handling since 1923. From its corporate headquarters in Cleveland, Ohio, and in partnership with HK Technologies in Salem, Ohio, the organization has met the challenges of more than 15,000 customers around the globe in a vast array of industries. Cleveland Vibrator Company’s comprehensive product line includes air-piston, rotary electric, electromagnetic, turbine and ball vibrators, as well as a wide variety of fabricated feeders, vibratory screeners, ultrasonic screeners, vibratory conveyors and vibratory tables used for light, medium and heavy-duty industrial applications.

For more information, contact Cleveland Vibrator Company at 800-221-3298 or visit clevelandvibrator.com.