Case history | Aerating silos for better material flow

A flooring material manufacturer installed fluidizers to prevent silo issues.

Forpac manufactures flooring materials at its Haines City, FL, plant using a variety of materials that are stored in 144-ton silos. However, keeping the material flowing to the production lines proved difficult.

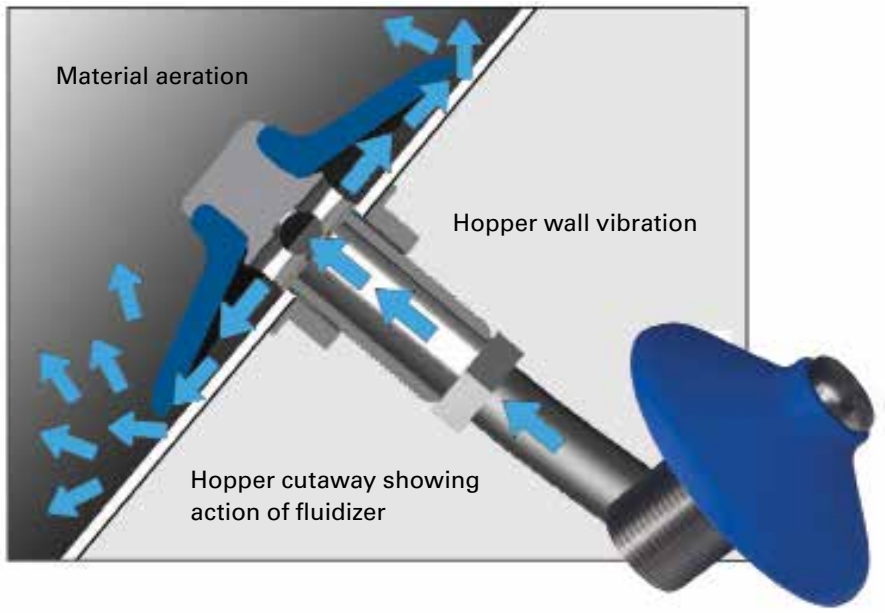
"We had been operating with air pads in our silos that store white cement powder and calcium carbonate used to make our thin-set adhesive and grout for tile floors," says Mike Dulin, plant manager.

The outdated air pads couldn't provide enough aeration to keep a constant material flow to the blending and packaging processes. Additionally, the fine powders would often leak out of the silo around the air pads due to them slipping, some of which was caused by hitting the silo with a hammer to get material to flow. The air pads' screening media required frequent cleaning and replacement, resulting in a loss of up to 7 hours of production time per week.

"The leaks caused a large mess, daily, that required constant cleaning and resulted in lost production time," Dulin says. "It also released a lot of dust in the air and on everything, made electrical contacts stick, and caused health and EPA concerns."

To get the silos working more efficiently, Forpac turned to Solimar Pneumatics, a Minneapolis, MN, company that designs and supplies aeration systems for the bulk material handling industry. The supplier recommended that disk-type pneumatic fluidizers be installed at the bottom of each silo. The 4-inch-diameter silicone disks can keep material flowing using aeration and hopper wall vibration. Using the new fluidizers, Forpac could provide uniform material flow to its production lines.

"We liked that there are pins on the bottom to keep [the fluidizers] from sliding, the larger seals, the larger and better-quality mounting



The fluidizers promote consistent material flow through material aeration while also vibrating the silo wall.

hardware, and the way the fluidizers generally work as opposed to the air pads," Dulin says.

The fluidizers help prevent bridging, ratholing, and compacting in storage silos, dust collectors, and weighbins using directional airflow along the equipment's walls along with gentle vibration. The fluidizers loosen up the material by sending steady airflow along the wall of the bin or silo, promoting smooth material flow. The gentle vibration caused by the airflow keeps material flowing without compacting or plugging. The proprietary disks seal tightly to prevent leaks and the fluidizers are designed to be long-lasting.

Installation on Forpac's silos required no cutting into them as the fluidizers' EZ-IN kits use the silos' existing air pad openings and feature a gasket that can be permanently fixed to the mounting plate. Fluidizers are available in zinc-plated carbon on stainless steel in three styles to fit most existing hole patterns. The supplier helped Forpac determine the optimal number of fluidizers and the correct spacing to ensure proper airflow.

Forpac's old air pads were causing poor airflow and leaks, resulting in lost production time and potentially dangerous working conditions. The company was able to install new fluidizers using existing silo openings.

"It took about 2 hours per silo to replace the old air pads with the fluidizers," says Dulin.

Forpac began seeing results almost immediately and was able to justify the purchase cost and installation time in just one week due to the savings in cleaning time and production gains for each silo. After more than a year of experience with the new aeration system, Dulin says, "It's like the difference between an antique method and a thoroughly modern method of aeration." **PBE**

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