



*REAL*  
**Vinyl Powder Solutions**  
*Flooring Industry*



## OVERVIEW

### The Challenge

- Seal Leakage
- Product Loss
- Plant Safety
- Material clean-up
- Maintenance costs
- Production Downtime

### The Solution

- PAV-10 Rotary Airlock
- Inpro Seal

### The Results

- \$4,000 in vinyl powder recovery savings in the first 6 months
- More efficient and higher capacity production line
- \$10,000 annual savings with a ROI within 7 months

### Business Overview:

A large flooring manufacturer in Southern Illinois processes many powders including limestone and vinyl to make laminate, vinyl sheet, vinyl tile and linoleum.

### The Challenge:

As part of their process, vinyl powder is off-loaded from rail cars and transferred into large storage silos. From there, the extremely fine vinyl powder is fed pneumatically into smaller silos as needed, and is then pneumatically transferred into one of the mixing stations.

For years, the manufacturer used a competitor's airlock which utilized graphite impregnated aramid fiber packing type shaft seals to feed the vinyl powder from the smaller storage silo into the pneumatic convey line. After only 2 months of service, the 9 PSI internal conveying line pressure would blow out the shaft seals, causing the vinyl powder to leak out onto the ground. After the shaft seals were blown, roughly 50 lbs of powder were lost each day at a cost of approximately \$7 to \$9 per pound. In addition to the loss of valuable powder, there were safety and material handling issues. Each seal failure resulted in downtime for the production line and constituted end product production loss.

### The Solution:

Already utilizing Prater Airlocks in various areas of the plant, the manufacturer reached out to Prater. The Maintenance Manager felt confident that Prater would have an answer.

After identifying the problem, Prater supplied a PAV-10 Rotary Airlock Valve with a 10" throat. Prater's universal flange is capable of matching most existing bolt hole patterns and allowed for a direct drop in replacement for the existing valve. Prater's heavy-duty PAV series airlocks come standard with outboard mounted, sealed for life bearings and a fabricated 8 blade open end rotor. The shaft seals utilized were a mechanical style labyrinth Inpro Seal which is designed to eliminate shaft seal leakage. Due to the non-abrasive nature of the vinyl powder, a standard cast iron housing with mild steel rotor finished out the valve.

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All Inpro products include a stator fixed in place on the valve's end plate and a rotor pressed onto the valve's shaft. When put together the two parts form a non-contacting, non-wearing labyrinth seal. To further isolate the product, compressed air is purged into the stator, which when combined with the labyrinth, creates a positive barrier to keep the powder inside the valve.

**The Results:**

The company purchased and installed the PAV-10 with the Inpro Seal in March of 2012. Eight months after the seal was installed it continued to operate without seal leaks. When asked about the impact of the improvement, the Maintenance Manager said the valve eliminated almost \$4,000 in wasted product within the first 6 months. The Prater solution also saved nine overtime hours per shaft seal replacement. The flooring manufacturer's production line now operates more consistently and at a higher capacity with no down time. Overall, the new valve is expected to save the company in excess of \$10,000 annually with a return on investment in less than 7 months.

**Bio:**

Brent McIntosh is an Airlock Account Manager for Prater. Brent has worked for the company for the company since 2012 in this position and has a background in Equipment Packaging.

At Prater, results come first. Prater has been providing reliable particle management solutions since 1925. The company specializes in an extensive line of equipment and engineered systems including rotary airlocks, lump breakers, hammermills, fine grinders, classifier mills, screeners/separators, air classifiers, compactors, minor/micro ingredient batching systems, plant-wide automation/controls as well as toll processing services.

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