

*Rebuilding America
with smart automation*



...the Workhorse of Industry

Smart Automation Newsletter

February, 2011

Industry Thoughts: The Physics of Part Feeding – it's not black magic

Air Pressure: Sixth in a series of highlighted physical principles for part feeding.

Fortville's key to fast vibratory part feeders is a strong working knowledge of the associated physics. February's Smart Automation focuses on air pressure and its effects on part feeding.

Air pressure is the force per unit area provided by compressed or flowing air



$$P = F / A \rightarrow F = P * A$$

P = Pressure A = Area
F = Force



Basically, a force acting on a surface can be influenced by the amount of pressure or by the area on which the pressure is acting.

A key enabler for high speed part feeding is the efficient use of air pressure. Although the ongoing goal of manufacturing and automation is to minimize the use of pressurized air, used effectively it represents an efficient means for high speed conveying and orientation of parts.

As parts are moved through a vibratory feeder in random orientations, the various surfaces of a part present unique aerodynamic conditions to a stream of pressurized air. The position of an air jet stream relative to a respective part surface can generate a pushing or pulling force on the part, as well as, only effect parts in a specific orientation.

When used appropriately pressurized air is an effective means to locally accelerate parts for merging of multiple lanes, as well as, generate part velocity required for high speed output. Although compressed air from plant compressors is common for automation, onboard blower systems are gaining popularity in part feeding systems as a means to minimize operating costs and air volume demands of in-plant pressurized air.

Although the ongoing goal is to minimize the use of pressurized air, Fortville has the experience and knowledge to optimally use air pressure for your part feeding needs – that's smart automation.



Look for future issues to learn more about how **Fortville masters physics** to provide world-class **part feeding solutions** and is among the leaders in **Smart Automation**.

Product Highlight:

High Speed Vibratory Feeder and Air Track

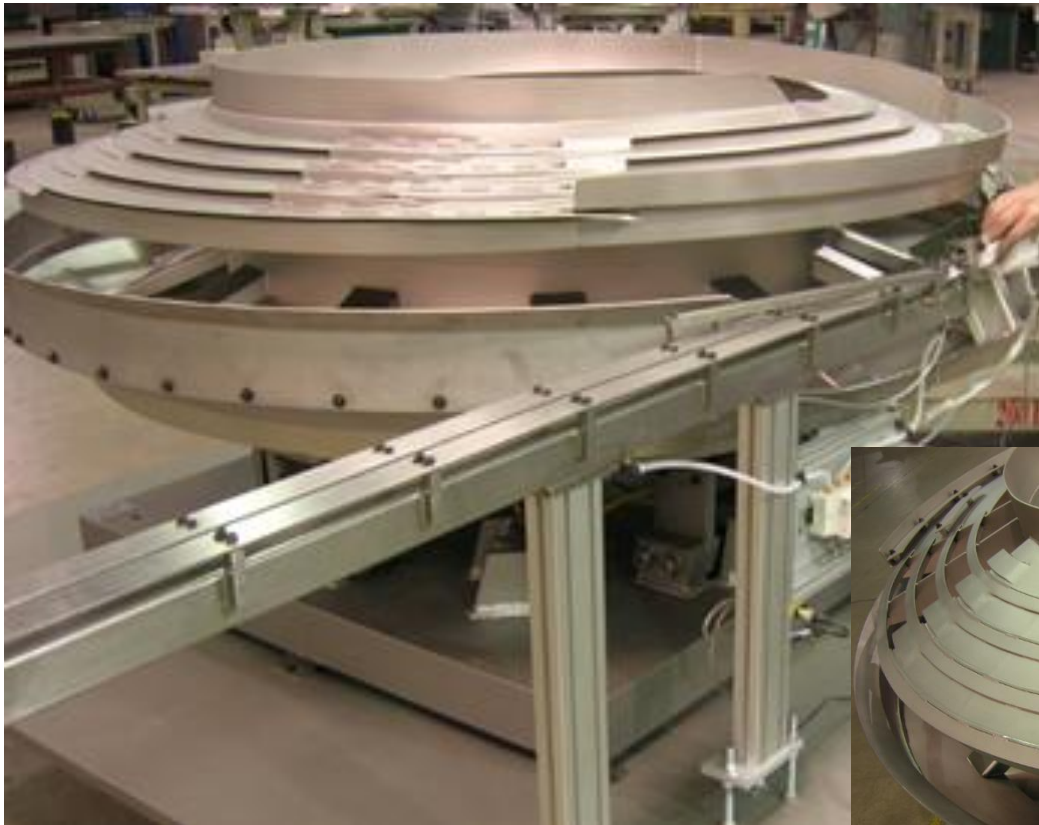
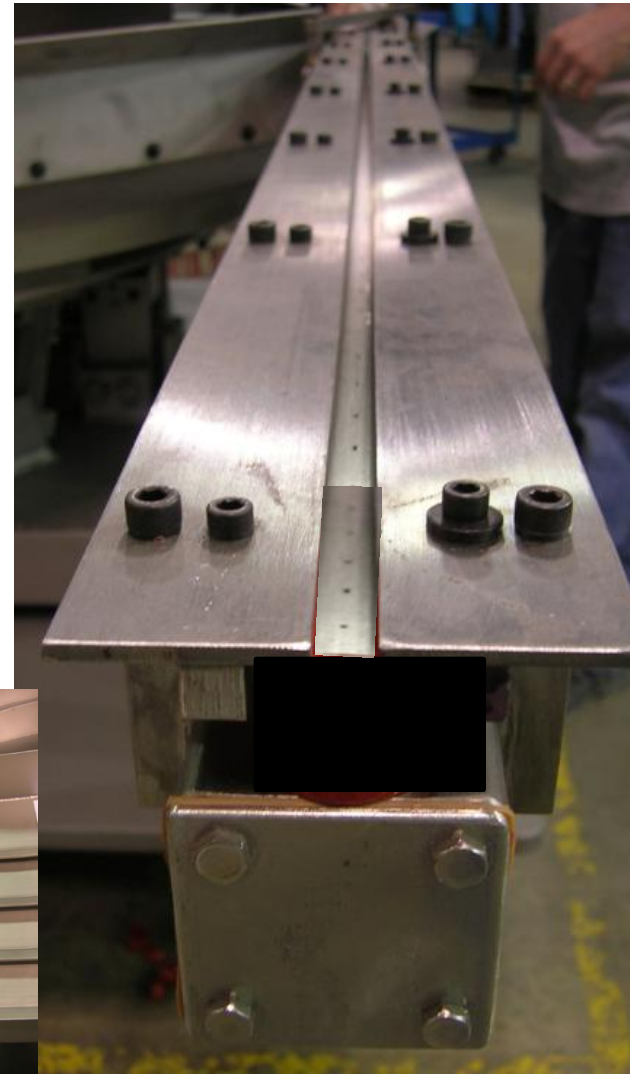
Application: Feeder bowl and air track for a continuous motion capping machine. System feeds plastic part with a compliant flip cap.

Feed Rate: 360 PPM – single output

Fortville Products:

- 42" CW Vibratory Bowl with bead-blast finish
- 6' Air Track with SMC pneumatic controls

Note clean execution of air tracks.



Product Highlight:

Vibratory part feeding system with Electro-Polish Finish

Application: Vibratory part feeding system with single lane output and electro-polish.

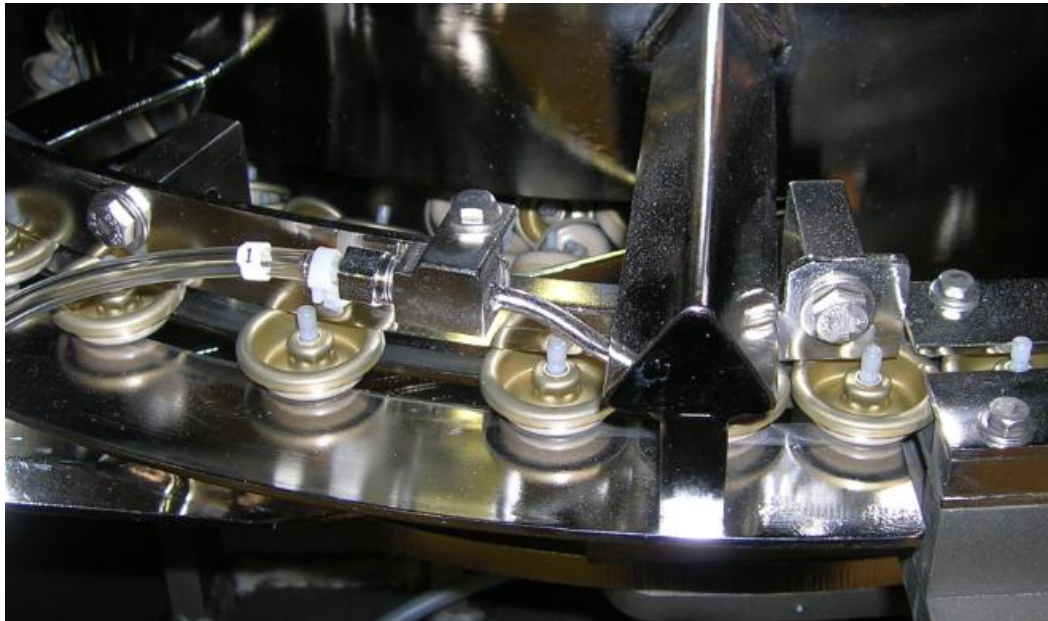
Feed Rate: 240 PPM – single output

Fortville Products:

- 24" CW Vibratory feeder bowl with electro-polish
- 63" long vibratory track
- Sound enclosure with base frame



Note clean execution of air jets.



Company News:

Fortville Feeders effectively uses CAD/CAM to drive efficiency

As part of Fortville's ongoing efforts to improve efficiency, Fortville has recently upgraded CAD/CAM capabilities with the addition of Master CAM X5. Master CAM X5, a product of CNC Software Inc., is the industry leading solution for seamless and efficient integration of CAD solid modeling software and CNC machining. As part of the Master CAM X5 upgrade, Fortville has also implemented an internal, collaborative process between engineering and the machine shop to assure the feasibility of new designs and a smooth work stream from design to fabrication.

Fortville is pleased to add Master CAM X5 to the following CAD/ CAM tools: Inventor Solid Modeling; a complete solid model portfolio of standard part feeding systems which is parametrically morphable; a direct design link between CAD and all water jet cutting; 2D scanning of patterns for direct feed to water jet cutting; and a structured and disciplined filing system of all CAD/ CAM data to facilitate a quick and accurate replication of repeat part feeding systems. Together, these tools are enabling Fortville to deliver world-class products at market competitive prices.

In short, smart automation is not just what you produce, but also how you produce it.

Products and Services:

Part Feeder Systems:

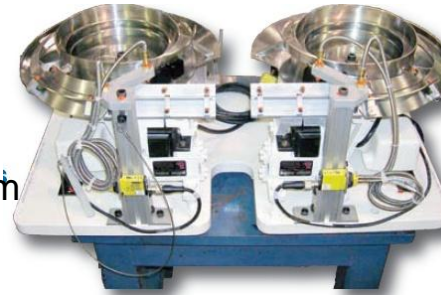


- **Vibratory Bowls:**
 - 6" to 70" in dia.
 - Feed rates to 600 pph
- **Centrifugal Bowls**

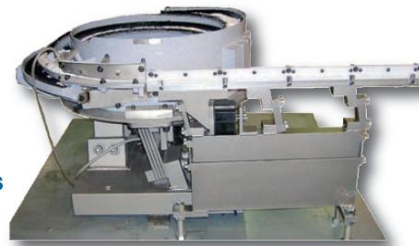
Fortville is the recognized industry leader in large, high-speed vibratory feeder bowls. Challenge us with your part.

- System design and development
- System build and validation
- System remanufacture & rework
- On-site service and support
- Service part sales

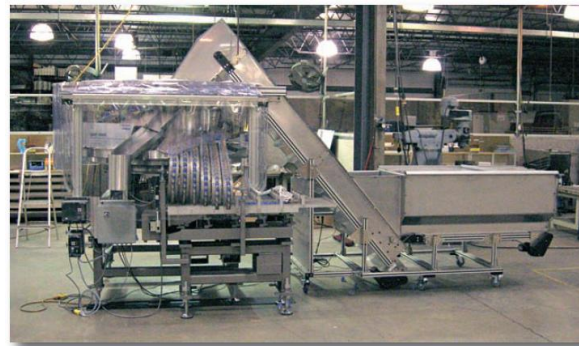
Material Handling Systems:



- **Track Feeding Systems:**
 - 6" to as long as required
 - In-line Vibratory Tracks
 - In-line Air Tracks
 - Conveyor Belt Tracks
 - Gravity Tracks



- **Automation Mechanisms:**
 - Isolation Escapements
 - Shuttle mechanisms
 - Sensor integration:
 - Vision and weight



- **Storage/ Transport Systems:**
 - Elevators and Gondolas
 - Bulk Storage Hoppers
 - Sound Enclosures

See: www.fortvillefeeders.com

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