

IAOM WESTERN DISTRICT CONFERENCE 2017






Industrial Magnetics, Inc.

Celebrating 56 years in business!



Who We Are

- Founded in Ferndale, MI 1961 (Detroit area).
- If it's magnetic, we do it.
-  70 employee company located in Boyne City, MI (pop. 3,500).
- Average employee tenure = 15 years.
- Recently expanded 16,000ft² which created 20 new jobs.
- Increased capacity for large Heavy Duty Magnets, more light duty production and new 1,400ft² R&D Lab.
- Acquired  Prater Industries and  Sterling Systems and Controls 4 years ago.





IMI Facility Expansion





Industries Related to IAOM

Free Flow Products

- | | | |
|------------------|--------------------|--------------------|
| • Aspirin Powder | • Ground Pepper | • Salt |
| • Barley | • Ice Crystals | • Sand, Silica |
| • Bone Meal | • Lime, Hydrated | • Seeds, Bird |
| • Carbon Black | • METHOCEL® | • Seeds, Celery |
| • Coffee Beans | • Nylon Pellets | • Seeds, Mustard |
| • Coffee Grounds | • Oats | • Seeds, Popcorn |
| • Corn Gluten | • Oxide, Magnesium | • Seeds, Sunflower |
| • Crumb Rubber | • Oxide, Zinc | • Sugar, Granular |
| • Cullet | • Paper Pulp | • Tobacco Grounds |
| • Flour | • Plastic Pellets | • Wheat Hulls |
| • Fertilizers | • Resins | • Whey Powder |
| • Garlic Powder | • Rice | • Whole Grains |
| • Graphite | • Roofing Granules | |

Liquid Products

- | | | |
|-------------|------------------|---------|
| • Chocolate | • Oil | • Soups |
| • Coolants | • Oil, Vegetable | • Syrup |
| • Fruits | • Paper Slurry | • Water |
| • Fuels | • Peanut Butter | |
| • Jellies | • Pudding | |

Difficult Flow Products

- | | | |
|---------------------|-------------------|--------------------|
| • Calcium Carbonate | • Hard Flour | • Powdered Sugar |
| • Calcium Phosphate | • Meal Bone | • Spice (some) |
| • Cheese Powder | • Meal Corn | • Stucco |
| • Clay | • Meal Fish | • Tabular Alumina |
| • Cocoa | • Meal, Poultry | • Talcum Powder |
| • Cornstarch | • Meal, Soybean | • TiO ₂ |
| • Dextrose | • Pet Food | • Vinyl Powder |
| • Gypsum | • Plastic Regrind | |



The Purpose of Our Products

- Equipment protection/Downtime prevention
- Product purification
- Injury prevention/Safety
- Energy savings – Most of our magnets do not require outside power.
 - Permanent magnets lose strength at a rate of $\frac{1}{2}$ of 1% every 100 years.



Western District Coverage



REGIONAL MANAGER - COVERAGE AREA

- 1 – **Bob Washburn** - 231.348.7801
Michigan & Ontario - Canada
- 2 – **Collins McGeorge** - Director of Sales - 231.348.7802
Connecticut, Delaware, District of Columbia, Kentucky, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia & West Virginia
- 3 – **Joe Skafar** - 231.348.7803
Illinois, Indiana & Wisconsin
- 4 – **Brian Hater** - 231.348.7804
Alaska, California, Hawaii, Idaho, Montana, Nevada, Oregon, Utah & Washington
- 7 – **Chris Stephens** - 231.348.7807
Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina & Tennessee
- 8 – **Mike Sickendick** - Director of Corporate / OEM Accounts - 231.348.7808
Colorado, Iowa, Kansas, Minnesota, Missouri, North Dakota, Nebraska, South Dakota & Wyoming
- 9 – **Kyle Fritz** - 231.348.7809
Arizona, Arkansas, Louisiana, New Mexico, Oklahoma, Texas & Mexico
- 11 – **IMI Direct** - 231.582.3100
International (Except Mexico & Ontario - Canada)



- Kyle Fritz for AZ





What We'll Discuss

- Please feel free to comment or ask questions as we go.
- IMI staying ahead of the curve.
- Magnet terminology.
- How magnetic circuits work
- Not going to bore you with magnetic separation principals. That's old news.
- Where magnets have come in the last 10 years.
- The future of magnets in the industry.
- HACCP, FSMA, SQF, FDA & USDA Compliance.
- Magnets and plant audits.
- Preventative Maintenance.
- Solutions.





Magnet Terminology

Gauss: Flux density. A measurement of the amount of magnetic flux in one square centimeter.

MgOe – Mega Gauss Oersteds. Magnetic capacity number. Unit of measure typically used in stating the maximum magnetic energy a piece of material can hold.

Magnetic Circuit (not electric): A certain combination of magnet material and ferromagnetic pole pieces.

Reach Out: The distance a magnet can effectively pull a given piece of steel to its face (measured in distance from magnetic poles).

Air Gap: Any non-ferrous material or space between the magnetic pole surface(s) and the steel which it needs to attract or hold. An increase in air gap results in a decrease in the holding value of the magnetic circuit.

Burden Depth: The depth of product the magnet has to pull through to extract metal contaminants.



Permanent Magnet Strength - MgOe

- MgOe stands for Mega Gauss Oersteds and indicates how much energy a piece of magnet material can supply to a circuit
- The higher the MgOe the stronger the magnet material
- IMI standard is 52 MgOe. This is the highest available for production purposes. 55 MgOe on the way.
- High heat options are available as well, up to 572°F; however high heat material is not quite as strong.





Magnetic Circuits

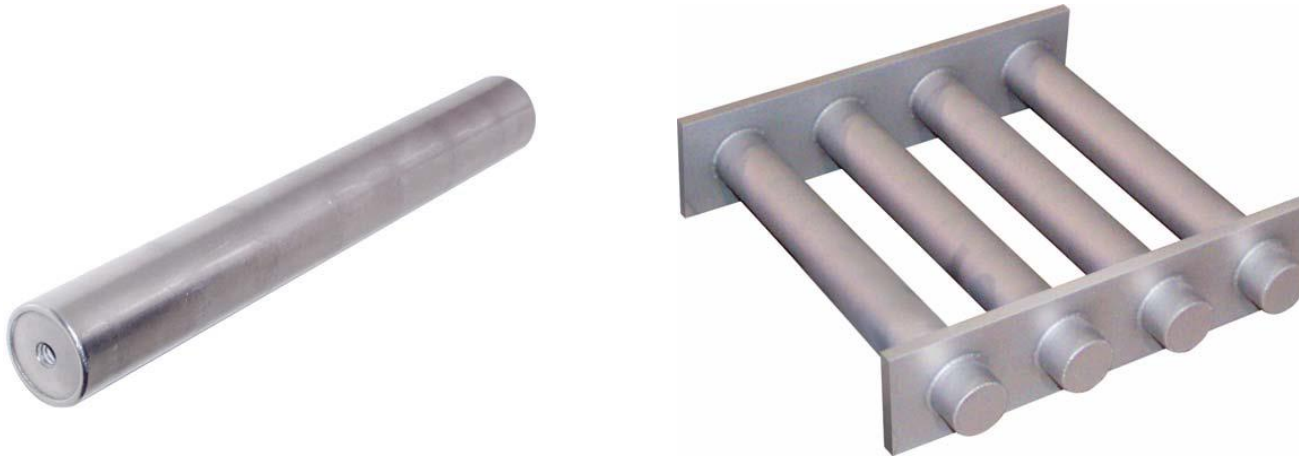
- Permanent magnet circuit.





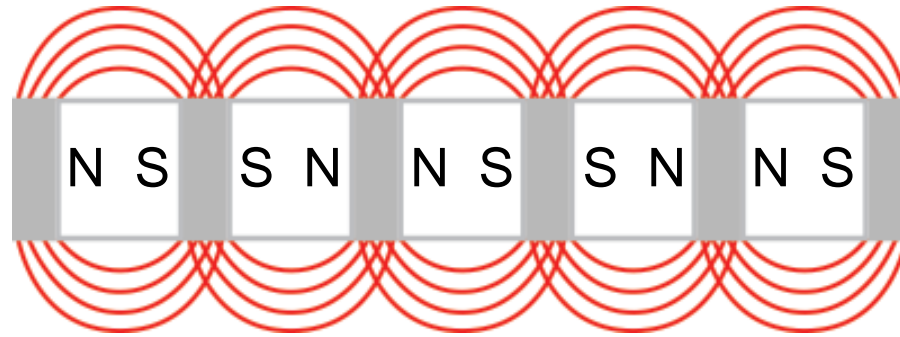
Magnetic Circuits

- Magnetic Grate Tube. What's inside?





Grate Tube Guts



Magnetic Strength

Gauss vs. Pull Test - GAME OVER

- Gauss (flux density) – Difficult to measure accurately outside of a lab.
- Pull Test (lbs.) – Simple, accurate and repeatable field test.
- High surface gauss does not necessarily make a more effective magnetic tube.
- Ø1" - 12,000 and 14lbs vs. 10,600 and 17lbs pull.
- Ø3" – 11,500-12,000 and 23-24lb pull.



Compliance

- HACCP, FSMA, SQF, FDA & USDA.
 - Compliance.
 - Fitting the magnets into your plan and documenting.
 - Magnets can be CCP's, but CP is preferred.
 - New IMI designs approved by USDA.
- New Compliance Engineer.
 - Main focus in the food industry.
- Partnered with HACCP International
 - Redefining the standards.



On Site Audits, PM and Service



- Independent 3rd party auditing keeps your facility in compliance with regulatory requirements.
- Visual inspection of magnet(s). Check for excessive wear.
- Onsite repairs, upgrades and more all performed by a qualified Technician.
- Cycle through mechanical steps to ensure motors, belting, cylinders, guide rods, etc. are in proper working order.
- Technician performs and documents pull tests.
- Technician can train your maintenance staff to ensure maximum effectiveness and longevity of magnet.



IMI Service Tech



- 30 hour OSHA General Industry Standards Certificate.
- 20+ years experience fabricating, welding and building magnetic assemblies at IMI.
- Certified Occupational Health and Safety Officer.
- Hazardous Material Responder- Operations Level.
- Certified Michigan Fire Instructor.
- Certified Fire Officer III.
- Certified Michigan Fire Fighter II.
- Certified Michigan EMT.
- Variety of Certification via State of Michigan DELAG and FEMA.



Regional Coverage



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Audits & Inspections

- Magnet Health

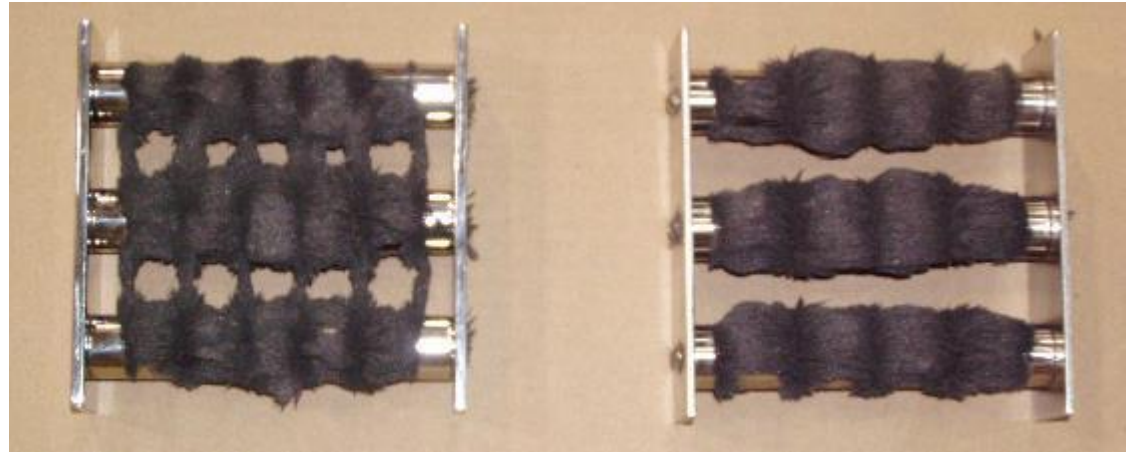




Is it the right equipment for the application?



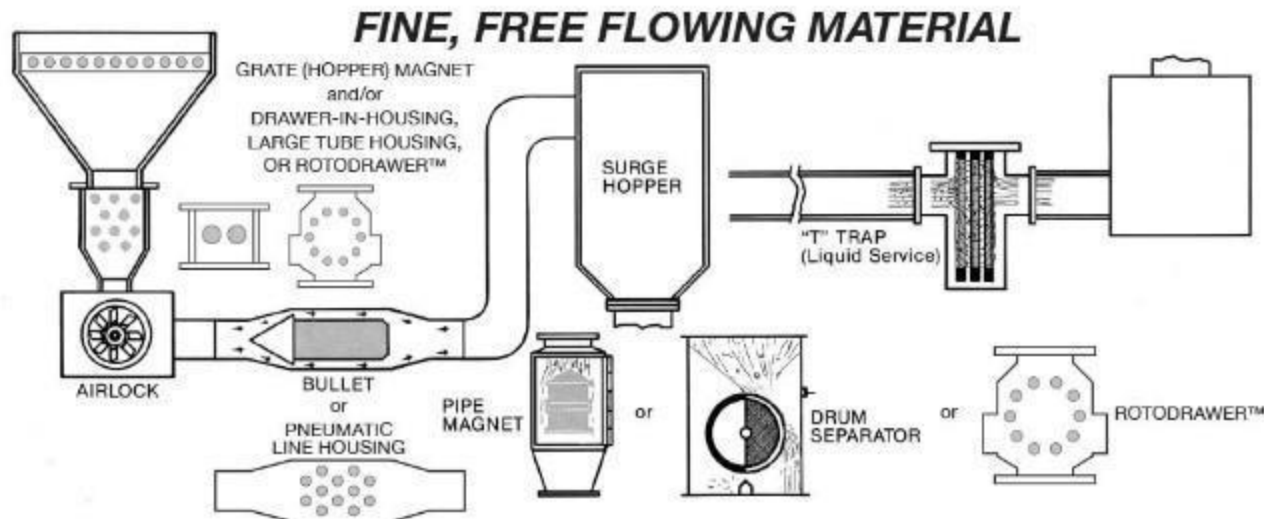
PM, Cleaning Schedule & Circuit Analysis



PM and Cleaning Schedule



Magnet Location & Selection



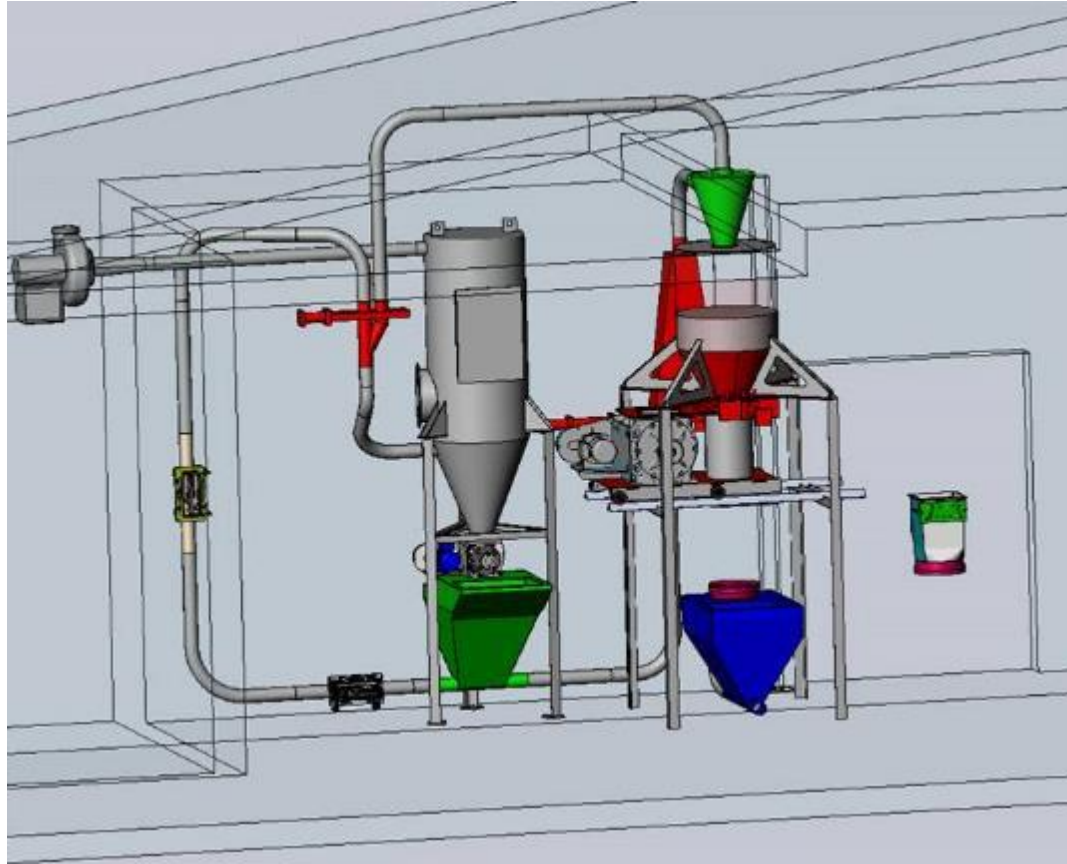
R&D Lab & Test Facility





Test Facility – Simulation

- Pneumatic conveying with magnets vertical or horizontal. Hopper for material, filter receiver to convey, and air lock for continuous test loops.
- Gravity feed using the pneumatic convey system for loading material from ground level to upper hopper.
- Air lock for metered flow, slide gate for flood loading, **glass sided housing** for 1" and 3" tube testing, various tube layout drawers.





Custom Solutions

- 95% of the magnets we build in this industry are customized in some way.



Fully Automated 8 Row Housing



- In service since 2002.
- 4 Drawer with 8 rows of magnets.
- PLC Integration.
- Has been upgrade to OX™ drawers.
- Semiannual drawer audits/repair by our in-house tech. All pull testing is on file at and IMI.



What does this all lead to?

- Compliance, compliance, compliance!
- We can help!





Questions?





Contact Info



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Map: [Regional Coverage](#)

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IMI Holdings

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