

# Process Solutions for Pneumatic Conveying, Injection & Dust Collection



Featuring Mac Process Technology, Design, In-House Manufacturing,  
Installation & Start-Up Supervision that Promotes High Performance  
& Energy Efficiencies

# Mac Process Does It All.

**From on-site surveys to design, build and installation.**

You'll enjoy single source responsibility for everything from material testing to system design, manufacturing, installation, and start-up supervision on both your conveying and dust collection systems. All major system components are produced by Mac Process, so you can have the peace of mind that you are receiving the quality you expect.

## **Global Network**

Mac Process Inc. , a member of the Schenck Process Group has an extensive representative network in North America consisting of 21 agencies, multiple dealers and 10 Field Service Technicians. Our large network allows us to respond quickly to your needs, minimizing delivery times and dispatching our field-service technicians wherever on-site service or system evaluation is required.

With a network of 32 locations with multiple offices, over 130 territorial agencies around the globe and 22 state-of-the-art assembly facilities Mac Process under the Schenck Process GmbH umbrella, has a global infrastructure capable of delivering solutions on a supply only or turnkey basis, utilizing local supply chains and ensuring that they remain competitive and easily accessible to customers irrespective of their location globally.

## **Members of the Schenck Process Group are:**



# Mac Process State-Of-The-Art TestCenter

Testing Provides the Best Solutions Before Final Investment Decisions are Made



## Kansas City, Missouri Pneumatic TestCenter

The Kansas City, Missouri Pneumatic TestCenter features both carbon steel and stainless steel piping ranging from 125 ft. to 975 ft. in length. Ledge free couplings are used throughout the system for testing products with breakage concerns. Sightglasses provide visual observation of the conveying techniques. The lab is centrally located a few miles from Kansas City's International Airport.

- ❖ Small Sample Testing
- ❖ Pressure Dilute Phase
- ❖ Vacuum Dilute Phase
- ❖ Continuous Dense Phase
- ❖ Vacuum Dense Phase
- ❖ Vessel Dense Phase
- ❖ Low Pressure Continuous Dense Phase
- ❖ Eductor
- ❖ Loss-In-Weight Feeding

## Sabetha, Kansas Filtration TestCenter

Our Sabetha, Kansas Filtration TestCenter features a Particle Emissions Test (PET) machine, which is unequalled in the filtration industry. The machine allows Mac Process to design and specify the best system for your specific application. The Particle Emissions Test equipment records and graphs air flow and velocity, air-to-cloth ratios, pressure differentials, inlet loading and outlet mass emissions.

- ❖ High Pressure Pulse Jet Bags & Cartridges
- ❖ Medium Pressure Cleaning Bags & Cartridges
- ❖ Horizontal Cartridges
- ❖ SEntry Cartridges
- ❖ SpaceSaver Cartridges
- ❖ Cyclone Efficiency Testing
- ❖ Small Scale Bench Testing
- ❖ Particle Size Analysis (PSA)



# Dilute Phase

When Dependability Is A Must



Dilute phase pneumatic conveying systems operate on the principle that the solids will be suspended in the conveying line air stream. This is accomplished by metering product into a moving air stream.

## **Types of Dilute Phase:**

- ❖ Dilute Phase Pressure
- ❖ Dilute Phase Vacuum

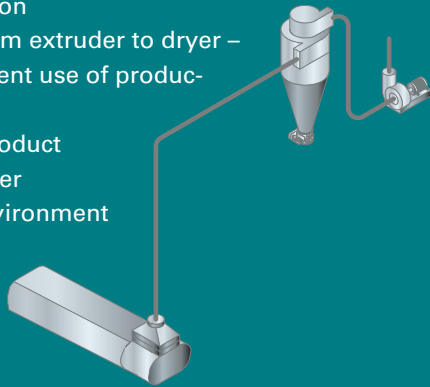
## **Commonly Conveyed Products:**

- ❖ Flours & Sugars
- ❖ Resins & Compounds
- ❖ Specialty Chemicals
- ❖ Granular & Pelletized Products
- ❖ Pet Foods

## Negative Airlift

Mac Process's Negative Airlift beats belt conveying seven ways:

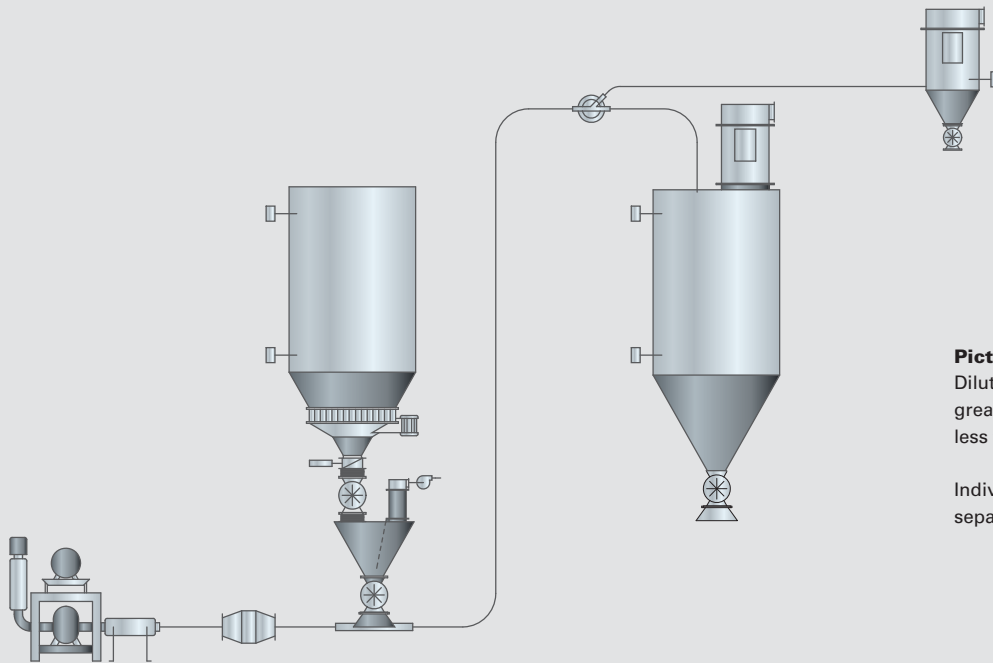
- ❖ Highest efficiency cyclone
- ❖ Lower maintenance requirements
- ❖ Lower microbial count
- ❖ Better product expansion
- ❖ More direct routing from extruder to dryer – resulting in more efficient use of production space
- ❖ Partial pre-drying of product during transport to dryer
- ❖ Cleaner, drier plant environment



## Turbo Blower

The Turbo Blower is an energy efficient alternative to the PD Pump providing a simple solution for manufacturers needing to reduce energy usage.

- ❖ Uses 25-40% less energy than a PD Pump
- ❖ Can be fitted into existing PD Pump packages
- ❖ Small footprint
- ❖ Operates at higher pressure than PD Pump
- ❖ Available with mechanical or electronic controls



### **Pictured: Pressure Dilute Phase Flow**

Dilute phase conveying velocities typically are greater than 3500 FPM and material to air ratios are less than 12 to 1.

Individual particles in the air stream will have some separation by their suspension in the air stream.

## Mixing & Dosing

Each ingredient station has a precision scale that provides accuracy suited to virtually any ingredient application. Parallel weighing adds speed to enhance plant productivity.

- ❖ Modular flexibility lets you add stations as your needs change
- ❖ Fast parallel weighing boosts productivity
- ❖ Easy access to components for cleaning
- ❖ Fully integrated controls



## Moduload

The Moduload, modular hopper loader is the vacuum vessel used to collect the conveyed product and separate the air from the product mixture.

- ❖ Modular construction for quick and simple adaptation to changing process needs
- ❖ Easy clean
- ❖ Fluidization for cohesive powders
- ❖ Can be added or adapted to any negative pressure system



# Dense Phase Conveying Redefined



## Types of Dense Phase:

- ❖ Vacuum Dense Phase
- ❖ Batch Dense Phase
- ❖ Continuous Dense Phase (CDP™)
- ❖ Low Pressure Continuous Dense Phase (E-finity™)

## Commonly conveyed products using Dense Phase Technology:

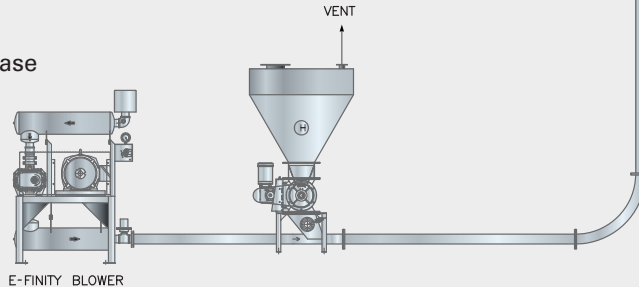
- ❖ Sugar
- ❖ Pet Food
- ❖ Coffee
- ❖ Pasta
- ❖ Carbon Black
- ❖ Plastic Pellets
- ❖ Detergents
- ❖ Fly Ash
- ❖ Sand
- ❖ Cement
- ❖ Cereals & Fragile Grains
- ❖ Nuts
- ❖ Abrasives

## E-finity™

### The Most Energy Efficient Continuous Dense Phase Technology Available on the Market

E-finity™ is a low breakage, energy efficient continuous dense phase pneumatic conveying system.

- ❖ Improves sanitary conditions and housekeeping
- ❖ Produces the lowest degradation available
- ❖ Allows for greater system flexibility
- ❖ Reduces plant footprint
- ❖ Lowest horsepower of any dense phase pneumatic system



## E-finity™

The blower air source can be located nearly anywhere in the plant

Multiple E-finity™ systems can be operated from a single blower air source

## Heavy Duty Dense Phase



### Spheri Valve

- ❖ Handles abrasive, cohesive, fine and dry products with ease
- ❖ Capable of returning over 1 million maintenance free cycles



### RotoFeed

- ❖ Accurately injects dry solids into processes
- ❖ Different configurations are available for batch or continuous delivery to one or multiple injection points



### DensePhase PD Pump

- ❖ Developed for maximum economy
- ❖ Highly efficient conveying allows rates of up to 75 t/hr over conveying distances of 3,000 ft or more
- ❖ Particularly suitable for transfer of dry, fluidizable materials

## Mac Process's Continuous Dense Phase Technology offers the following benefits:

- ❖ Lowest product breakage/degradation
- ❖ Ability to operate multiple systems off of a single air source
- ❖ Continuous operation allows use with other continuous processing
- ❖ Reduced control pressure resulting in optimum energy savings
- ❖ Simplified air controls for ease of operation
- ❖ Comprised of Mac Process manufactured components
- ❖ Available with either vacuum or pressure modulation options

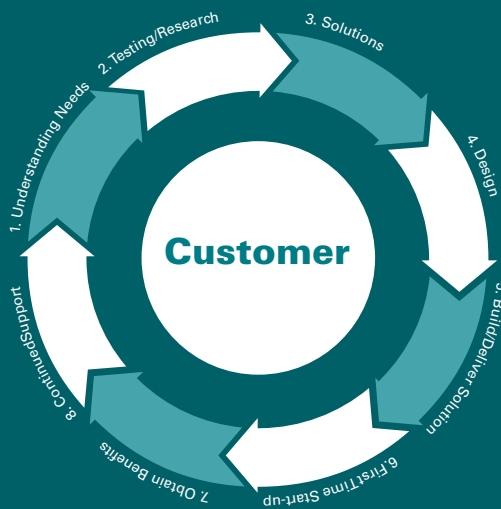
## Vacuum Dense Phase

Vacuum Modulating Air Control is the newest generation of vacuum dense phase conveying available on the market.

VMAC uses specially designed modulating air controls that automatically correct feed conditions based on vacuum levels to insure the system is properly loaded and that the benefits of dense phase are realized.



# Mac Process Project Management



Whether we're doing a simple engineering study or a complete design-build project, we think and plan like your business partner.

At Mac Process, everything we do is centered around the customer satisfaction. We seek to follow a customer focused eight step process that allows our experienced project managers and their teams of engineers to design the most efficient, cost effective system to meet your operational requirements on budget and on time.

## Understanding Needs

Every project begins with your operation, your conditions, your application and your unique needs. We seek to understand the issues and problems that you are facing.

## Testing/Research

Our TestCenter allow us to develop the best innovative solution that will solve any conveying or filtration challenge. In addition to our TestCenter, our database that contains thousands of records, can quickly cross-reference previously handled materials instantaneously identifying a pneumatic or air filtration solutions which has already been used to handle the same material characteristics.

## Solution

During this stage, Mac Process discusses the testing and research analysis and outcomes with you. From this, we submit a quote that will meet your exact needs.

## Design

Mac will discuss the proposal in greater detail with you in terms of initial and ongoing costs, energy consumption, delivery dates, project timetables and deadlines before agreeing and proceeding to the next step.

## Build/Deliver Solution

No matter where you are located in the world, Mac has a global network to engineer, project manage and deliver a solution.

## First Time Start-up

Our rapid start-ups with onsite engineers enable you to quickly get your system up and running.

## Obtain Benefits

Our rapid startup allows you to realize maximum productivity with minimal disruption immediately at the time of implementation.

## Customer Support

Our knowledgeable Service Center personnel are available 24/7 to assist you with ongoing support after implementation.

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## Enhanced Process Controls for Product Consistency and Quality

Put Mac Process to work on your process control project and you'll get everything you need from a single source. Our control systems are all Mac Process designed, programmed and built by our own people in our own facilities. If there's a problem, we fix it. No hedging. No delays to determine who's responsible.



### No Black Boxes

It is important you have access to the programs that run your process. Mac Process provides fully-documented program files to allow you to maintain the system long-term. We will not hold you hostage by forcing you to hire us for future system modifications or expansions.

### Data and Process Integration to Plant Information Systems

These days it is not enough to have control and process data solely on the plant floor. Many companies are taking advantage of new networking and integration technologies to more tightly control process setpoint entry and gain better visibility of process performance. We have integrated our control systems with various plant-wide computer systems to make processes more efficient and consistent by reducing waste, improving finished product quality, and increasing throughput.

### Engineers Who Understand Process

The key to developing a control system is to understand the process being controlled. Mac Process's engineers are not only well-versed in control system hardware and software, but also understand the ins and outs of plant processes.

### Custom Solutions

Because most process systems are unique, Mac Process controls engineers incorporate standard hardware and software products to create a control system designed specifically for your process. Our engineers will design the system based around your standards and specifications. We have relationships and experience with many control system hardware and software vendors.

UL/CSA/CE Certified

# Mac Process Dust Collection Filters and Cyclones

Designed to Meet Any Challenge



Mac Process filters and cyclones can be used in a wide variety of air filtration applications. Depending on the configuration, they can be used as the filter in a dust collection system or as the product receiver in a pneumatic conveying system. Filters can also be equipped with a HEPA high efficiency filter on the clean air exhaust where the air is being reintroduced into the work environment. Contact Mac Process for all of your industrial filtration needs.

## **Reliable Filtration**

A full line of pulse jet filters is available. All models feature the same compressed air cleaning technology, reliable components and quality construction. Each model includes factory assembly and pre-wiring of the timer board and solenoid valves to ensure proper installation and operation.





### Medium Pressure Pulse Jet Filter

Designed for applications where compressed air is not available or unfavorable. Ideal for cold climates.

The MPJ:

- ❖ incorporates a self-contained PD blower
- ❖ uses no high pressure compressed air
- ❖ runs on medium pressure air
- ❖ requires less horsepower compared to traditional pulse jets
- ❖ available round or square
- ❖ available in either top or bottom bag removal styles



### AV-2 and AV-4 Filters

- ❖ feature compact square or rectangular designs
- ❖ available fitted with either two or four filters
- ❖ ideally suited for cleaning the air vented from rotary airlocks and surge hoppers or for venting small volumes of displaced air.



### RT Pulse Jet Filters

RT Filters are similar to the round AVR Filters, but they are configured for topside filter media replacement. The clean air plenums have hinged doors to facilitate access to the tube sheet and filter media.



### RTC-1 and RTC-3 Filters

These filters are compact units. Their round housings contain three cartridge-style filters. They are designed for low-capacity pneumatic conveying systems, such as vacuum loading extruders or refilling minor/micro hoppers.



### LST and RPT Pulse Jet Filters

LST and RPT Filters are similar to the AVS line but are designed for topside bag replacement.

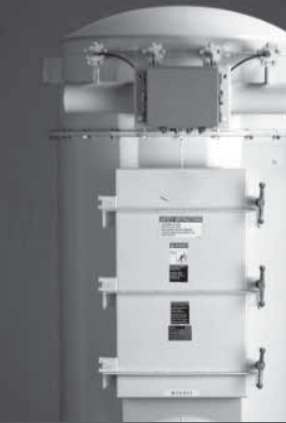
- ❖ walk-in clean air plenums
- ❖ hinged top doors for easy access to the tube sheet and filters



### Mac Process High-Efficiency (HE) Cyclone

Mac Process HE Cyclones are designed to separate product from an air stream. The collected product is discharged out of the bottom of the cyclone and the clean air is discharged through the top exhaust.

For increased airflows, the HE is available in one, two, three or four unit configurations.



### AVR Pulse Jet Filters

AVR Pulse Jet Filters are designed with:

- ❖ vacuum
- ❖ pressure
- ❖ combination vacuum/pressure

Configured with an optional receiver, the AVR is recommended for handling heavy dust loads and for applications in which the filter is used as a pneumatic receiver.



### Mac Process Ultra High-Efficiency (UHE) Cyclone

The Mac Process Ultra High-Efficiency Cyclone does not have bags, which results in all product being returned to the process. The Mac Process Ultra High-Efficiency Cyclone offers ultra high efficiency, up to 99.9% and it's performance is guaranteed. The Mac Process HE is a suitable replacement for many baghouses.



### AVS Pulse Jet Filters

AVS Filters have square housings and are ideally designed for use with storage tanks, work bins and similar applications. The square configuration is more economical than comparable round filters.

AVS Filters can also be customized for higher operating static pressures to meet specific application requirements.



### Want to restore your airlocks to peak performance?

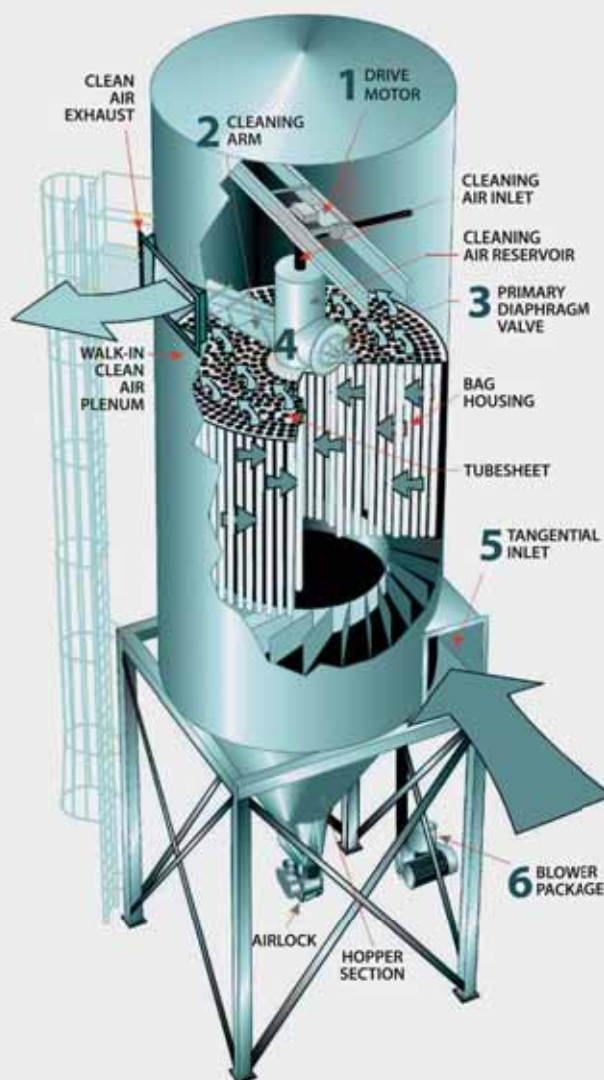
The skilled technicians in our Sabetha, KS facility will complete a full evaluation of your equipment. You will receive a detailed estimate, with a line by line description of what needs to be done and how much it will cost.

- ❖ Expert Service
- ❖ Experienced Personnel
- ❖ Factory Warranty
- ❖ Quotes in 24 Hours

Mac Process has been developing dust collection systems to meet regulations and enhance plant air quality since before the passage of the 1970 Clean Air Act. With an array of dust collectors that include cartridge, pulse jet, reverse air, HEPA, and medium-pressure controlled cleaning systems, we can solve virtually all industrial air pollution problems.

## Get Cost-Cutting Solutions For Your Air Quality Requirements

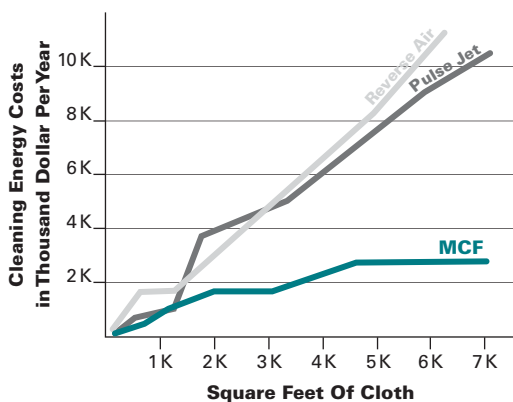
Medium-Pressure Controlled Cleaning (MCF) PowerSaver –  
Patented Technology, Groundbreaking Design – Patent #7,494,521



### No Plant Compressed Air Required

The MCF PowerSaver is designed specifically for the high air volume and heavy dust loading applications that are common to:

- ❖ board plants
- ❖ cement plants
- ❖ chemical plants
- ❖ furniture plants
- ❖ grain processing applications
- ❖ food processing applications
- ❖ mining



1. Main drive uses rugged electric motor
2. Cleaning arm directs air flow
3. Diaphragm valving assemblies minimize recovery time
4. Index assembly ensures reliable cleaning
5. Tangential Inlet controls heavy dust loads –  
Optional high-entry inlet controls light dusts
6. Medium-Pressure Blower Package saves energy



### The SpaceSaver™

Tired of replacing cartridges? Finally, something small that really works! The SpaceSaver™ is a perfect dust collector for those with limited space both from a footprint and overall height stand point. The small, compact size of this collector allows for it to fit into some very tight spaces.

- ❖ Smallest most compact size
- ❖ Superior cleaning mechanism
- ❖ Tool-free and easy to maintain
- ❖ Most robust cartridges
- ❖ No confined space entry
- ❖ Fewer cartridges than traditional collectors



### Explosion Protection for all Dust Collectors

Mac Process wants to help our dust collector customers meet their obligations under the new Occupational Safety and Health Administration (OSHA) requirements.

Once you supply Mac Process with the Kst and Pmax test values for the material that will be introduced into the Mac Process dust collector, we will calculate the vent area required according to NFPA 654 and will send you a copy of our calculations.

### MAC2Flo & MAC2Flo Mini

Don't be Fooled by Imitators

The MAC2Flo is designed to capture and remove very fine and light airborne nuisance dusts.

#### The Standard MAC2Flo provides:

- ❖ Modular design
- ❖ Tool-free cartridge removal
- ❖ Reduced compressed air requirements
- ❖ Interchangeable components
- ❖ Wide selection of media
- ❖ No confined space

#### The MAC2Flo Mini provides:

- ❖ Tool-free cartridge Removal
- ❖ Reduced setup time
- ❖ Reduced compressed air requirements
- ❖ Interchangeable components
- ❖ No confined space
- ❖ Even air distribution
- ❖ Compact design
- ❖ Ships in 48 hours



### Central Vacuum System

High-Performance Central Vacuum Capability

- ❖ Multi user or single user application
- ❖ Self cleaning separator
- ❖ Broad range of tools & accessories



### SEntry Side Entry For Low Headroom

- ❖ Ideally suited for pressure or vacuum applications
- ❖ Available in SS, aluminum or carbon steel construction
- ❖ Easy tool-free cartridge removal
- ❖ Clean side access
- ❖ No confined space entry

The shorter SEntry uses a sanitary envelope style cartridges that do not allow for dust accumulation on top of the cartridge.





Process  
Advanced  
Service  
System

# PASS

## The right solution for your requirements.

Customized to meet your filtration requirements, our comprehensive **Process Advanced Service System** provides you with the best service.

Are you looking for individual, perfect-fit service solutions? Then our modular service system PASS is the ticket:

- ❖ Choose from a range of service products
- ❖ Benefit from the continuous development of our service modules
- ❖ We will customize our standard modules to meet your exact requirements
- ❖ Enjoy maximum flexibility and security

Our modular concept covers the entire service spectrum, from simple inspections through to full service.

Interested? Then find out more about the individual components! For more information on PASS, contact us at 1-800-821-2476.

**Our PASS service levels provide the following:**

### **PASS** Full Service

- ❖ Optimization of installation availability
- ❖ Calculable costs
- ❖ Increased process efficiency

### **PASS** Repair

- ❖ Downtime minimisation
- ❖ Short response times
- ❖ Avoidance of high downtime costs

### **PASS** Check

- ❖ Increased operational reliability
- ❖ Extended service life
- ❖ Maintenance of value

### **PASS** Basic

- ❖ Reliable assembly
- ❖ Needs-oriented training
- ❖ Supply of high-quality spare parts

## Baghouse Services

Ask about our special Baghouse Services PASS program



### Leak Free. Mechanically Correct. Guaranteed!

- ◆ Initial Analysis / Continuous Compliance Inspection
- ◆ Baghouse Repair & Upgrades
- ◆ Ongoing / Periodic Scheduled Maintenance

### Benefits of Mac Process's Baghouse Services Program

- ◆ Extended life of bags
- ◆ Lower emissions
- ◆ Reduced downtime
- ◆ Reduced in-house maintenance costs
- ◆ Improved plant sanitation and employee satisfaction
- ◆ Minimized plant liability
- ◆ Reduced operational costs
- ◆ Reduced spare parts inventory

## The Mac Process Service Center

Get the Support You Need When You Need It!

24 Hours / 7 Days A Week



### Airlocks

Cast or Fabricated Rotary Valves, Available in Aluminum, Carbon & Stainless Steel. High & Low Pressure Design. Round or Square Flanged Openings. Side Door Inspection.



### Central Vac

Vacuum Tubing & Fittings. Vacuum Tools & Accessories.



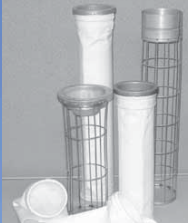
### Level Indicators

Electronic Mechanical, also Dry Material Flow Switch (Broken Bag Detector) for Dust Collectors & Bulk Dry Material Systems.



### Valves

Butterfly Valves, Knife Gates & Slide Gates for Dry Bulk Material Handling, also Diaphragm Valves & Solenoid Valves.



### Baghouse Parts

Parts for Bin Vents, Filter Receivers & Vacuum Receivers. Most common parts include: Filter Bags, Cages, Cartridges, Clamps, Venturies, Gaskets & Explosion Panels.



### Diverter Valves

Scale Valves, Plug Style Diverter, Flapper Style Air Diverter, Gravity Flow Diverter.



### Line Components

**Couplings:**  
Cam & Groove, Compression, Quick-on, Repair, Booth & a Variety of Specialty Couplings.

**Convey Elbows:**  
Long & Short Radius. Available in Aluminum, Stainless Steel, Carbon & Galvanized.

**Hose:**  
Standard & Food Grade, Rubber, Plastic Anti-Static & Stainless Steel or Galvanized Steel.



### Bin Vents & Filter Receivers

Top Loading & Bottom Loading, Side Entry, in Aluminum, Carbon & Stainless Steel.



### Fans

Straight Blade, Material Handling, Backwardly Inclined, High Static Pressure, Centrifugal, Abrasion Resistant.



### Pipe & Tubing

Carbon Steel, Aluminum, Stainless Steel, Galvanized. Available Flo-lined, Straight, or Spiral Grooved.



### Blowers

Pressure & Vacuum, Positive Displacement & Regenerative Blowers for Dilute Phase Conveying and a Complete Line of Blower Packages.



### Gauges

Magnehelic, Photohelic, Pressure & Vacuum Gauges.



### Semco

Airlock Valves, Couplings, Ells, Tees, Diverter Valves, Impactors... and More. Made in USA

We've Got the Answer.

**1-800-821-2476**

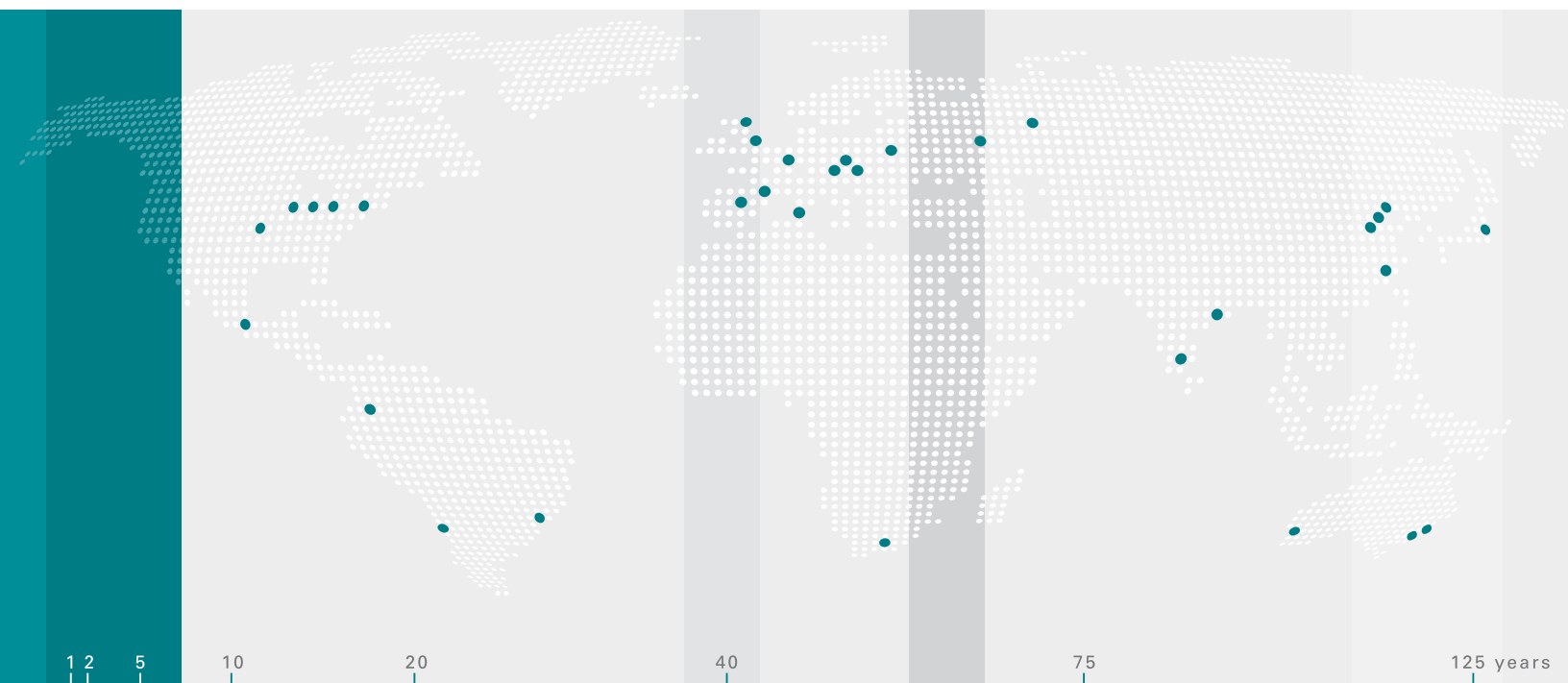
Call today and request a free product catalog!

weighing

feeding

measuring

automation



The Schenck Process Group is the global market leader of solutions in measuring and process technologies in industrial weighing, feeding, measuring and automation.

The Schenck Process Group develops, manufactures and markets a full range of solutions, products and turnkey systems on the basis of combining process engineering expertise, reliable components and field-proven technology.

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we make processes work