



- » Pneumatic Conveying
- » Weighing
- » Feeding
- » Milling
- » Screening
- » Extrusion
- » Mixing
- » Depositing
- » Cooking

# Integrated Bulk Material Handling Technologies for Food Processes







# Excellence in food technology

**Weighing, feeding, milling, sifting, mixing, screening, depositing, cooking, pneumatic conveying, and air filtration for the food industry from Schenck Process**

We have the right weighing, feeding, milling, sifting, mixing, screening, depositing, cooking, pneumatic conveying and air filtration for even your most challenging food processing applications.

The combination of knowledge, field proven technology and many years of experience enables Schenck Process to offer customers within the food industry tailor-made solutions in sanitary design and for explosion protection our air filtration systems deliver proven results.

**Embracing international standards:**

- » USDA (3-A USDA)
- » FDA
- » EHEDG Recommendations
- » DIN-EN Standards
- » EU Machinery Directive
- » NFPA
- » UL



**Schenck Process delivers custom-designed and engineered solutions for the following applications:**

- » Grinding of powders and granules
- » Separate and de-dust dry, powdered and granular products
- » Starch free depositing of sugar and sugar-free confectionery
- » Complete cooking from flexible small batch systems to fully automated high output lines
- » Low pressure continuous dense and dilute phase handling systems
- » Plant controls systems
- » Dust collection
- » Sifting, storage and mixer transfer systems
- » Ingredient unloading, cleaning and storage systems
- » Liquid storage, scaling and transfer systems
- » Dry ingredient convey systems
- » Trim and reclaim transfer systems
- » Batch and continuous feeding systems

# Project management

At Schenck Process, everything we do is centered on customer satisfaction. We strive to make your equipment and systems robust and efficient. Our project management teams become an extension of your business with a direct line of communication to the many resources within the Schenck Process global network. Your Schenck Process team will take command of the design/build process from the project kick-off all the way to process commissioning. From start to finish, our teams are dedicated to meeting your business goals.

## Process Controls

Our Process Controls Group has been entrusted to control processes for some of the world's most recognizable brands. We've been building customized controls for over 40 years and our engineers have an intimate knowledge of industrial processing and production. Our in-depth experience provides field proven solutions.

We can custom design whole-plant or partial systems for new plants or integrate legacy control systems. We make everything from small independent panels to complex multi-processor and distributed I/O control systems. Interface with warehouse management, MES and ERP software systems provide a seamless transfer of data throughout a facility. The Schenck Process Controls Group forges long term relationships with customers to support large control system implementations, typically utilizing remote access tools allowing rapid resolution of issues or minor operational adjustments.

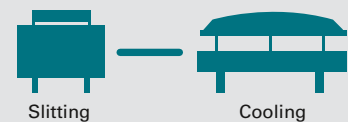
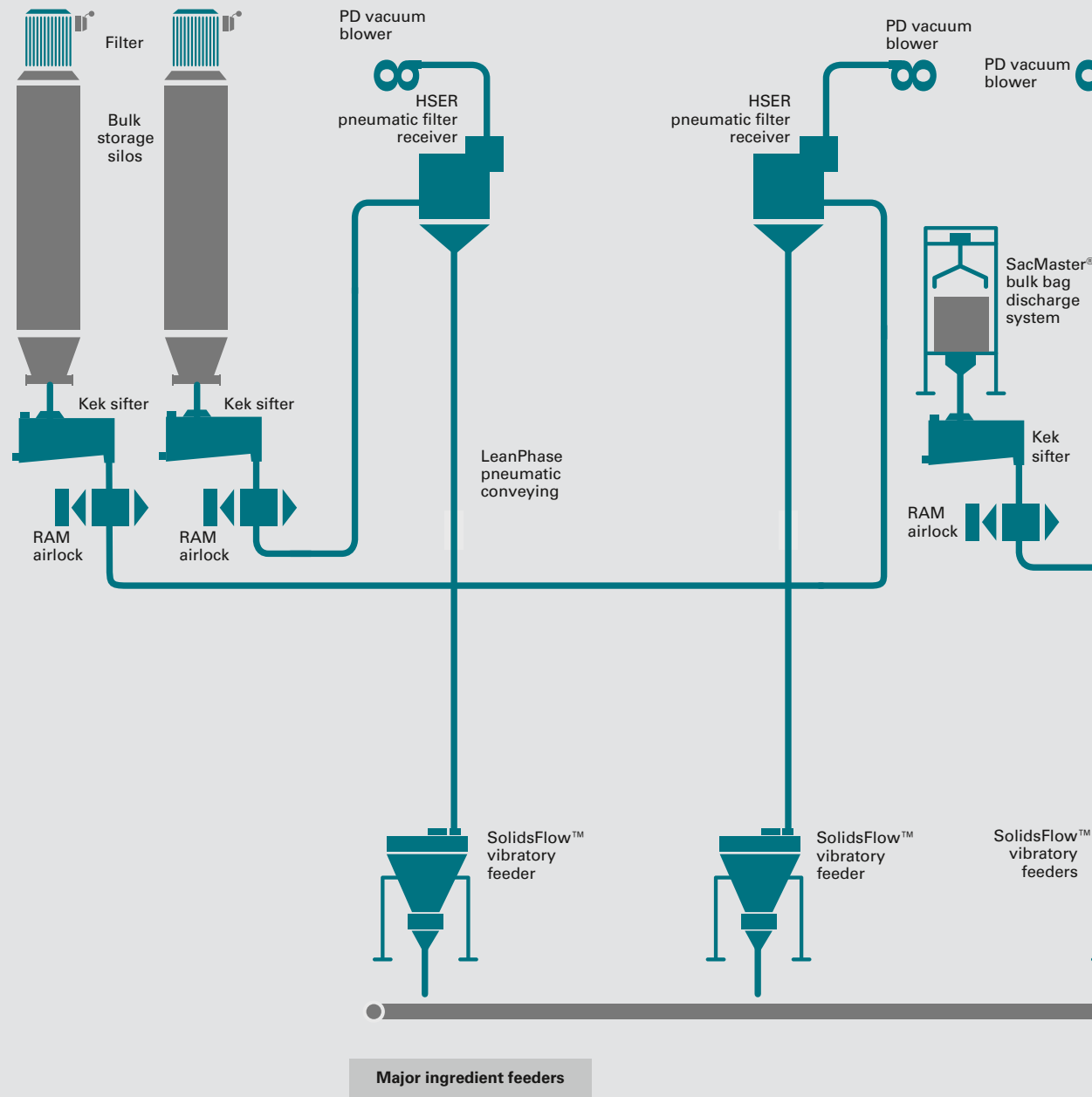
From analysis and planning, through equipment and control panel design, to testing and long-term service, our customers work with a single point of contact throughout the project.



# Food handling solutions

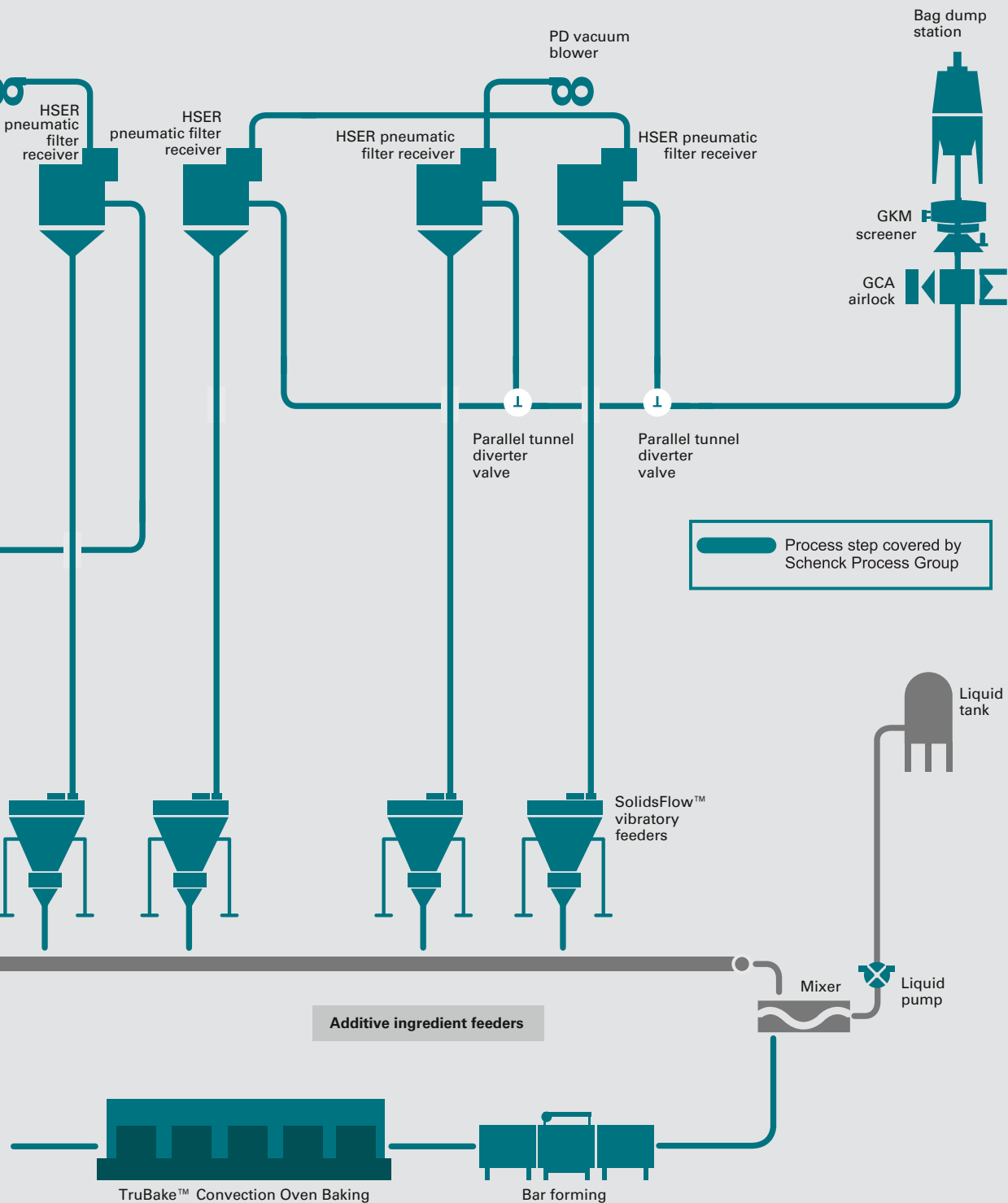
Whether we are conveying 300,000 lbs. of sugar or feeding small amounts of food additives, our experienced staff will work with you to select the most appropriate, cost-effective and energy efficient technology for your product. We deliver all types of pneumatic conveying technologies and have a complete selection of weighing, feeding, milling, sifting, mixing, screening, depositing, cooking, and air filtration solutions to solve your toughest bulk material handling challenges.

## Application example: Cereal Bar Manufacturing



Schenck Process delivers custom-designed and engineered solutions for the food industry that span the following:

- Grinding of powder and granules
- Separate and de-dust, dry powdered and granular products
- Starch free depositing of sugar and sugar-free confectionery
- Low pressure continuous dense and dilute phase handling systems
- Plant controls systems
- Dust collection
- Sifting, storage and mixer transfer systems
- Ingredient unloading, cleaning and storage systems
- Complete cooking from flexible small batch systems to fully automated high output lines
- Ingredient dry convey systems
- Batch and continuous feeding systems



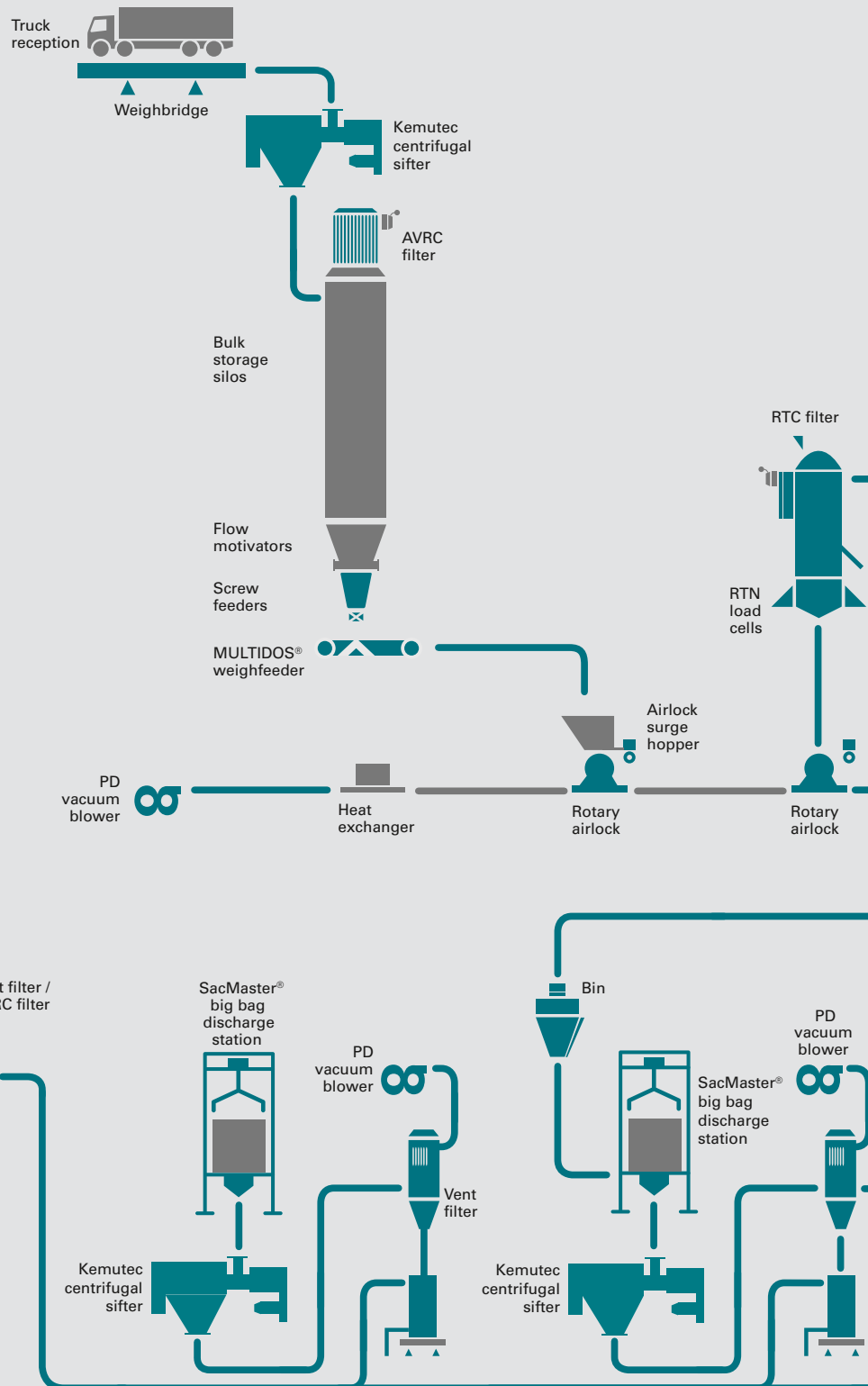
# Project management

At Schenck Process, everything we do is centered on customer satisfaction. We 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

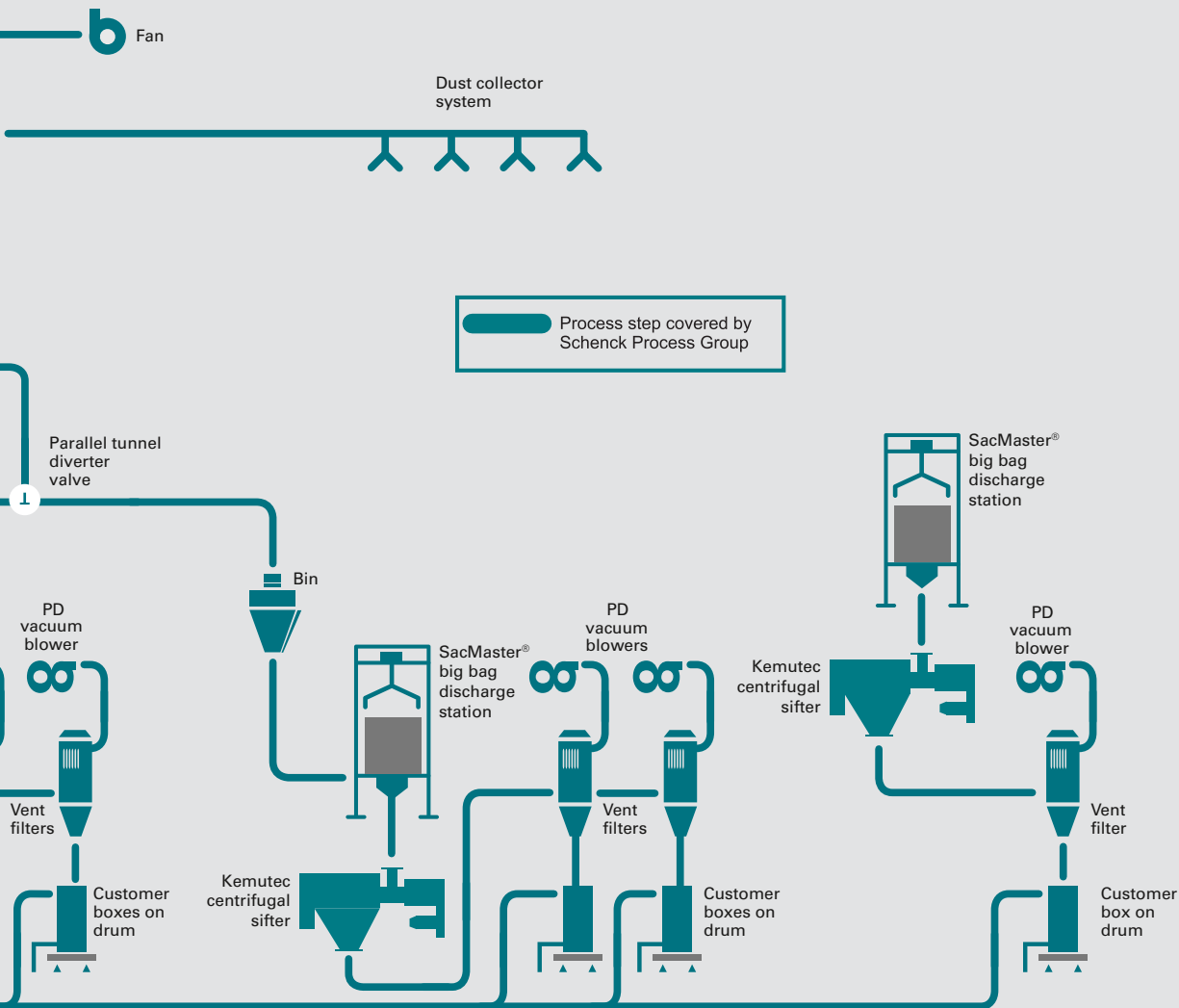
Every project begins with your operation, your conditions, your application and your unique needs. We seek to understand the issues and problems that you are facing.

## Application example: Sugar



## Testing / research

Our TestCenters allow us to develop the most innovative solution that will solve any conveying, sifting, milling, mixing, screening, air filtration, weighing or feeding challenge. In addition to our TestCenters, our database containing thousands of test records allows us to cross reference previously handled materials enabling quick identification of proven pneumatic conveying, sifting, milling, mixing, screening, air filtration, weighing and feeding solutions.

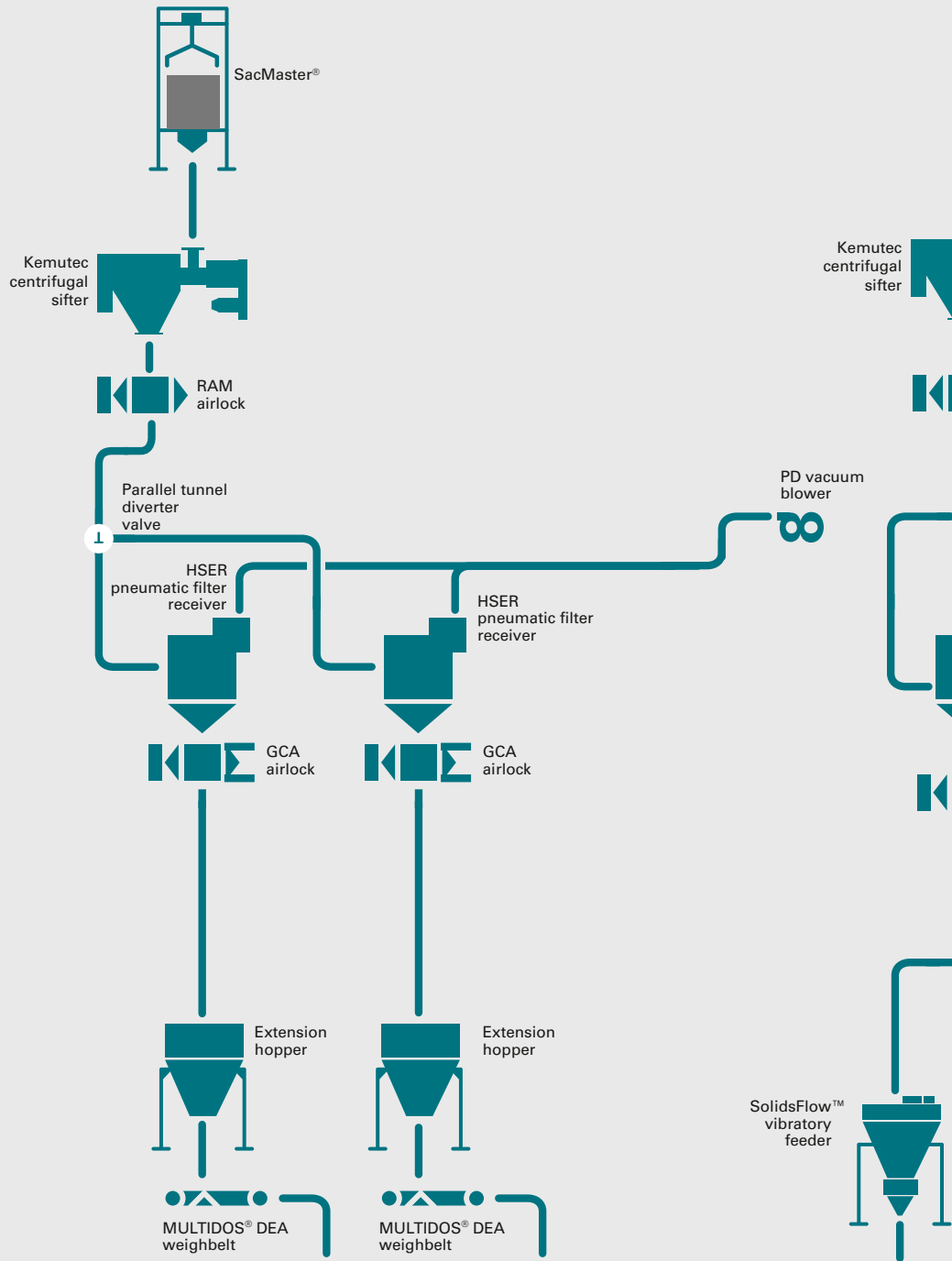


# Project management

## Solution

During this stage, we discuss the testing and research analysis with you. Using that information, a systems quote is prepared to meet your exact needs.

## Application example: Snack Coating



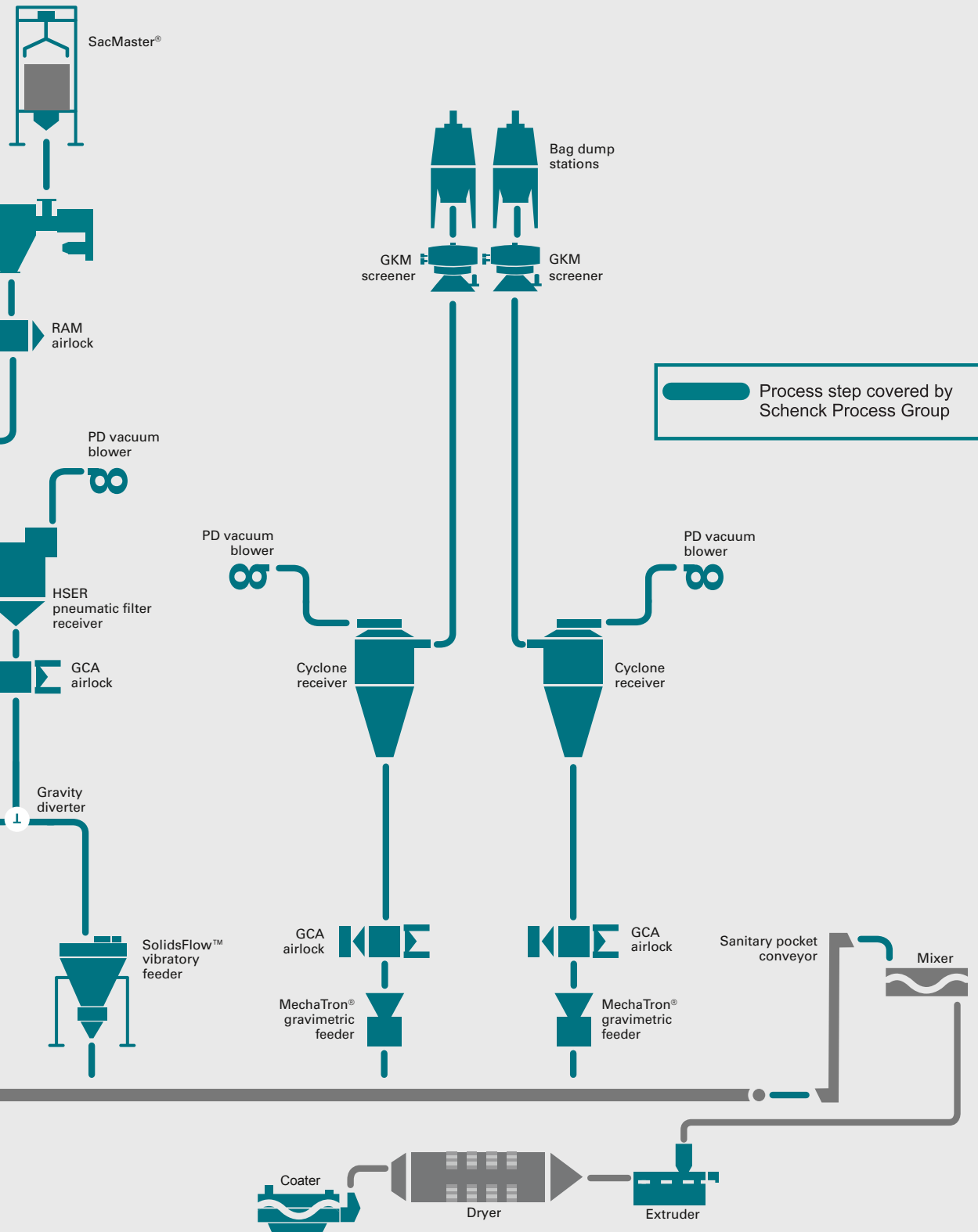


## Design

We 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, our global network allows us to engineer, project manage and deliver a solution.

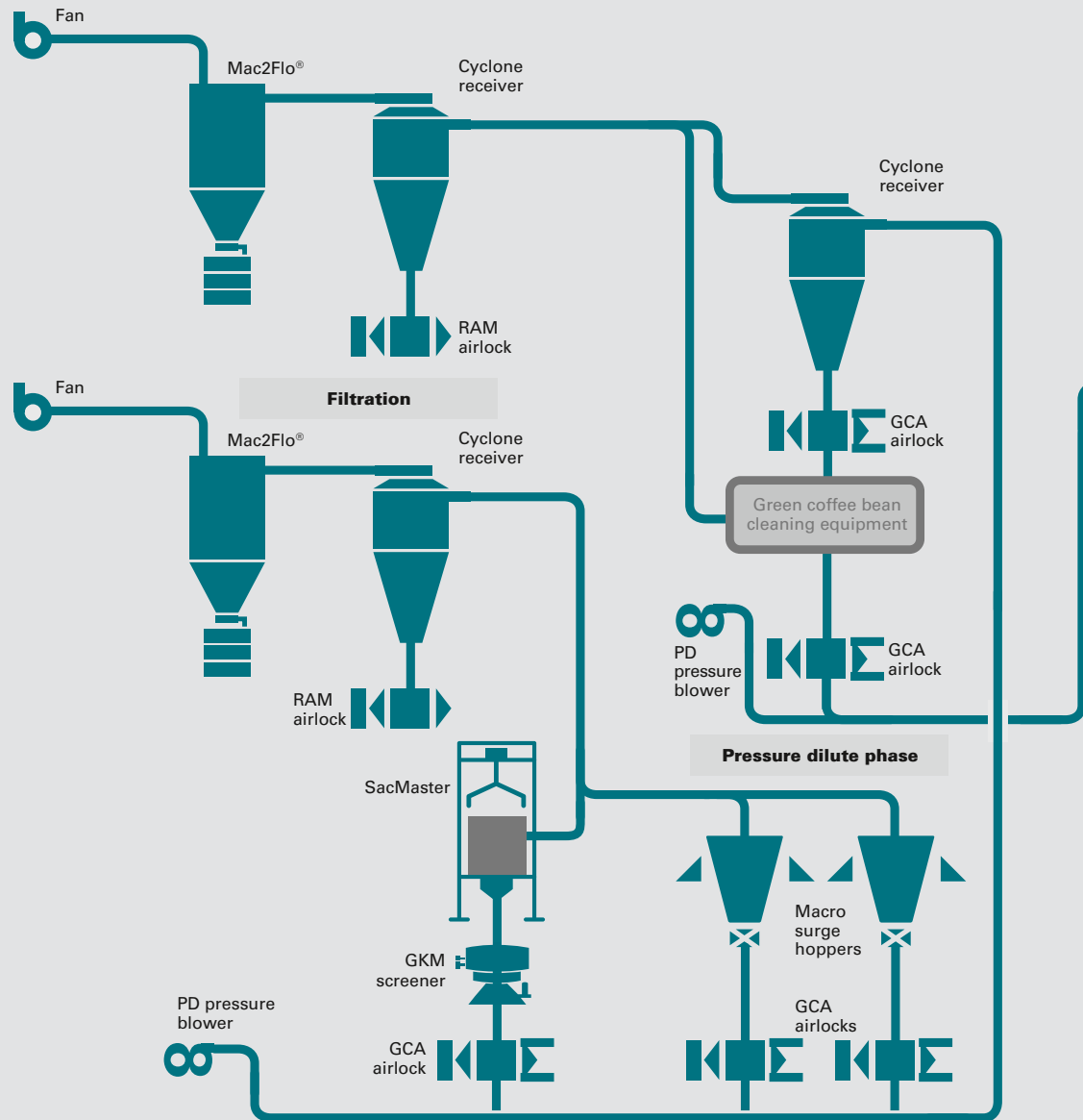


# Project management

## First Time Start-up

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

## Application example: Coffee



Pressure dilute phase

Process step covered by Schenck Process Group

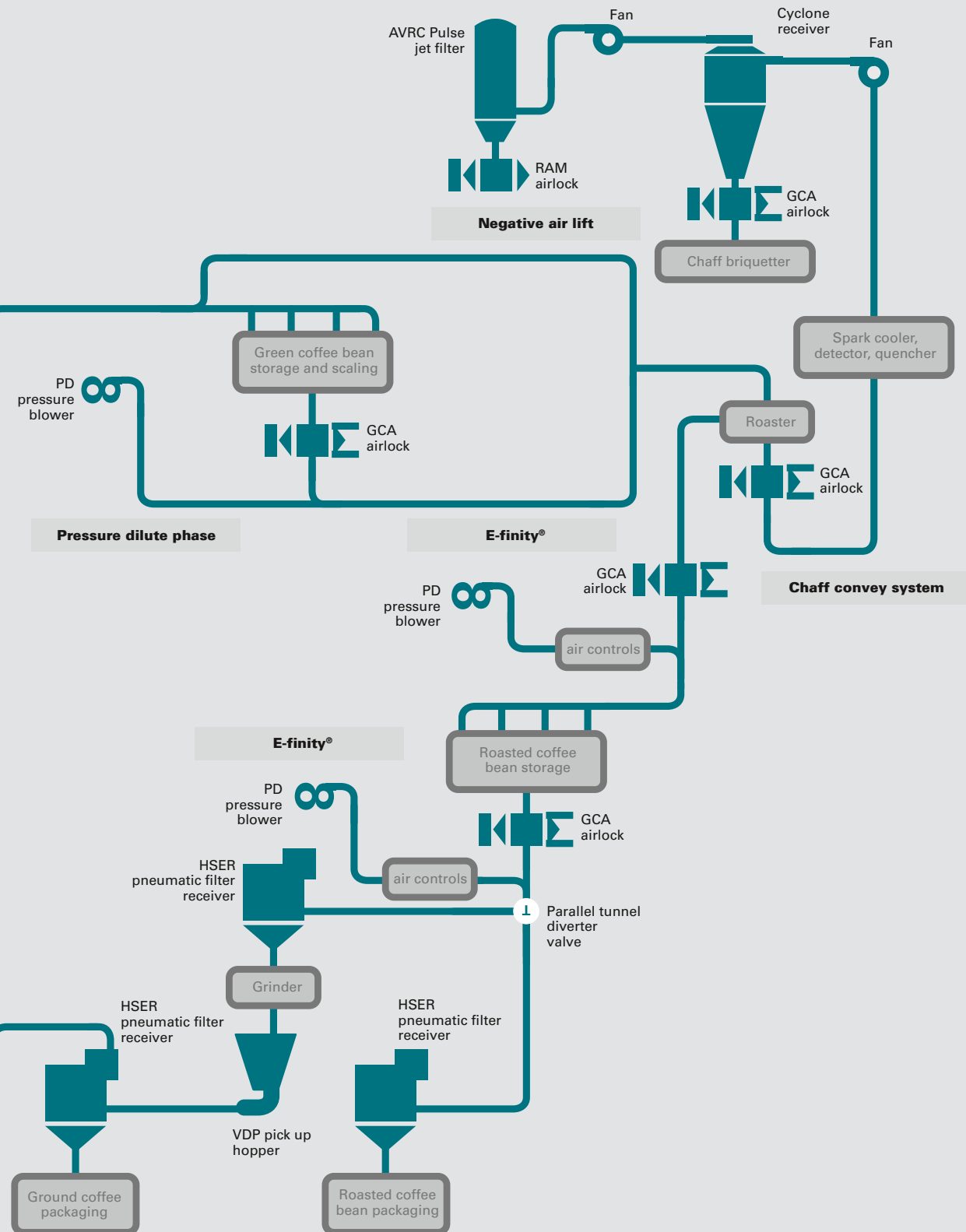
High vacuum pump  
Vacuum dense phase

### Obtain Benefits

With quick start-up you realize maximum productivity with minimal disruption at the time of implementation.

### Customer Support

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





## Feeding

For accurate metering of a wide range of dry ingredients Schenck Process offers feeders for most food applications. Whether you are feeding additives into blends, cereals into extruders or coating snack foods Schenck Process has a screw, vibratory, volumetric or gravimetric feeder to meet your specific requirement.

## Weighfeeding

When totalization, controlled flow metering or batching of fragile (friable) materials are required weighbelts are the ideal solution. An open weighdeck receives and feeds the materials without damage while accurately verifying total amounts being added to the process.



### MechaTron®

Volumetric and gravimetric feeders

- » Ideal for feeding major and minor ingredients
- » Complete disassembly from the non-process side speeds cleaning and maintenance
- » Sanitary and industrial models available
- » Gravimetric accuracies of  $\pm 1/4\%$  to 1% of feed rate setpoint at 2 sigma
- » Feed rates up to 1,100 ft<sup>3</sup> (32,000 l) per hour are achievable

### AccuRate® Series

Volumetric feeding systems

- » Proven volumetric feeding technology with installations throughout the world
- » Food grade and industrial vinyl hoppers available
- » Quick disassembly for cleaning or material change
- » Paddle agitation to the vinyl hopper gently massages materials into the feeding screw
- » Feed rates from .000017 to 280 ft<sup>3</sup> (.0005 to 7,928 l) per hour

### DEA Open Frame Weighbelt

An open frame weighbelt feeder designed specifically for sanitary process applications.

- » Tool-less removal of both the belt and sanitary flex connector for quick cleaning and maintenance
- » Open frame design simplifies equipment washdown
- » Direct drive system on the tail pulley eliminates potential product contamination

## Milling

For high efficiency and gentle grinding of sugar, dairy powders, spices, and other bulk materials the Kemutec milling line is equipped with a range of models to meet any size reduction application. Benefits include low heat generation, minimal dust levels and muted noise production.

## Sifting and Screening

Removing foreign contaminants, fines, and oversize product or breaking soft lumps in dairy, bakery and general food applications can be accomplished with Kemutec high-capacity and high efficiency sifters and screens.

### Kemutec Kek Cone Mill

High efficiency material size reduction

- » Gentle grinding action
- » Uniform size distribution results in minimal fines generation
- » Low dust levels eliminate the need for air filtration
- » Ideal for sizing in both wet and dry granulation processes

### Kemutec Kek Sifters

Rotary sifter for powder and granule processing

- » High capacity and high-efficiency sifting
- » Gravity and inline pneumatic conveying designs
- » 30 second screen changes
- » Rates from a few pounds to over 200,000 lbs/hr (90,720 kg/hr)
- » Easy disassembly for cleaning and maintenance

### GKM Screeners

Controlled screening and multi-deck separation of fines

- » De-dusting of dry, powdered or granular products
- » Suitable for high feed rates
- » Handles difficult to screen lightweight products
- » Screens down to 200 $\mu$



## Pneumatic Conveying

For dilute or dense phase conveying of cereals, coffee, pasta, sugar and many other granular, pelletized or powder products Schenck Process has the system to efficiently transfer your bulk materials.

## Bulk Bag Unloading

For complete material discharge from bulk bags the SacMaster® bulk bag unloader incorporates a Posi-Flow agitation system to handle bulk powders, pellets and granules. Integration of a volumetric or gravimetric feeder is easily done for a highly accurate discharging system.



### E-finity®

Low pressure continuous dense phase conveying system

- » The blower air source designed for less than 15 psig (1 bar) can be located nearly anywhere in the plant
- » Multiple E-finity® systems can be operated from a single blower air source
- » Various systems can be turned on and off as needed, and air delivery from the PD blower compensates automatically



### SacMaster®

Bulk bag discharge system

- » Agitation to eliminate material bridging and promote full bag emptying
- » Two agitation and two pivoting paddles for full bag support
- » Modular design for easy system customization and compatibility
- » Pre-programmed control minimizes set up time
- » Easily integrated with a dry material feeder



### MCF PowerSaver®

Industrial air filtration

- » Operates with medium-pressure cleaning air (7-9 psig)
- » Total filter area available exceeds 23,000 ft<sup>2</sup> (7,000 m<sup>2</sup>)
- » Cleaning capacities over 250,000 CFM
- » Timing mechanism non-electrical – safe in dusty, explosive atmosphere
- » Good for use in high temperatures 500 °F (260 °C) and higher



## Dust Collection

Removal of general plant dust or filtering pneumatic conveying systems Schenck Process offers high efficiency dust collectors and filter receivers to keep operations safe from harmful materials. 3-A accepted models are available for sanitary applications.

## Bag Emptying

Safe and sanitary manual bulk bag unloading is accomplished with the Hygienic Bag Dump Station (HBD). Interior and exterior finishes meet 3-A requirements and large openings enable a sanitary method for internal CIP cleaning.

### Hygienic Side Entry Receiver (HSER) Air filtration

- » Simple design with minimal internal structure enables thorough clean-down
- » Single point access to both clean and dirty volumes of the filter
- » Ideally suited for low headroom applications under pressure or vacuum
- » Side entry and tool-free cartridge removal speeds maintenance with no confined space entry
- » Operates as a filter receiver at the end of a pneumatic conveying system

### Hygienic Bag Dump Station (HBD) Safe and sanitary manual bulk bag unloading

- » Interior and exterior finishes meet 3-A sanitary requirements
- » Ferrules mounted for use with clean-in-place (CIP) system
- » Removable internal bag rest
- » Bag cages: 304 stainless steel
- » Diaphragm bodies are all stainless steel versus commonly found aluminum

### Hygienic Round Top Removal (HRT) Filter Dust collection in low capacity pneumatic conveying systems

- » Interior and exterior finishes meet 3-A requirements
- » Ferrules mounted for use with clean-in-place (CIP) skid and clean-out-of-place (COP) filter media and purge pipes
- » Diaphragm bodies are all stainless steel as opposed to others on the market that use aluminum
- » Bag cages: 304 stainless steel
- » Spring assisted hinge for clean air plenum access



## Confectionery Cooking and Depositing Systems

Continuous, accurate and hygienic starch-free depositing at final moisture creates confectionery pieces that are perfectly shaped, with beautifully smooth flavors and components. Fillings and inclusions can be incorporated easily and multiple depositing heads can be combined on the same line for additional versatility or output.

## Food Extrusion

With a preconditioner and a selection of die and cutter options, the SBX Master™ is a flexible production platform for an extensive variety of extruded foods. Systems can be specified to produce a wide array of products - from simple direct-expanded snacks and cereals to complex, multi-component extruded foods, ingredients and texturized vegetable proteins.



### ServoForm™ High Output Confectionery Depositing System

Flexible cooking and depositing lines for jellies, gummies, hard candy, lollipops and soft confectionery

- » Outputs to 5,290 lbs/hr (2,400 kg/hr)
- » High quality, hygienic alternative to traditional methods
- » Production to validation standards for functional or medicated products
- » Versatile one-shot depositing process

### ServoForm™ Mini Confectionery Depositing System

Depositor for producing a wide range of confectionery products

- » Servo-driven confectionery depositing system
- » Produces high-quality, smooth product with consistent size and shape
- » Perfect for depositing candies, jellies, toffees and lollipops
- » Piece weights range from 2 g to 16 g



### SBX Master™ Twin-Screw Extruder

Versatile, high output food extruders

- » Open frame design with minimal open piping and cabling that simplifies cleaning
- » Ideal for starch-based products, but can be configured for a wide range of applications
- » Designed with stainless steel for maintaining hygienic principles
- » Patent-pending die and cutter assembly makes cleaning and maintenance fast and safe



## Airlocks and Valves

For pneumatic conveying, feeding, and dust collection systems Schenck Process airlocks and valves are designed to handle high capacities, high pressures, and process wear.

## Process Controls

Ingredient handling systems that include recipe management, data collection and reporting, ingredient lot tracking and interface to customer MES/ERP systems are a small sample of the process controls capabilities provided. Full service system integration is also available.

### GCA Global Cleanable Airlock

Pneumatic conveying

- » Demountable rotor with tool-free disassembly facilitates cleaning and inspection
- » Oversized rotor shaft creates a naturally radiused rotor pocket for more complete product release
- » Product contact manufactured with stainless steel and FDA-approved seals and bearing lubricants
- » Available design for NFPA 69 blocking valve requirements
- » CE & ATEX variants (optional)

### PT45 Diverter Valve

Two way valve operating as a 1 to 2 way diverting valve or 2 to 1 way converging valve

- » Tunnel that rotates 45° port to port which helps prevent contamination
- » Aluminum housing and tunnel are hard anodized for wear resistance
- » Includes a positive food grade rubber silicone seal at each port
- » Can be used in dilute or dense phase pneumatic conveying systems

### Process Controls

Systems for product consistency

- » Weighing, feeding and pneumatic conveying controls for process systems
- » In-house designed, programmed and built by our personnel
- » Fully documented program files are provided to you for long-term maintenance
- » Controls can be integrated into your plant-wide computer systems
- » Custom solutions for your specific requirements







# Test results you can rely on

## **Schenck Process Group TestCenters around the globe**

No matter what materials you work with, chances are we have tested them. That's because we have tested more than 4,000 bulk materials in more than 40,000 tests conducted in our labs throughout the world.

And, if your particular product hasn't been tested yet, then the right tests in our TestCenter will provide you with comprehensive answers. Proven bulk materials technology from Schenck Process. Tested and approved so you can be certain that our feeders, dust collectors, mills, sifters, mixers, screeners or pneumatic conveying systems are perfectly compatible with your material.

Which feeder is best for which bulk material? What needs to be considered for pneumatic conveying and dust collection? Schenck Process operates TestCenters around the globe which are tailored to your individual requirements. Two of these centers are located in Darmstadt, Germany. Additional test facilities can be found at our locations in the UK, Austria, the Czech Republic and the USA.

Our TestCenters are equipped to simulate loss-in-weight feeding, refilling, sifting, milling, mixing, screening, weighing, dilute and dense phase conveying and filtration to help confirm the configured design meets the most efficient, economical method of processing your material ahead of time.



# Complete after-sales solutions for your requirements

Looking for after-sales solutions? Our extensive AfterMarket program provides you with after-sales services – customized to your specific requirements.

The framework of our AfterMarket program is designed with you in mind. With the guidance of our experienced after-sales team, you can create AfterMarket packages comprised of original spare and wear parts, various services and high-quality components to meet your needs.

Our AfterMarket program is based on a modular principle – you can pick and choose any individual product or a combination thereof. AfterMarket service categories focused on repair, inspection, management and support help to easily find the appropriate products.

We welcome the opportunity to provide you with individual consultation, either as part of an AfterMarket contract or on an individual basis. Whatever Full Service means to you – let's create it together!



Schenck Process offers a wide range of bulk material handling system solutions for food processes. Whether you need a feeder for precise dosing or a depositor for producing a wide range of candies, gummies, and jellies we have the right equipment and engineering expertise to meet your specific application.

# Keeping your systems well fed



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we make processes work