

PROC-X

MANUFACTURING GROUP

ENGINEERING • INNOVATION • INTEGRATION



AUTOMATIC INGREDIENT DOSING SYSTEMS

Precision. Repeatability. Traceability. Process Control.

Integrated macro & micro ingredient handling, dosing, weighing, conveying and process automation solutions engineered around your industry.



MACRO &
MICRO DOSING



GRAVIMETRIC &
VOLUMETRIC
FEEDING



PNEUMATIC &
DENSE PHASE
CONVEYING



IBC / TOTE /
SUPER SACK /
BAG HANDLING



SANITARY
DESIGN & CIP



ATEX / EX
CONSTRUCTION



AUTOMATION &
TRACEABILITY



INGREDIENT DOSING IS A PROCESS, NOT JUST A FEEDER

The science of putting the right ingredient in the right place — at the right time.

Accurate, repeatable dosing is the foundation of consistent product quality.

Proc-X designs integrated systems that coordinate every step of the ingredient handling process to deliver performance you can trust.

- | | |
|---|--|
| <ul style="list-style-type: none">  BULK STORAGE & DISCHARGE – Reliable mass flow and complete evacuation.  CONVEYING & FEEDING – Gentle, controlled transfer to maintain ingredient integrity.  WEIGHING & DOSING – Accurate, repeatable results batch after batch.  DUST CONTROL – Clean operation and a safer working environment.  INGREDIENT IDENTIFICATION – Positive ID, lot tracking and traceability. | <ul style="list-style-type: none">  RECIPE MANAGEMENT – Standardized recipes and version control.  PROCESS SEQUENCING – Steps executed in the right order, every time.  AUTOMATION & CONTROLS – Integrated control and data for visibility and reporting.  SANITARY DESIGN – Hygienic construction for food, dairy, and pharma applications.  EXPLOSION PROTECTION – Engineered for safety in hazardous environments.  CLEANING & CHANGEOVER – Fast, effective and easy to validate. |
|---|--|



PROC-X APPROACH

Proc-X evaluates the ingredient from storage through final addition. We consider:

- ✓ Physical characteristics (density, flowability, particle size, cohesiveness, moisture, etc.)
- ✓ Required accuracy and repeatability
- ✓ Batch size and process throughput
- ✓ Sanitation requirements
- ✓ Downstream process interaction

The result: a system designed for your process, your ingredient, and your success.

ONE PROCESS. ONE CONTROL PHILOSOPHY. ONE INTEGRATED SYSTEM.



PRECISION.
BY DESIGN.



REPEATABILITY.
BY CONTROL.



TRACEABILITY.
BY DATA.



PERFORMANCE.
DELIVERED.

www.procxinc.com

MACRO DOSING VS. MICRO DOSING

Not every ingredient should be handled the same way.

MACRO DOSING

Used for high-volume ingredients that represent the majority of the formula.

EXAMPLES:

Flour, sugar, starch, salt, minerals, resins, fillers, pellets and powders.

TECHNOLOGIES:

- Bulk silos
- Screw feeders
- Rotary valves
- Weigh hoppers
- Weigh belts
- Loss-in-weight feeders
- Pneumatic conveying



MICRO DOSING

Used for low-inclusion ingredients that can be critical to final recipe performance.

EXAMPLES:

Colors, flavors, vitamins, enzymes, catalysts, stabilizers, additives and active ingredients.

TECHNOLOGIES:

- Precision screw feeders
- Twin-screw feeders
- Vibratory micro feeders
- Individual weigh hoppers
- Gravimetric feeders
- Pre-weighed systems



**The smaller the ingredient quantity,
the larger the consequences of a dosing error can become.**

INGREDIENT RECEIVING & STORAGE OPTIONS

From bulk to bag to tote — we handle it all.

Flexible receiving and storage solutions for every ingredient type. Designed for clean, safe, efficient transfer into your dosing system— with full control and traceability.



BULK SILOS



High-capacity storage for free-flowing powders received by bulk truck, rail or pneumatic conveying.

Benefits:

- Large volume, low labor
- Ideal for high usage ingredients
- Level control & inventory visibility
- Designed for safe venting and pressure balance

SUPER SACK / FIBC UNLOADERS



Ergonomic lifting and bulk bag unloading with dust containment.

Benefits:

- Safe, ergonomic operation
- Dust-tight containment
- Compatible with bag types and sizes
- Integrated massaging and flow aids

BAG DUMP STATIONS



Manual bag dump stations for low to medium volume ingredients.

Benefits:

- Simple, cost-effective solution
- Dust collection connections
- Breaks up agglomerates
- Easy to clean & maintain

IBC / TOTE STATIONS



Safe, controlled handling and discharge of IBCs and reusable totes.

Benefits:

- Forklift or pallet jack accessible
- Contained, drip-free discharge
- Level sensing & weighing ready
- Ideal for liquids and high-value ingredients

DAY BINS / RIGID TOTES



Intermediate storage for batching and continuous process needs.

Benefits:

- Feeds dosing systems on demand
- Multiple discharge configurations
- Mobile or stationary options
- Easy integration

DRUMS / PAILS



Secure handling and dispensing of drums and pails.

Benefits:

- Drum lifts & tilters
- Pail dispensing systems
- Spill containment options
- Suitable for powders and liquids

LIQUID TOTES OR TANKS



Bulk liquid storage and day tanks for efficient ingredient management.

Benefits:

- Insulated & jacketed options
- Agitation & recirculation
- Level measurement
- CIP ready designs

COMMON SUPPORTING FEATURES



DUST CONTAINMENT & VENTING

- Dust-tight seals
- HEPA filtered vents
- Central dust collection integration



SAFETY INTERLOCKS & CONTROLS

- Interlocked access doors
- Guarding & sensors
- Integrated with plant controls



MAGNETIC SEPARATION & SCREENING

- Protects downstream equipment
- Magnetic traps
- Screens & sifters available



BIN ACTIVATORS & FLOW AIDS

- Vibrators & air pads
- Massaging systems
- Prevents bridging & rat-holing



LEVEL MEASUREMENT & ALARMS

- Point & continuous level sensors
- High / low alarms
- Inventory visibility



DESIGNED FOR INTEGRATION. BUILT FOR RELIABILITY.

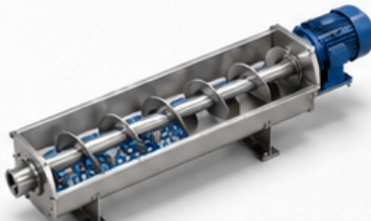
All systems are engineered to seamlessly integrate with your dosing, conveying, and automation solutions—delivering safe, clean, and efficient ingredient flow.

CONVEYING TECHNOLOGIES

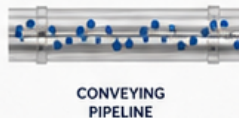
Metering controls how much material moves. Conveying determines how it gets there.

Selecting the right conveying method protects product integrity, ensures process efficiency, and maintains a clean, safe operation.



	VACUUM CONVEYING	PRESSURE CONVEYING	DILUTE PHASE CONVEYING	DENSE PHASE CONVEYING	GRAVITY TRANSFER	SCREW / MECHANICAL CONVEYING
						
	Uses vacuum to draw material through a pipeline to a receiver.	Uses pressure to push material through a pipeline to a receiver.	Uses pressure to push material through a pipeline to a receiver.	Low solids loading, high velocity conveying that suspends material in an air stream.	Material flows by gravity from one vessel to another without pneumatic assistance.	Uses a rotating screw or mechanical device to move material horizontally or inclined.
	IDEAL USES: Medium to high rates, longer distances, or when discharging into restricted or elevated locations.	IDEAL USES: Medium to high rates, medium distances, or the isolating economy focused	IDEAL USES: Non-abrasive powders, large volumes, longer distances, economy focused.	IDEAL USES: Abrasives, fragile, heat-sensitive or degradation-prone products, long distances, dense materials, or when minimizing product degradation is critical.	IDEAL USES: Free-flowing powders or granules, short distances, cost-effective transfer between elevated vessels.	IDEAL USES: Cohesive or non-free flowing materials, precise metering, horizontal or inclined conveying.
 VELOCITY	Medium - High	Medium - High	High	Low	N/A (Gravity)	Low - Medium
 DISTANCE	Short - Moderate	Moderate - Long	Long	Long	Short	Short - Moderate
 PRODUCT DEGRADATION POTENTIAL	Low - Medium	Low - Medium	Medium - High	Very Low	Very Low	Medium
 DUST CONTAINMENT	Excellent	Excellent	Good	Excellent	Excellent	Good
 TYPICAL APPLICATIONS	Pharma, Food, Chemicals, Fine Powders	Bulk Powders, Long Distances, Tight Discharge Requirements	Large Volume Powders, Non-Abrasives Materials	Abrasives, Powders, Fragile Materials, Degradation-Sensitive Products, Heat-Sensitive Ingredients	Free-Flowing Powders, Elevated Tank to Tank Transfer	Cohesive Powders, Sludges, Metering, Small Footprint Solutions

TYPICAL CONVEYING PROCESS FLOW



THE RIGHT CONVEYING TECHNOLOGY PROTECTS YOUR PRODUCT, YOUR PROCESS, AND YOUR PROFITABILITY.

MACRO DOSING TECHNOLOGIES

High-capacity ingredient addition with controlled accuracy.

Proc-X offers a full spectrum of macro dosing technologies to accurately deliver ingredients in the gram to multi-kilogram range. Each solution is selected based on material characteristics, accuracy requirements, and process objectives.



GAIN-IN-WEIGHT BATCHING (WEIGH HOPPERS)

Ingredient is batched into a hopper on load cells until the target weight is achieved.

ADVANTAGES:

- High accuracy and repeatability
- Ideal for a wide range of bulk solids
- Simple and robust

DISADVANTAGES:

- Not ideal for free-flowing, low bulk density powders
- Requires batching time
- Higher initial cost



SCREW FEEDERS

An auger conveys material at a controlled rate into the process.

ADVANTAGES:

- Consistent feed for free-flowing solids
- Compact design
- Good for continuous processes

DISADVANTAGES:

- Less accurate without feedback
- Wear on screw and liner
- Not ideal for fragile or abrasive materials



WEIGH HOPPERS

Load cell-backed hoppers meter ingredients by loss-in-weight or batch discharge.

ADVANTAGES:

- Accurate and repeatable
- Handles a wide range of materials
- Easy to clean and maintain

DISADVANTAGES:

- Requires adequate headroom
- Batch process vs. continuous
- Weight fluctuations if not isolated



ROTARY VALVES

Rotary airlock valves meter material by trapping and releasing a fixed volume.

ADVANTAGES:

- Simple, reliable, and cost-effective
- Good for dense phase conveying
- Provides pressure isolation

DISADVANTAGES:

- Lower accuracy
- Not ideal for very fine or sticky powders
- Wear over time



WEIGH BELT FEEDERS

Material is fed on a belt and weighed continuously for high-capacity dosing.

ADVANTAGES:

- High capacity and continuous flow
- Excellent for free-flowing materials
- Good accuracy with proper control
- Larger footprint



LOSS-IN-WEIGHT FEEDERS (LARGE QUANTITIES)

Material is continuously fed from a hopper while weight loss is measured.

ADVANTAGES:

- Continuous, accurate feed
- Ideal for large volumes
- Real-time process control

DISADVANTAGES:

- More complex control
- Requires stable flow
- Higher instrumentation cost



LIQUID INGREDIENT DOSING

Dosing systems for bulk liquids using flow meters, Coriolis meters, or mass flow controllers.

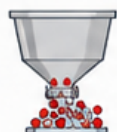
ADVANTAGES:

- High accuracy and repeatability
- Supports a wide range of viscosities
- Closed-loop flow control

DISADVANTAGES:

- Requires clean, conditioned liquids
- Temperature/viscosity can affect accuracy
- Higher cost for precision systems

TYPICAL MACRO DOSING PROCESS



1 COARSE FEED

Rapid feed delivers the majority of the ingredient quickly and efficiently.



2 FINE FEED

Slower feed rate refines the approach to the target weight.



3 PREDICTIVE CUTOFF

Algorithm predicts target and stops feed just before setpoint.



4 FINAL VERIFICATION

System verifies final weight and records data for full traceability.

WHY CHOOSE PROC-X MACRO DOSING?

- ✓ Wide range of proven technologies
- ✓ Engineered for accuracy and reliability
- ✓ Scalable for your capacity and accuracy needs
- ✓ Seamless integration with upstream and downstream systems
- ✓ Built with sanitary design and cleanability in mind



ENGINEERED
FOR ACCURACY



BUILT FOR
RELIABILITY



DESIGNED FOR
CLEANABILITY



INTEGRATED FOR
PERFORMANCE



SUPPORTED FOR
SUCCESS



MICRO INGREDIENT DOSING

When grams matter as much as tons.

Micro ingredients are typically used in very small percentages, yet they can have an outsized impact on product quality, performance, compliance and cost. Accurate micro dosing ensures consistency, regulatory compliance and brand protection.

COMMON MICRO INGREDIENTS

- ✓ Colors & Pigments
- ✓ Flavors & Fragrances
- ✓ Vitamins & Nutrients
- ✓ Enzymes & Cultures
- ✓ Catalysts
- ✓ High-Intensity Sweeteners
- ✓ Stabilizers & Emulsifiers
- ✓ Preservatives & Antimicrobials
- ✓ Pharmaceutical Actives
- ✓ Processing Aids
- ✓ Functional Additives

TECHNOLOGIES & SOLUTIONS



PRECISION SCREW FEEDERS

High-accuracy screw feeders for consistent, low-rate delivery.



TWIN-SCREW FEEDERS

Gentle handling and superior metering of difficult micro ingredients.



VIBRATORY MICRO FEEDERS

Ideal for free-flowing powders and precise small-rate control.



INDIVIDUAL WEIGH HOPPERS

Dedicated hoppers with integrated load cells for ingredient isolation.



CENTRAL MICRO SCALES

Multi-hoppers on a central scale for high accuracy and efficiency.



LOSS-IN-WEIGHT FEEDERS

Real-time weight loss measurement for continuous accuracy.



PRE-WEIGHED INGREDIENT SYSTEMS

Pre-batch and load micro ingredients for repeatable results.



HIGH-ACCURACY LIQUID MICRO-DOSING

Precision gear or piston pumps for low-flow liquids and solutions.

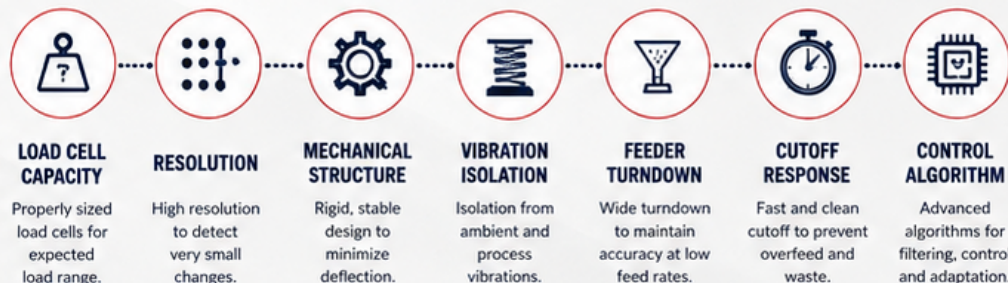


WHY MICRO DOSING DEMANDS MORE

- Small quantities amplify measurement error
- Variability affects batch consistency
- Ingredient characteristics change performance
- Regulatory compliance requires traceability
- Product quality and cost depend on accuracy

THE MICRO DOSING PRECISION CHAIN

True micro dosing accuracy is a system—each link must perform. If any link is weak, accuracy is lost.



ENGINEERED
FOR ACCURACY



BUILT FOR
REPEATABILITY



DESIGNED FOR
EASE OF USE



VALIDATED FOR
COMPLIANCE



SUPPORTED FOR
YOUR SUCCESS

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Precision. Repeatability. Traceability. Process Control.

SANITARY DESIGN, CLEANABILITY & CIP

Engineered for food, dairy, nutraceutical, pharmaceutical and other hygiene-sensitive industries.



1 SANITARY DESIGN



Hygienic Geometry
Smooth transitions, no sharp corners, and minimal horizontal surfaces.



Polished Stainless Construction
316L stainless steel with Ra ≤ 0.5 µm finish for superior cleanability and corrosion resistance.



Sloped & Drainable Surfaces
Controlled slope angles and full drainability prevent product hold-up and standing liquid.



Sanitary Welds
Full-penetration TIG welds with pickled & passivated finishes for crevice-free joints.



Gasket & Seal Integrity
FDA/USP Class VI compliant gaskets with sanitary clamp connections and no exposed threads.



Tool-less Access & Inspection
Hinged doors, tri-clamp access and tool-less latches for quick inspection and maintenance.



Removable Screws & Fasteners
Captive, sanitary fasteners or easily removable hardware to eliminate hard-to-clean features.



Allergen Control
Validated cleanability and changeover efficiency to minimize cross-contact risk.

2 CLEANABILITY

- ✓ Designed for full product evacuation and minimal hold-up.
- ✓ Open, accessible design for thorough visual inspection.
- ✓ Smooth internal finishes and optimized flow paths.
- ✓ Compatible with automated CIP systems and validated cleaning procedures.
- ✓ Supports rapid changeover and total sanitation assurance.



FOOD



BEVERAGE



DAIRY



CONFECTIONERY



NUTRACEUTICAL



PHARMACEUTICAL

3 CIP / WIP / DRY CLEANING



DRY CLEANING

- ADVANTAGES**
- No water required
 - Ideal for powders & low-moisture residues
 - Fast for light cleaning

- LIMITATIONS**
- Physical access required
 - Not effective for sticky/high-risk residues
 - Limited allergen control



WASHDOWN / WIP

- ADVANTAGES**
- Quick rinse between batches
 - Reduces cross-contamination
 - Supports visual cleanliness

- LIMITATIONS**
- Higher water usage
 - Not sufficient for validated sanitation
 - Chemical use may still be required



CIP (CLEAN-IN-PLACE)

- ADVANTAGES**
- Fully automated, closed-loop cleaning
 - Validated & repeatable
 - Minimizes water & chemical waste
 - Ideal for complex & enclosed systems

- LIMITATIONS**
- Higher initial investment
 - Requires system design & validation
 - Setup time for programs

BUILT FOR HYGIENE. DESIGNED FOR PERFORMANCE.

Our systems are engineered for maximum sanitation, regulatory compliance, and product safety—so you can deliver quality with confidence.



FDA / USDA / EHEDG
Guideline-Aligned



3-A Sanitary &
EHEDG Compliant
Components



Fully Traceable
Materials & Welds



Designed for Validation,
Documentation & Audit

TRUSTED IN HYGIENE-CRITICAL INDUSTRIES

- ✓ Food Processing
- ✓ Dairy & Beverage
- ✓ Confectionery

- ✓ Nutraceuticals
- ✓ Pharmaceuticals
- ✓ Cosmetics & Personal Care



BETTER ENGINEERING.



SMARTER INTEGRATION.



CLEANER RESULTS.

www.procxinc.com

ATEX / EX CONSTRUCTION & COMBUSTIBLE DUST

Safety is designed in, not added on.

Combustible powders present real risks. Our ingredient dosing systems are engineered with a layered protection philosophy that addresses ignition sources and manages explosion risk at every stage.



THERE IS NO UNIVERSAL EXPLOSION-PROOF DOSING SYSTEM.
Protection philosophy depends on the powder, process and installation.



DUST CLOUDS

Fine powders can form ignitable dust clouds. Control concentration, containment and housekeeping.



STATIC ELECTRICITY

Electrostatic discharge can ignite dust. Control static through grounding, bonding, and conductive materials.



FRICTION & IMPACT

Moving parts and material impact generate heat and sparks. Use low-speed design and wear-resistant components.



HOT SURFACES

Surface temperatures must remain below the powder's ignition temperature. Insulate, monitor and control.



GROUNDING & BONDING

All equipment, frames, hoppers, piping and flex connections are bonded and grounded to dissipate static.



CONDUCTIVE FLEXIBLE CONNECTIONS

Conductive or static-dissipative hoses with bonding leads prevent static build-up across flexible interfaces.



CERTIFIED MOTORS & INSTRUMENTATION

ATEX/IECEx certified motors, sensors and controls are selected to the required zone classification.



EXPLOSION VENTING

Where appropriate, vessels and enclosures are vented to safely relieve explosion pressure and direct it to a safe location.



ISOLATION

Rotary valves, flap valves and pinch valves isolate dust layers and prevent flame propagation through process lines.



SUPPRESSION INTERFACES

Systems are designed with interfaces for explosion suppression equipment when required by the risk assessment.



PRESSURE-RESISTANT CONSTRUCTION

Where venting is not appropriate, equipment can be engineered for pressure-resistant construction to contain an internal explosion.



RISK ASSESSED. TASK SPECIFIC. ENGINEERED RIGHT.

We follow recognized standards including ATEX Directive 2014/34/EU, IEC 60079 series, NFPA 652, NFPA 69 and OSHA guidance.



DOCUMENTED. TRACEABLE. DEFENSIBLE.

Hazard assessments, classifications, equipment certification and FAT/SAT documentation are provided with every system.



AUTOMATION, TRACEABILITY & COMPLETE PROC-X SYSTEM ARCHITECTURE

Turning material handling into process intelligence.



PLC / HMI CONTROL

Allen-Bradley® or Siemens® PLC control with intuitive HMI for complete line visibility, control and diagnostics.



RECIPE MANAGEMENT

Create, store and manage unlimited recipes. Parameter protection and user access levels ensure consistency and security.



LOT TRACKING

Track ingredient lots from receipt through production. Full genealogy and traceability at every step.



BARCODE / RFID VERIFICATION

Automated identification and verification of materials, containers and operators to prevent errors and ensure accuracy.



ALARMS & NOTIFICATIONS

Real-time alarms, alerts and interlocks protect equipment, product and operators. Notifications via HMI, email or SMS.



REPORTING & ANALYTICS

Production dashboards and detailed reports for performance, quality, OEE, material usage and compliance.



MES / ERP INTEGRATION

Seamless data exchange with MES and ERP systems for scheduling, inventory, quality and business intelligence.



ELECTRONIC BATCH RECORDS

All batch data captured, stored and exportable for audit, compliance and continuous improvement.



WHY PROC-X

- ✓ Complete engineering and project management
- ✓ Application-specific system design
- ✓ High accuracy & repeatability
- ✓ Sanitary / ATEX / custom designs
- ✓ Global support and service
- ✓ Proven integration capability



ELECTRONIC BATCH RECORDS CAPTURE

TARGET WEIGHT	ACTUAL WEIGHT	DEVIATION	INGREDIENT	LOT	OPERATOR	DATE	TIME
25.000 kg	25.012 kg	+0.012 kg	Citric Acid	CA-20240515-01	J. Smith	05/15/2024	10:32:15 AM

Secure, searchable and audit-ready records for full compliance and traceability.