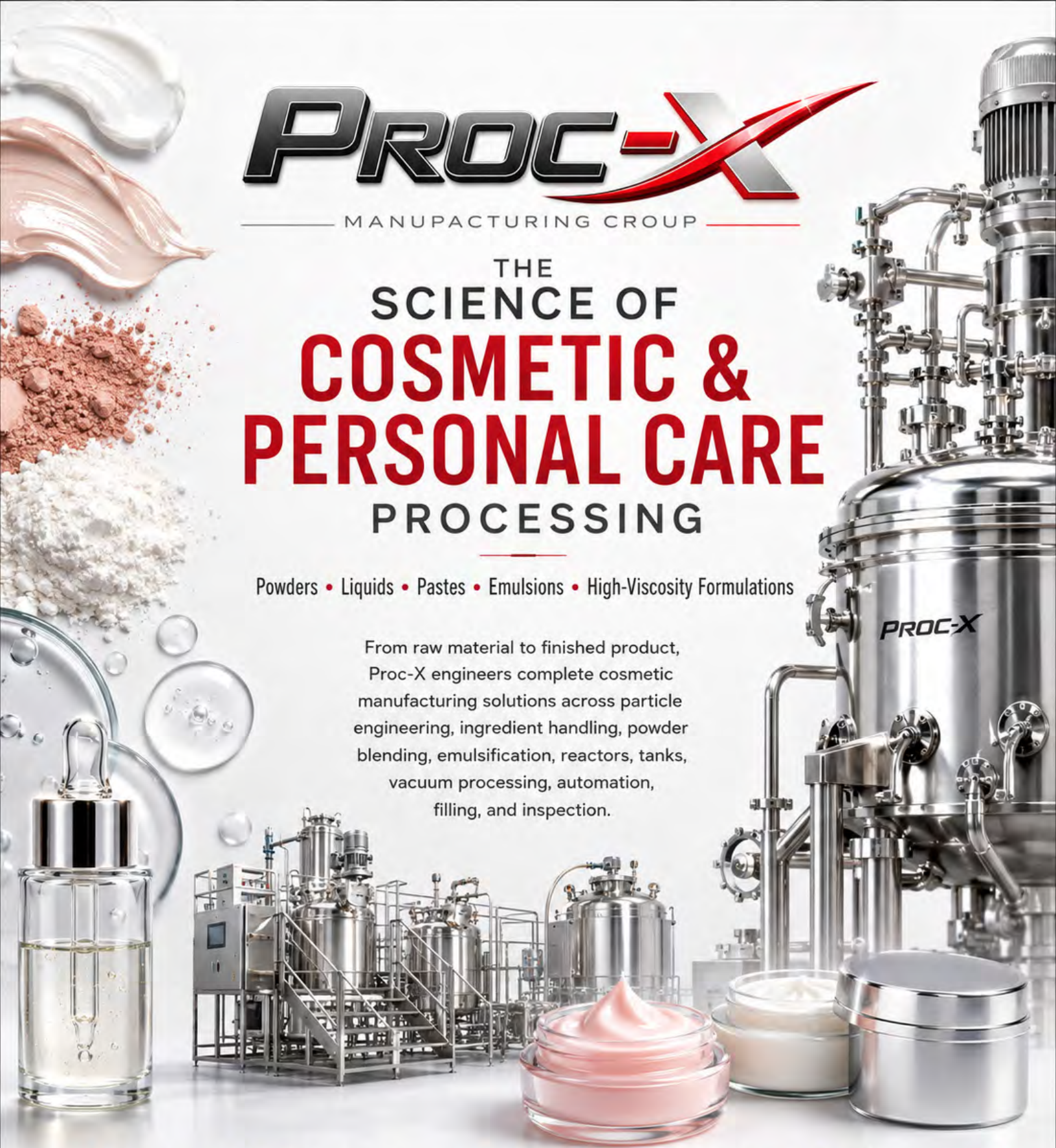
PROC-X

MANUPACTURING CROUP

THE SCIENCE OF COSMETIC & PERSONAL CARE PROCESSING

Powders • Liquids • Pastes • Emulsions • High-Viscosity Formulations

From raw material to finished product, Proc-X engineers complete cosmetic manufacturing solutions across particle engineering, ingredient handling, powder blending, emulsification, reactors, tanks, vacuum processing, automation, filling, and inspection.



DP POWDER HANDLING & PROCESSING

AIS AUTOMATED INGREDIENT SYSTEMS

QuantumX VACUUM PROCESSING SOLUTIONS

EmulXion EMULSIFICATION TECHNOLOGY

PreciXion PROCESS & BATCH SOLUTIONS

InspeX INSPECTION SOLUTIONS

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COSMETICS ARE A MATERIAL-SCIENCE PROBLEM

Powders, liquids and pastes behave differently — and the process must respect those differences.

Every cosmetic formula is a complex system of materials in motion. Particle size, surface area, density, hydration, fluid dynamics, viscosity, heat transfer, and rheology determine how a product looks, feels, performs, and stays stable over time. Change any one of these variables and the entire system responds.

Powders must address flowability, segregation, agglomeration and electrostatic behavior. Liquids require control of suspension, dissolution, hydration, emulsification and thermal transfer. Pastes and high-viscosity products demand attention to torque, wall adhesion, circulation, cooling, and discharge.

Proc-X treats powders, liquids, and pastes as three equally important branches of process engineering. Our equipment, automation, and process know-how are designed to control how materials behave—not just to move them.

The objective is not simply to make ingredients move, but to control how the product behaves.

POWDERS

Fine particles drive performance—but only when they flow, disperse, and blend consistently.

We engineer systems that manage flowability, prevent segregation, minimize agglomeration, and control electrostatic behavior to protect product quality and downstream processing.

LIQUIDS

Liquid systems demand precise control of mixing, mass transfer, and temperature.

Our solutions ensure uniform suspension, complete dissolution, controlled hydration, stable emulsification, and efficient thermal transfer for repeatable, scalable results.

PASTES

High-viscosity materials require power, precision, and intelligent process design.

We design for the realities of pastes and gels—managing torque, wall adhesion, circulation patterns, cooling, and clean, complete discharge without compromising product integrity.

From raw material input to finished product, Proc-X provides the knowledge, equipment, and integration to engineer control into every step of your process.

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THE PROC-X COSMETIC PROCESS

From raw material to finished product — one connected manufacturing platform.

A high-performance cosmetic is the result of a carefully engineered process. Long before ingredients enter a mixer, raw materials must be received, stored, moved, conditioned, weighed, blended, processed, and transferred under controlled conditions that protect quality, ensure safety, and deliver consistency.

Proc-X Manufacturing Group connects every step through a fully integrated platform of specialized brands. **DP** engineers particle size. **AIS** controls material handling and ingredient dosing. **QuantumX** delivers powder, paste, and vacuum processing solutions. **EmulXion** engineers fluid behavior, emulsification, and homogenization. Tanks and reactors connect the system. **PreciXion** and **InspeX** extend the process into filling, packaging, and quality assurance.

The result is more than equipment — it's a connected process built to perform. Our systems are engineered as one solution, working in harmony to maximize efficiency, protect product integrity, and accelerate your time to market with confidence.

ONE CONNECTED PROCESS

1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 → 9 → 10 → 11

1 RAW MATERIAL RECEIVING

Safe receipt and identification of all materials.

2 MILLING & SIZE REDUCTION

DP mills reduce particle size for performance and stability.

3 CONVEYING & TRANSPORT

AIS systems move materials gently, cleanly, and efficiently.

4 DOSING & WEIGHING

AIS technology delivers accurate dosing and traceability.

5 DRY BLENDING & PRE-MIXING

Uniform blends ensure consistent formulations.

6 EMULSIFICATION & HOMOGENIZATION

EmulXion systems engineer fluid behavior and product texture.

7 REACTORS & TANK SYSTEMS

Engineered vessels connect and control every process step.

8 VACUUM PROCESSING

QuantumX vacuum processing removes air, enhances quality, and extends stability.

9 TRANSFER & PRODUCT FLOW

Controlled transfer maintains integrity from tank to filler.

10 FILLING & PACKAGING

PreciXion solutions deliver precise filling and packaging.

11 INSPECTION & QUALITY ASSURANCE

InspeX inspection systems ensure quality, safety, and compliance.

DP — POWDER HANDLING & PROCESSING

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PreciXion — PROCESS & BATCH SOLUTIONS

InspeX — INSPECTION SOLUTIONS

ENGINEERED AS ONE. BUILT TO PERFORM.

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POWDERS ARE NOT SIMPLY DRY LIQUIDS

Powder cosmetics obey a different set of physical rules.

Powders do not level like liquids. They can bridge over outlets, compact in hoppers, segregate in transit, accumulate electrostatic charge, form agglomerates, and trap small-dose ingredients in localized regions.

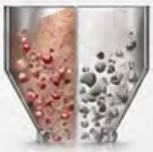
In cosmetic products such as powder foundation, blush, dry shampoo, mineral cosmetics, and pigment blends, ingredients often differ dramatically in particle size, density, morphology, and surface chemistry. If those differences are ignored, the result can be color inconsistency, poor skin feel, segregation during packaging, excessive dust, poor pressability, and uneven active distribution.

Successful powder processing requires controlling the particle before the blend, the ingredient during the blend, and the powder after the blend.

POWDER BEHAVIOR CHALLENGES

Bridging & Ratholing

Compaction


Segregation

Electrostatic Charge

Agglomeration

Small-Dose Localization

QUANTUMX + DP + AIS: ENGINEERED TOGETHER FOR POWDER EXCELLENCE

QuantumX
VACUUM PROCESSING SOLUTIONS
Daaerates and deagglomerates particles, improves flow, reduces dust, and ensures uniform ingredient distribution.

+

DP
POWDER HANDLING & PROCESSING
Controlled transfer, accurate feeding, and contained handling protect powder integrity from start to finish.

+

AIS
AUTOMATED INGREDIENT SYSTEMS
Precision small-dose delivery and tracking eliminate localized hot spots and ensure batch-to-batch consistency.

ONE INTEGRATED APPROACH. PREDICTABLE RESULTS.

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PARTICLE SIZE IS PART OF THE FORMULA

Particle engineering shapes cosmetic performance before mixing begins.

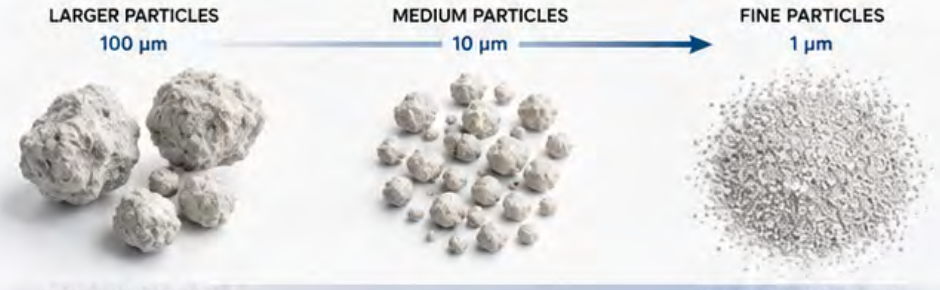
At **DP**, we engineer particle-size distribution to control how powders behave—from the way they disperse and suspend to how they feel and perform on the skin. Particle size influences skin feel, coverage, opacity, color strength, dispersion, suspension behavior, flowability, dissolution, blend uniformity, and final texture.

As particles become smaller, total surface area increases dramatically, changing the way powders interact with oils, binders, pigments, and the skin.

Pigment agglomeration is another challenge: primary particles may already be fine, yet still arrive as larger clusters that weaken color development and consistency unless properly deagglomerated.

DP technologies apply energy differently. The goal is not simply to grind as small as possible, but to produce the particle distribution that delivers the required cosmetic performance.

SMALLER PARTICLES. GREATER SURFACE AREA. DIFFERENT PERFORMANCE.



1x	~10x	~100x
RELATIVE SURFACE AREA	RELATIVE SURFACE AREA	RELATIVE SURFACE AREA

THE IMPACT ON COSMETIC PERFORMANCE

IMPROVED SKIN FEEL · ENHANCED COVERAGE · GREATER OPACITY · STRONGER COLOR · BETTER DISPERSION · BETTER SUSPENSION · IMPROVED FLOWABILITY · FASTER DISSOLUTION · SUPERIOR TEXTURE

DP MILLING TECHNOLOGIES

PIN MILLS · AIR-CLASSIFIER MILLS · JET MILLS · HAMMER MILLS · TURBO MILLS · CONE MILLS · CRYOGENIC MILLING

DP CAPABILITIES

- ✓ Broad range of milling technologies for every particle-engineering goal
- ✓ Precise control of particle-size distribution and deagglomeration
- ✓ Scalable solutions from lab development to full production
- ✓ Integrated systems for conveying, classification, and collection
- ✓ Application expertise across cosmetics and personal care

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INGREDIENT HANDLING IS PART OF PRODUCT QUALITY

What enters the process determines what leaves it.

A mixer cannot correct a handling system that delivers the wrong amount of an ingredient.
Cosmetic plants often handle materials across enormous differences in scale: water or carrier powders by the ton, pigments in kilograms, and preservatives, fragrances, or actives in grams.

AIS systems are engineered so bulk powders can move from silos, super sacks, or bag-dump stations through vacuum, pneumatic, or dense-phase conveying systems; minor powders can be routed to weigh hoppers; micro ingredients can be individually verified and weighed; and liquids can be measured through load cells, flowmeters, or metering systems.

The objective is not merely automation — it is mass balance. What the formula specifies must be what physically enters the process.

RECEIVING

Super sacks, drums, or bagged ingredients received and inspected. Lot traceability begins.

STORAGE

Materials stored in silos, bins, or tanks under controlled conditions to protect quality.

TRANSFER

Vacuum, pneumatic, or dense-phase conveying moves materials gently and efficiently.

WEIGH / DOSING

Ingredients are verified and weighed to the required accuracy — down to grams.

TO PROCESS

Only what the formula specifies enters the weigh vessel. Every time.

INTEGRATED • ACCURATE • REPEATABLE • TRACEABLE

DP — POWDER HANDLING & PROCESSING

AIS — AUTOMATED INGREDIENT SYSTEMS

QuantumX — VACUUM PROCESSING SOLUTIONS

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POWDER MIXING IS ABOUT MOVEMENT AND ENERGY

Successful blending depends on how particles move and how energy is applied.

A powder mixer must move particles through the vessel and apply the right amount of energy to them. Too little movement creates dead zones and poor distribution. Too much energy may damage fragile particles, generate heat, or create unwanted fines.

Ribbon agitators establish axial and radial circulation. Paddle mixers create broad product movement and can promote fast, gentle blending. Plough-shaped tools create dynamic mixing zones that are especially useful when intensive mixing or liquid addition is required.

High-speed choppers add another level of energy for agglomerate breakup or the distribution of small quantities of liquid, pigment, fragrance, or binders through a powder bed. In cosmetics, these are not merely blending problems — they are energy-distribution problems.

QuantumX

ENGINEERED FOR OPTIMAL MOVEMENT.
DESIGNED FOR YOUR FORMULATION.

THE TOOLS OF EFFECTIVE POWDER MIXING

RIBBON
AXIAL & RADIAL CIRCULATION

Ribbon agitators establish consistent axial and radial flow patterns, promoting uniform distribution throughout the vessel with gentle particle handling.

PADDLE
BROAD & GENTLE MOVEMENT

Paddle mixers generate broad product movement for fast, efficient, and gentle blending—ideal for delicate powders and cosmetic formulations.

PLOUGH
DYNAMIC & INTENSIVE MIXING

Plough tools create high-shear mixing zones and are especially effective for intensive mixing or the controlled addition of liquids into powders.

CHOPPERS
AGGLOMERATE BREAKUP & LIQUID DISTRIBUTION

High-speed choppers add energy to break down agglomerates and disperse small amounts of liquid, pigment, fragrance, or binders through the powder bed.

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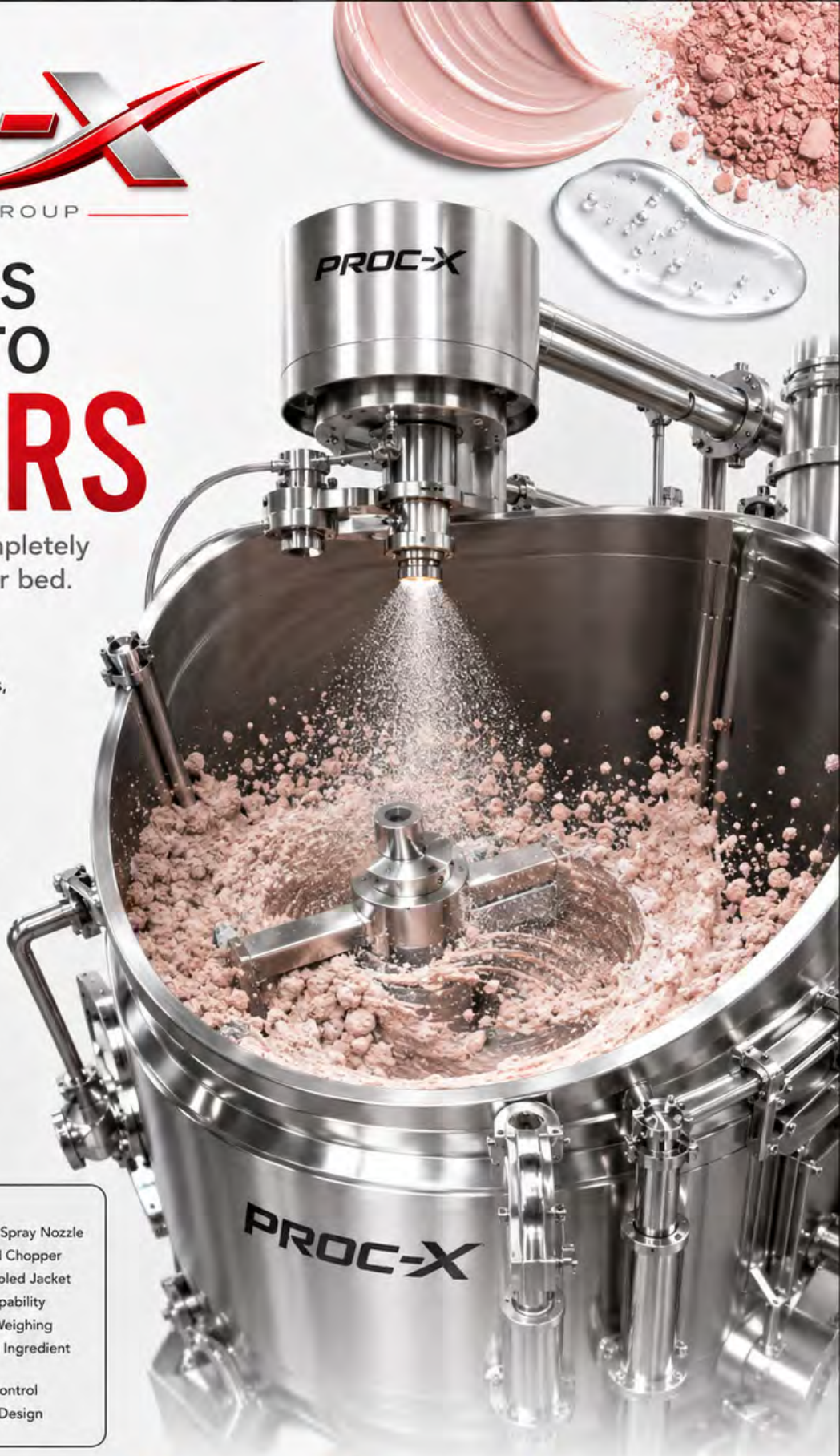
WHEN LIQUIDS ARE ADDED TO POWDERS

Small amounts of liquid can completely change the behavior of a powder bed.

Many powder cosmetics are not completely dry processes. Oils, fragrances, binders, moisturizers, or liquid actives may need to be introduced into the powder.

The moment liquid enters a powder bed, the physics changes. Droplets wet particles and cause adhesion; under controlled conditions this may support agglomeration, dust reduction, pressability, or improved feel, but under uncontrolled conditions it can create wet lumps, color variation, and poor flowability.

Spray-nozzle location, droplet size, spray rate, mixer speed, and chopper intensity all influence the result. Proc-X can engineer systems that combine controlled spray addition, high-speed choppers, heating or cooling jackets, vacuum, load cells, and automated ingredient addition, transforming the powder mixer into a fully controlled powder-processing reactor.



ENGINEERED SYSTEM

Spray Addition Powder Reactor System with High-Speed Chopper

- Top-Mount Spray Nozzle
- High-Speed Chopper
- Heated/Cooled Jacket
- Vacuum Capability
- Load Cell Weighing
- Automated Ingredient Addition
- PLC/HMI Control
- CIP-Ready Design

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MICRO DOSING:
WHERE SMALL ERRORS BECOME LARGE PROBLEMS

Tiny additions often carry the greatest functional importance.

Micro ingredients frequently represent the smallest mass fraction of a cosmetic product and the **greatest functional importance.** Pigments determine color, preservatives protect microbiological stability, fragrances define sensory identity, actives support product claims, and pH modifiers can change the physical behavior of an entire formulation.

When these materials are manually measured and introduced, production becomes increasingly dependent on operator technique. Automated micro-dosing systems reduce that dependency.

The engineering challenge is considerably different from bulk dosing because very small quantities must be transferred without excessive residual product, bridging, or cross-contamination. A micro-dosing station may therefore combine precision feeders, small weigh vessels, ingredient identification, barcode verification, and recipe-controlled sequencing.

The result is not simply higher accuracy, but greater **traceability, reproducibility,** and **manufacturing discipline.**

THE PRECISION DOSING CONCEPT

IDENTIFY	PRECISELY FEED	WEIGH & VERIFY	DISPENSE	DOCUMENT
Verify ingredient and lot information.	Deliver controlled micro-quantities without bridging or waste.	Confirm target weight in real time with tight tolerances.	Introduce material cleanly to the formulation vessel.	Record every step for full traceability and compliance.

AIS AUTOMATED INGREDIENT SYSTEMS

SMALL DOSES. BIG IMPACT.
ENGINEERED FOR ACCURACY. BUILT FOR TRUST.

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WHY POWDERS SEGREGATE

A blend can be homogeneous in the mixer and non-uniform by the time it reaches the package.

Powders that differ in particle size, density, or shape respond differently to gravity, flow, and movement. Once a blend leaves the mixer, external forces can cause the components to separate—even if the blend was uniform at the end of mixing.

Segregation can occur during discharge, pneumatic conveying, residence in a hopper, vibration, or packaging. These effects reduce product consistency, undermine performance, and increase the risk of off-spec lots or customer complaints.

That's why the design of the entire powder system matters. Proc-X evaluates milling, conveying, weighing, blending, discharge, transfer, and packaging as a connected process—protecting your blend quality from start to finish.

WHERE SEGREGATION CAN OCCUR

1 DISCHARGE
Heavier or larger particles flow differently during discharge.

2 CONVEYING
Airflow and line routing can cause stratification and particle separation.

3 HOPPER STORAGE
During residence, percolation and sifting separate the blend.

4 VIBRATION
Equipment vibration can cause particle migration.

5 PACKAGING
Filling operations can result in variation in the final package.

MIXER SELECTION MATTERS

The right mixer is selected based on powder behavior and process goals—not habit. Each design offers distinct mixing action and benefits.

PADDLE MIXERS

Rapid blending with high-intensity radial and axial flow.

Ideal for free-flowing powders and short mix cycles.

RIBBON MIXERS

Strong circulation with gentle action.

Excellent for large batch sizes and a wide range of powder properties.

PLOUGH MIXERS

Intensive mixing and agglomerate breakup.

Effective for cohesive powders and high-uniformity requirements.

CONICAL MIXERS

Gentle, three-dimensional mixing with low residue.

Ideal for fragile particles and sensitive ingredients.

The correct mixer delivers the right mix—without damaging the powder or your finish line.

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LIQUID PROCESSING BEGINS WITH FLUID BEHAVIOR

Liquids may appear easier to process than powders because they flow naturally. In reality, complex cosmetic liquids introduce an entirely different set of challenges.

Liquid cosmetic processing depends on fluid dynamics. Hydration, suspension, dissolution, heat transfer, air entrainment, and viscosity changes all interact while the product is being mixed. An ingredient that behaves one way in the beaker may behave very differently once it is exposed to shear, temperature, or changes in formulation.

EmulXion liquid processing systems are engineered around how energy is transferred into the product rather than simply how an agitator rotates. The goal is to apply the right type of shear, in the right location, for the right amount of time — and to do so in a way that protects sensitive actives, minimizes air, and ensures repeatable results from batch to batch.

HOW ENERGY IS APPLIED MATTERS

CONVENTIONAL AGITATORS
Broad, low-intensity energy

Anchor, paddle, or turbine agitators move the bulk product and help with heat transfer, but they distribute energy broadly and rely on long residence time to achieve results.

HIGH-SHEAR ROTOR-STATOR
Targeted, high-intensity energy

Rotor-stator systems concentrate energy in a small processing zone. This creates intense shear for dispersion, emulsification, and rapid hydration without excessive over-processing.

HOMOGENIZERS
Precision shear and particle reduction

Inline homogenizers provide controlled shear for droplet or particle size reduction within the process line.

High-pressure homogenizers deliver greater shear and finer particle or droplet sizes for demanding formulations.

TECHNOLOGIES ENGINEERED FOR LIQUID EXCELLENCE

BATCH HIGH-SHEAR MIXERS

Versatile systems for blending, dispersion, and emulsion formation.

INLINE ROTOR-STATOR HOMOGENIZERS

Continuous, in-line shear for efficient emulsification and dispersion.

BOTTOM-ENTRY HOMOGENIZERS

Powerful in-tank shear for hard-to-mix and high-viscosity products.

POWDER INDUCTION SYSTEMS

Liquid dispersers that hydrate and draw powders in quickly and cleanly.

COLLOID MILLS

Fine grinding and particle size reduction for stable suspensions and slurries.

HIGH-PRESSURE HOMOGENIZERS

Maximum shear for ultra-fine emulsions and consistent droplet size control.

VACUUM EMULSIFYING SYSTEMS

Temperature control, deaeration, and vacuum for premium products.

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EMULSIONS EXIST AT THE MICROSCOPIC SCALE

A cream or lotion may look perfect to the eye, yet its long-term performance is determined by what happens at the microscopic level.

Creams and lotions are mixtures of phases — typically oil, water, and emulsifiers — that do not naturally remain together. They must be engineered and processed to form a stable emulsion.

Long-term stability depends on droplet size and droplet-size distribution. Larger droplets are more likely to rise, settle, or merge, leading to separation and performance loss.

Smaller, more uniform droplets stay suspended. They support a stable physical structure, improved texture, and longer shelf life — when the formulation chemistry is correct.

EmulXion systems from Proc-X are engineered to create tight, uniform emulsions with controlled droplet size distribution, protecting the quality, appearance, and performance of your cosmetic products.

EmulXion | ENGINEERED EMULSIONS. SUPERIOR PERFORMANCE.

- TIGHT DROPLET DISTRIBUTION
- GREATER STABILITY
- BETTER TEXTURE
- LONGER SHELF LIFE

LARGER, INCONSISTENT DROPLETS

- **INSTABILITY** — Droplets rise, settle, or merge over time.
- **SEPARATION** — Layers form, emulsion breaks.
- **POOR TEXTURE** — Gritty, waxy, or thin feel.
- **OIL BLEED** — Surface shine, weeping, or residue.

SMALLER, UNIFORM DROPLETS

- **IMPROVED STABILITY** — Droplets remain suspended and resist coalescence.
- **NO SEPARATION** — Consistent product from start to finish.
- **BETTER TEXTURE** — Smooth, rich, and luxurious feel.
- **LONGER SHELF LIFE** — Maintains quality, appearance, and claims.

PROCESSING MAKES THE DIFFERENCE

High-shear homogenization and proper processing parameters create the right droplet size — and the right distribution. That is what separates a beautiful product today from a reliable product tomorrow.

DISPERSE — Break phases into small droplets.

→ **HOMOGENIZE** — Reduce droplet size to target range.

→ **STABILIZE** — Maintain uniformity through time.

→ **DELIVER PERFORMANCE** — Consistent quality. Confident results.

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POWDER INTO LIQUID: ONE OF THE MOST DIFFICULT STEPS IN THE PLANT

Powder incorporation into liquids frequently becomes a major production bottleneck.

Difficult powders—such as carbomers, gums, cellulose derivatives, clays, silica, starches, pigments, titanium dioxide, zinc oxide, and functional actives—are notorious for resisting wetting and uniform dispersion. When added through a top-loaded port, these powders can form fisheyes, float, dust, or sink, creating lumps, inconsistent viscosity, poor product stability, and rework.

Powder induction changes the mechanism. Instead of dropping powder into a quiescent tank, an induction system pulls dry powder directly into a fast-moving liquid stream. The powder is immediately wetted, dispersed, and broken apart by high shear and turbulence—before it ever has a chance to float or agglomerate.

The result is faster incorporation, fewer fisheyes, less dust, reduced operator exposure, and predictable, repeatable performance—batch after batch.

PROC-X INDUCTION SYSTEMS DELIVER:

- ✓ Faster wetting and dispersion
- ✓ Elimination of fisheyes and floating powders
- ✓ Reduced dusting and ingredient loss
- ✓ Lower energy consumption
- ✓ Improved batch consistency
- ✓ Scalable from lab to production

THE INDUCTION PROCESS

1 AUTOMATIC INGREDIENT MEASUREMENT

Powders are automatically measured and verified for accuracy and traceability.

2 CONTROLLED POWDER FEED

A controlled feeder delivers powder at a precise rate to the induction port.

3 DIRECT INDUCTION

Powder is pulled directly into a high-velocity liquid stream and instantly wetted.

4 HIGH-ENERGY DISPERSION

High shear and turbulence break apart agglomerates for uniform dispersion.

5 TANK RECIRCULATION

The blended product recirculates for complete hydration and uniformity.

BUILT FOR TOUGH POWDERS

Proc-X induction systems are engineered to handle the most challenging powders with precision, speed, and reliability—ensuring complete incorporation and consistent results every time.

TYPICAL APPLICATIONS

- Gels & Viscosity Builders
- Pigment Dispersions
- Sunscreens (TiO_2, ZnO)
- Clays & Silicas
- Starches & Cellulose
- Functional Actives

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PASTES ARE A DIFFERENT WORLD

At high viscosity, many assumptions used for liquid mixing stop being valid.

Pastes and high-viscosity materials do not behave like liquids. They resist flow, store energy, and respond to mixing forces in complex ways. They do not circulate easily, may move near the agitator while remaining stagnant near the wall, and become harder to heat, cool, deaerate, and discharge. These realities require specialized equipment designed specifically for high-viscosity performance.

Proc-X designs and builds mixing systems that create the right movement, energy distribution, and shear for pastes—delivering uniformity, consistency, and product integrity from start to finish.

HIGH-VISCOSITY CHALLENGES

Do not visculate easity. Material may move near the agitator but remain stagnant near the wall.

Harder to heat & cool. Poor flow reduces heat transfer efficiency.

Difficult to deaerate. Entrapped air is harder to remove in thick formulations.

Harder to discharge. High viscosity resists flow, increasing residual product risk.

Require specialized equipment. Engineered systems solve the unique challenges of pastes.

EQUIPMENT DESIGNED FOR PASTES

DOUBLE PLANETARY MIXERS

Dual-agitator action provides intense shear and thorough wall-to-wall wiping for maximum uniformity. Ideal for high-viscosity creams, pastes, gels, and waxes.

SIGMA MIXERS

Z-blade kneading action applies high shear at low speed for excellent agglomerate breakup and uniformity in very thick materials.

MULTI-SHAFT SYSTEMS

Multiple shafts apply tailored shear and flow patterns to move material through its full volume—improving consistency and reducing cycle times.

SCRAPED-WALL SYSTEMS

Continuous wall scraping prevents buildup, improves heat transfer, and ensures uniform mixing and high-quality results.

BUILT FOR PASTES ACROSS PERSONAL CARE

BALMS & BUTTERS
Rich, anhydrous formulations with thick, waxy structures.

POMADES & WAXES
High-hold styling products and wax systems.

THICK CREAMS
Moisturizers, body creams, and heavy emulsions.

HAIR MASKS
Deep-conditioning pastes with high viscosity bases.

GELS & SCRUBS
Carbomer gels, exfoliating scrubs, and bead systems.

SILICONE SYSTEMS
Silicone-heavy formulations, primers, and sealants.

TOOTHPASTE-TYPE PRODUCTS
Abrasive pastes and hygiene formulations.

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THE TANK IS PART OF THE MACHINE

Process vessels directly influence how your product behaves every stage of the process.

A vessel is more than a container. Its geometry, height, diameter, bottom shape, jacket configuration, nozzle location, and agitator-to-wall relationship determine how your formulation moves, mixes, heats, cools, and transfers. These design choices directly impact circulation, heat transfer, powder incorporation, air entrainment, drainability, cleanability, and batch-to-batch consistency.

At Proc-X, we engineer vessels as an integral part of the total process—optimized for the physics of your product and the realities of your production goals.

TANKS BUILT FOR EVERY STAGE

RAW-MATERIAL STORAGE TANKS

Safe, sanitary storage for powders, liquids, and bulk ingredients.

OIL-PHASE TANKS

Precise heating and mixing for oils, waxes, and lipid systems.

WATER-PHASE TANKS

Efficient heat transfer and agitation for water and aqueous systems.

PREMIX TANKS

High-shear or gentle agitation for powders, gums, and actives.

PROCESS TANKS

Engineered for optimal mixing, heat transfer, and product integrity.

HOLDING TANKS

Maintain product quality and temperature between operations.

DAY TANKS

Smaller-volume vessels for blending, staging, and short-term hold.

FINISHED-PRODUCT TANKS

Hygienic storage with gentle agitation to protect final quality.

MOBILE VESSELS

Flexible movement for multi-line and multi-product needs.

VACUUM VESSELS

Remove entrapped air and moisture for better texture and stability.

PRESSURE-CAPABLE VESSELS

Designed for elevated pressure processes and closed operations.

ENGINEERED AROUND YOUR PRODUCT, NOT SELECTED FROM A CATALOG.

The right vessel design improves performance, increases consistency, and protects your brand.

THE RIGHT VESSEL DESIGN. BETTER CIRCULATION. SUPERIOR PRODUCTS. CONSISTENT RESULTS.

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REACTORS: WHEN CHEMISTRY, TEMPERATURE, AND TIME MATTER

A reactor provides a controlled environment where physical and chemical changes occur with precision and repeatability.

From melting and hydration to neutralization and active incorporation, reactors are where formulations come to life. They create the right conditions to drive reactions, dissolve materials, and build structure—safely, efficiently, and consistently.

Proc-X engineers reactors for high-performance cosmetic and personal care manufacturing, supporting a wide range of critical unit operations.

- Wax melting
- Polymer hydration
- pH adjustment
- Neutralization
- Controlled dissolution
- Surfactant processing
- Oil-phase preparation
- Active incorporation
- Vacuum processing
- Controlled condensation

Every Proc-X reactor is built to maintain control over the variables that matter—ensuring your process performs exactly as designed, every time.

CONTROLLED VARIABLES. PREDICTABLE RESULTS.

TEMPERATURE
Jacketed and internal systems deliver precise heating and cooling for optimal reaction conditions.

PRESSURE
Operate under pressure or vacuum to enhance solubility, prevent boiling, and ensure process safety.

VACUUM
Removes air and moisture, improves product quality, and enables low-temperature processing.

RESIDENCE TIME
Controlled mixing and hold times ensure complete reactions and consistent product outcomes.

pH CONTROL
Integrated pH probes and feedback systems maintain target levels with high accuracy.

AUTOMATED ADDITION
Add liquids, powders, or actives at the right time and rate—every time.

REPEATABILITY
Engineered systems and automation reduce variability and support regulatory compliance.

DP	AIS	QuantumX	EmulXion	PreciXion	InspeX
POWDER HANDLING & PROCESSING	AUTOMATED INGREDIENT SYSTEMS	VACUUM PROCESSING SOLUTIONS	EMULSIFICATION TECHNOLOGY	PROCESS & BATCH SOLUTIONS	INSPECTION SOLUTIONS

ENGINEERED AS ONE. BUILT TO PERFORM.

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HEATING, COOLING, & HEAT TRANSFER

Thermal control is not just about adding heat—it is about managing the entire thermal cycle.

Many cosmetic processes focus on heating—melting waxes, dissolving powders, or starting reactions. But controlled cooling is often harder, and it is frequently the production bottleneck.

As viscosity rises and circulation drops, removing heat becomes more difficult. Poor cooling can extend cycle times, destabilize emulsions, or compromise product quality. That's why Proc-X designs systems that deliver precise, efficient thermal control across every phase.

THE THERMAL CYCLE

1. HEAT-UP

Add heat efficiently and uniformly. Bring materials to the target temperature.

2. HOLD

Maintain stable temperature for complete melting, mixing, or reaction initiation.

3. PROCESS

Execute the unit operation with precise thermal control and agitation.

4. CONTROLLED COOL-DOWN

Remove heat reliably and consistently to reach the target product state.

HEATING APPLICATIONS

- Wax melting and oil-phase preparation
- Powder dissolution and dispersion
- Hydration of gums and polymers
- Reaction control and activation
- Viscosity reduction for better flow
- Temperature ramping with precision

COOLING APPLICATIONS

- Emulsion stabilization and set-up
- Crystallization and phase control
- Viscosity development and build
- Protection of heat-sensitive actives
- Shortening cycle time and improving throughput
- Consistent batch-to-batch quality

Proc-X engineers integrated heating and cooling systemss that work in harmony—designed for rapid heat-up, precise control, efficient heat transfer, and reliable cool-down. Every system is optimized for your formulation, vessel size, and process goals.

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VACUUM: MORE THAN JUST REMOVING AIR

Vacuum processing can improve product quality across powders, liquids, emulsions, and pastes in many ways.

Entrained air is one of the most common yet overlooked causes of product and process issues. Air trapped during mixing, transfer, or filling can lead to foaming, oxidation, poor texture, density variation, filling inconsistency, and reduced shelf life.

Vacuum is not just about removing air — it is about controlling the environment to protect your formula and improve performance.

HOW VACUUM ADDS VALUE

LIQUIDS & EMULSIONS

- Removes entrained air to prevent foaming
- Reduces oxidation for better color, stability, and shelf life
- Improves dispersion and uniformity of actives and pigments
- Enhances clarity, gloss, and sensory feel

PASTES

- Eliminates air pockets for smooth, consistent texture
- Increases bulk density and yield
- Improves flow for filling and downstream processing
- Reduces defects and rejects

POWDERS

- Removes moisture to prevent caking and extend shelf life
- Enables solvent removal under reduced pressure
- Supports vacuum drying and controlled-atmosphere processing
- Improves flowability and bulk density

KEY VACUUM BENEFITS ACROSS ALL FORMULATIONS

- Improved product stability and shelf life
- Better texture, appearance, and sensory feel
- More consistent density and filling accuracy
- Fewer defects, less waste, higher yield
- Faster processing and shorter cycle times

Proc-X vacuum systems are engineered for deep, consistent vacuum, optimal heat transfer, and precise process control — so you can protect your formula and elevate your results.

DP POWDER HANDLING & PROCESSING

AIS AUTOMATED INGREDIENT SYSTEMS

QuantumX VACUUM PROCESSING SOLUTIONS

EmulXion EMULSIFICATION TECHNOLOGY

PreciXion PROCESS & BATCH SOLUTIONS

InspeX INSPECTION SOLUTIONS

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AUTOMATION TURNS PROCESS KNOWLEDGE INTO REPEATABILITY

Process automation systems control the entire process, from raw-material handling to finished product transfer.

Every great formula is built on knowledge. Automation captures that knowledge and applies it with precision—every time.

Proc-X automation systems are engineered to control every critical variable in your process, including:

- ✓ Ingredient identity and quantity
- ✓ Addition sequence and timing
- ✓ Agitator speed and direction
- ✓ Homogenizer speed and pressure
- ✓ Temperature and thermal profiles
- ✓ Vacuum level and hold
- ✓ Processing time and dwell
- ✓ Valve sequencing and routing
- ✓ Alarms, interlocks, and safety
- ✓ Data logging and traceability

Integrated recipe management, electronic batch records, and real-time monitoring reduce operator dependency and ensure that proven processes are followed consistently—no matter who is running the equipment.

POWERFUL AUTOMATION. PROVEN RESULTS.

CONSISTENT QUALITY
Precise control of every variable ensures the same results, every batch.

REDUCED DEPENDENCY
Less reliance on operator technique means fewer errors and greater efficiency.

FULL TRACEABILITY
Complete batch records protect product integrity and simplify compliance.

DP POWDER HANDLING & PROCESSING

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FROM PROCESSING TO PACKAGING

The product journey does not end at the vessel discharge.

Finished cosmetics must be transferred gently and held under the right conditions before the final package is completed. Temperature control, product integrity, cleanline transfers, and accurate handling are critical to protecting the quality you engineered in the process.

PreciXion and InspeX extend your process into the packaging suite—delivering integrated solutions that fill, close, label, verify, and prepare your product for market with care and precision.

A CONNECTED END-TO-END SOLUTION

1 FROM VESSEL DISCHARGE

Controlled discharge of finished product.

2 GENTLE TRANSFER

Clean, low-shear transfer preserves texture and product integrity.

3 FILLING SOLUTIONS

Accurate filling for bottles, jars, tubes, and pouches with minimal waste.

4 CAPPING & LABELING

Secure closures and precise label application for brand consistency and compliance.

5 INSPECTION & VERIFICATION

Checkweighing, vision inspection, and data capture ensure quality at every step.

PACKAGING & FINISHING OPERATIONS

From primary packaging to final pallet—engineered to protect your product and your reputation.

BOTTLE FILLING | JAR FILLING | TUBE FILLING | POUCH FILLING | CAPPING | LABELING | CARTONING | CASE PACKING | PALLETIZING

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ONE MANUFACTURING GROUP. **ONE** ENGINEERED SOLUTION.

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AUTOMATION & CONTROL: INTELLIGENCE BEHIND CONSISTENCY

Precise control. Complete visibility.
Confident production.

Proc-X systems are built with advanced automation that gives you complete control of your process. From ingredient dosing to final packaging, every step is monitored, recorded, and optimized.

Siemens PLC & HMI
Intuitive interface with recipe management, real-time monitoring, and alarm diagnostics.

Formula Management
Create, store, and protect unlimited formulas with user-level access and audit trail.

Data Integrity & Traceability
Batch records, electronic signatures, and full traceability compliant with 21 CFR Part 11.

Remote Access & Support
Secure remote connectivity for troubleshooting, updates, and performance optimization.

BUILT-IN BENEFITS

- Repeatable Batches
- Reduced Operator Error
- Real-Time Process Control
- Faster Changeovers & Scalability
- Regulatory Compliance

PROC-X
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QUALITY BY DESIGN.
BUILT TO COMPLY.

Cosmetic manufacturing demands the highest standards of product quality, safety, and consistency. Proc-X systems are engineered to meet and exceed global regulatory and industry requirements.

STANDARDS & COMPLIANCE

GMP COMPLIANT
Designed and built to cGMP guidelines for cosmetic manufacturing.

ISO CERTIFICATIONS
Manufactured under ISO 9001 quality management systems for consistent excellence.

FDA CFR 21
Materials and design meet FDA requirements for cosmetic products.

MATERIAL TRACEABILITY
Full material certification, including 3.1 certificates for all product contact parts.

ATEX / IECEx
Explosion protection for safe handling of flammable powders and solvents.

VALIDATION READY
IQ/OQ documentation support for easy validation and compliance.

Your product is only as safe as the process that makes it. We engineer systems that protect your brand, your people, and your customers.

PROC-X
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COMPLETE PROJECT EXECUTION

From concept to commissioning, we deliver success.

Proc-X provides end-to-end project management to ensure your system is delivered on time, on budget, and to specification.

- **CONSULTATION & DESIGN**
  Process evaluation, feasibility, and system engineering.
- **MANUFACTURING & ASSEMBLY**
  Precision fabrication, rigorous testing, and quality assurance.
- **TESTING & VALIDATION**
  Factory Acceptance Testing (FAT) with documented results.
- **DELIVERY & INSTALLATION**
  Global logistics and on-site installation support.
- **COMMISSIONING & TRAINING**
  Start-up assistance, operator training, and performance optimization.
- **AFTER-SALES SUPPORT**
  Spare parts, service, upgrades, and lifetime partnership.

PROJECT BENEFITS

- Single Source Accountability
- Predictable Timelines
- Global Project Experience
- Reduced Risk & Downtime
- Long-Term Support

PROC-X

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ENGINEERED AS ONE.
BUILT TO PERFORM.

Proc-X delivers integrated solutions that turn your ingredients into exceptional cosmetic products.

From powders to pastes, emulsions to liquids — our equipment, automation, and expertise work together to help you create with confidence.

THE PROC-X ADVANTAGE

- Integrated Solutions
- Process Expertise
- Proven Performance
- Global Support
- Built for Your Future