



Engineer the powder. Perfect the product.

DRY INGREDIENT PROCESSING

Milling • Mixing • Sterilization • Instantization • Packing • Inspection



GULFOOD | PROCESS TECHNOLOGY COLLECTION

From raw ingredients to finished packs,
connected by **Proc-X engineering.**

| proxinc.com | 01

One group. A complete powder line.

Connect ingredient handling, transformation and final-pack quality.



AIS

Receive, convey, weigh and dose powders and liquids.



DP

Control particle size with application-selected mills.



QuantumX

Blend, condition, granulate and thermally process powders in suitable configurations.



EmulXion

Prepare liquid binders, dispersions and wet-process feeds.



ThermoFlow

Dry suitable ingredients and liquid feeds using belt or spray drying.



FuXion

Produce extruded ingredient intermediates where required.



PreciXion

Meter and fill powder into selected pack formats.



InspeX

Integrate metal detection and checkweighing.



Proc-X integrates the equipment, controls, utilities and interfaces around your product.

Specialist process modules and preservation validation are defined in the project scope.

Start with controlled ingredients.

Accurate batches begin before the mixer.



01 | Receive & identify

Verify supplier, lot, allergens, condition and moisture.



02 | Empty & contain

Select sack tipping, bulk-bag unloading or silo handling with dust capture.



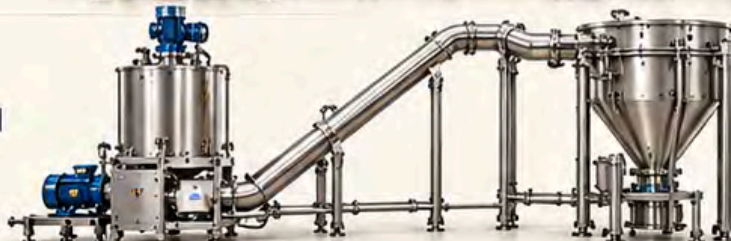
03 | Screen & protect

Remove oversize and use suitable magnets or detection at defined control points.



04 | Convey & dose

Match pneumatic or mechanical transfer to fragility, flow and segregation risk.



05 | Verify & release

Confirm weights and micro-ingredient additions before batch transfer.



EXAMPLE

AIS receiving and dosing
DP size reduction where required
QuantumX blending



Specify the smallest addition, bulk density range and required dosing accuracy.



Dust containment, combustible-dust protection and hygiene zoning are application-specific.

Mill for function.

The right particle size is a process decision.

PIN MILLS

Fine impact grinding of suitable spices, sugars and dry ingredients.



HAMMER MILLS

Versatile reduction of suitable coarse or fibrous feed.



AIR CLASSIFIER MILLS

Combine impact grinding and dynamic classification for controlled fine powder.



JET MILLS

Consider for suitable ultrafine duties after trials and utility review.



COOLED & CRYOGENIC ROUTES

Evaluate for heat-sensitive, oily or aroma-rich ingredients.



Clean feed



Controlled dosing



DP milling



Separation and collection



Protected transfer



Test particle-size distribution, temperature rise, yield, energy and cleanability.

Finer is not always better: excess fines can worsen dust, flow and wetting. Mill selection depends on feed properties and target performance.

Choose the mixing action.

Match geometry to the powder,
not the other way around.



Ribbon

Horizontal and vertical configurations for convective powder blending.



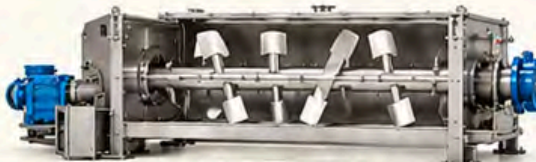
HORIZONTAL RIBBON



VERTICAL RIBBON

Paddle & twin-shaft

Horizontal, twin-shaft and vertical configurations.



HORIZONTAL PADDLE



VERTICAL PADDLE

Plow

Intensive mixing with optional choppers and liquid addition.



Conical screw

Gentle lifting and circulation in a conical vessel.



V, double-cone & drum

Tumbling of suitable free-flowing blends.



High-shear granulator

Controlled wet massing and granule formation.



Vacuum & thermal variants

Combine mixing with suitable drying or treatment duties.



Selection inputs:

cohesion • fragility • density • batch range • liquid load • cleanability

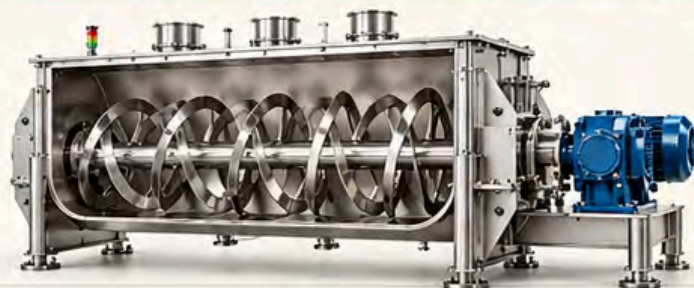
Planetary and sigma mixers address paste and dough duties when the process moves beyond dry powder. Selection and working fill require trials.

Ribbon mixers

**A versatile foundation
for dry blending.**

HOW IT WORKS

Inner and outer ribbons move material in opposing directions, creating bulk circulation through the vessel.



WHERE IT FITS

Bakery premixes, seasoning blends, dry sauce bases and other suitable powder formulations.



CONFIGURE THE DUTY

Select loading ports, liquid spray addition, jacket, discharge arrangement and optional choppers for the recipe.



PROTECT THE RESULT

Confirm working fill, loading order, mixing time and discharge behaviour. Check for segregation after transfer.



**Measure blend uniformity
at discharge, not only inside the mixer.**



Paddle & fluidized-zone mixers

**Mix efficiently.
Preserve the ingredients.**

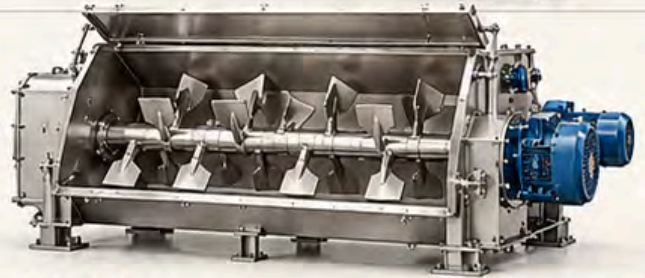
SINGLE-SHAFT PADDLE

Convective mixing for suitable powders, flakes and formulations needing gentler handling.



TWIN-SHAFT PADDLE

Counter-rotating shafts create an active mixing zone for rapid distribution in suitable recipes.



LIQUID ADDITION

Distribute oils or flavours through controlled sprays; verify droplet size and local wetting.



PARTICLE CARE

Match speed and residence time to friability. Add fragile inclusions at the appropriate stage.



EXAMPLE PROCESS

Dry soup blend with vegetable flakes:

AIS dosing / **QuantumX** paddle mixing / gentle transfer / **PreciXion** packing / **InspeX** checks



EVALUATE

Evaluate uniformity, particle breakage, liquid distribution and discharge residue.



NOTE

Mechanical fluidization is a mixing action; it is not the same as a fluid-bed dryer.

Proc-X integrates the equipment, controls, utilities and interfaces around your product.

Specialist process modules and preservation validation are defined in the project scope.

Plow mixers & granulators

Intensive mixing. Controlled liquid distribution.



PLOW MIXING

Plow-shaped tools mobilize powder for intensive contact and dispersion.



CHOPPER OPTIONS

Break suitable agglomerates and distribute liquid additions; select duty to avoid unwanted fines.



HIGH-SHEAR GRANULATION

An impeller and chopper wet-mass suitable formulations into controlled granules.



PROCESS DEVELOPMENT

Balance spray rate, binder properties, mixing energy and endpoint.



Powder premix



Metered binder



QuantumX wet granulation



Selected drying



Sizing



Packing



A granule is not automatically an instant product.

Test wetting and dispersion as well as size.



Drying technology is selected for granule strength and thermal sensitivity. Specialist modules are defined per project.

Gentle blending. Flexible geometries.

Conical screw, V, double-cone and drum mixers.



CONICAL SCREW

A rotating, orbiting screw lifts powder through a conical vessel. Consider for gentle blending and suitable variable-batch duties.



V-BLENDER

Tumbling divides and recombines suitable free-flowing powders.



DOUBLE-CONE

Rotating geometry redistributes suitable powders with low-intensity motion.



DRUM

Gentle tumbling for suitable blending and coating applications.



DEFINE THE LIMITS

Cohesive powders may need intensification. Verify fill range, micro-ingredient distribution and discharge segregation.

EXAMPLE

Nutritional premix / validated minor-ingredient preblend / QuantumX gentle blender / protected transfer / packing.



NOTE: Tumbling alone does not reliably disperse every cohesive ingredient. Low-dose uniformity must be demonstrated.



Steam sterilization

Engineer a validated microbial-reduction process.

01 Characterize

Identify product, target organisms, initial load, moisture and quality limits.



02 Condition

Load the configured QuantumX thermal vessel; manage air removal and steam contact.



03 Treat

Control product temperature, moisture and exposure time against a validated recipe.

04 Dry & cool

Remove added moisture using a suitable vacuum-drying cycle, then cool under controlled conditions.



05 Protect & release

Transfer into the defined clean zone; verify records and release criteria.

Example

Spices or botanicals / validated steam treatment / vacuum drying / controlled cooling / protected packing



Prove microbial reduction
while checking colour, aroma, flow and functionality.

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The term sterilization describes the process category. Sterility or a specific log reduction is not assumed; each product and cycle requires validation.

Instantization

Build powders that wet and disperse.



01

Define the target

Specify wetting time, dispersibility, bulk density and the intended liquid and temperature.



02

Prepare

Blend ingredients and control feed particle size.



03

Agglomerate or coat

Apply controlled moisture or binder to form suitable porous agglomerates. Evaluate lecithination where relevant.



04

Stabilize

Dry and cool using a matched system; control moisture and agglomerate strength.



05

Classify & protect

Screen, manage fines and use gentle conveying and packing.



Example

Instant beverage premix / trial-selected agglomeration / drying and cooling / screening / PreciXion packing / InspeX checks

QuantumX mixing and granulation • **EmulXion** binder preparation • **Proc-X** module integration

Note

Instantization improves physical reconstitution; it does not make insoluble ingredients soluble. Dedicated agglomeration and fluid-bed modules are specified where needed.

Proc-X integrates the equipment, controls, utilities and interfaces around your product.

Drying & the wet-process bridge.

Control moisture without losing product function.



VACUUM MIXER-DRYING

QuantumX combines agitation and indirect heating under reduced pressure for suitable wet powders and thermal-treatment routes.



BELT DRYING

ThermoFlow handles suitable formed particles or pieces where controlled residence time is needed.



SPRAY DRYING

ThermoFlow converts suitable liquid feeds into powder; feed properties determine the process.



LIQUID PREPARATION

EmulXion disperses powders and prepares binders, emulsions or slurries before the selected downstream step.



INGREDIENT TRANSFORMATION

Fuxion extrusion can create suitable cooked intermediates before drying and milling.



Measure moisture, water activity, thermal damage, recovery and reconstitution.



Drying is not automatically a microbial kill step. A fluid-bed finishing module may be required for fragile agglomerates.

Proc-X integrates the equipment, controls, utilities and interfaces around your product.

Specialist process modules and preservation validation are defined in the project scope.

Pack the quality you created.

Gentle transfer. Consistent dosing.
Protected product.



01

Buffer carefully

Limit residence time, moisture pickup and segregation.



02

Select the filler

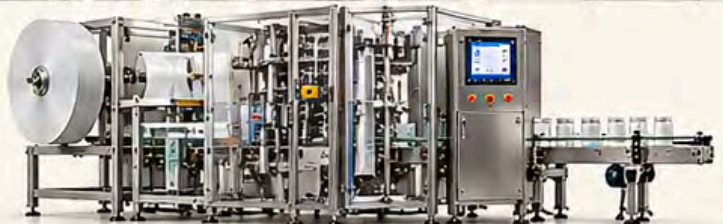
Match auger, gravimetric or other dosing technology to powder flow and pack size.



03

Control the pack

Choose the moisture and oxygen barrier for the product. Consider nitrogen flushing where justified.



04

Seal & identify

Verify closure, lot code, label and allergen information.



05

Inspect & release

Check weight and apply suitable foreign-body detection.



PreciXion packing

AIS feed control

InspeX inspection

Formats

Sachets • Pouches • Jars • Bags • Bulk packs



Formats and atmosphere options are application-dependent. Foil and metallized packs influence detector selection and location; detection sensitivity requires product tests.

Proc-X integrates the equipment, controls,
utilities and interfaces around your product.

Three products. Three line concepts.

Start with the specification.
Build the right sequence.

SEASONING BLEND

Approved spices / DP milling where required / validated thermal treatment / drying and cooling / AIS dosing / QuantumX blending / PreciXion packing / InspeX checks



INSTANT COCOA BEVERAGE

Approved powders / AIS dosing / QuantumX premixing / selected agglomeration or coating / drying and cooling / screening / gentle packing and inspection



BAKERY PREMIX

Approved flour and minor ingredients / screening / AIS weighing / minor-ingredient preblend / QuantumX ribbon or paddle mixing / packing and inspection



Choose microbial controls before fixing the layout.
Protect treated ingredients from untreated material.

Concepts are illustrative. Milling and treatment order, post-treatment additions and preservation controls depend on the validated product process.

Proc-X integrates the equipment, controls, utilities and interfaces around your product.



Specify results. Prove them.

The strongest line is the one that meets your acceptance criteria.

PRODUCT TRIALS

Use representative ingredients. Measure particle size, blend uniformity, granule strength and reconstitution.



THERMAL VALIDATION

Agree microbial targets and quality limits with qualified specialists. Confirm product-specific cycles.



HYGIENIC DESIGN

Define contact materials, finishes, access, seals and cleaning method. Manage allergens and dry-out.



LINE ACCEPTANCE

Test throughput, yield, dosing, cleaning changeover and packaging performance. Agree FAT and SAT scope.



CONTROLS & SUPPORT

Define recipe control, traceability, interlocks, utilities, documentation and service requirements.



Bring the difficult ingredient.
Define the result. Engineer the line.

No universal capacity, kill rate or blend-uniformity guarantee is implied. Performance is established through specification and trials.



Your ingredients. Our process expertise. Let's build your next powder line.

Meet Proc-X at **Gulfood** to discuss milling, mixing, thermal treatment, instantization, packing and inspection.



OFFICES & REGIONAL PRESENCE

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REGIONAL COVERAGE

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