

Applications/Industries

- Systems Engineering
- Application Examples
- Pharma Industry
- Food Industry
- Polyolefin Production

Extruded Snacks, Pastas and Cereals



Experience in Extruded Food Processes

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- Continuous Food Processing

- Continuous Extrusion

- Gravimetric LIW feeders for ingredient delivery
 - LIW liquid feeders for water/liquid flavor addition in lieu of flowmeters
 - Pneumatic receivers for material transfer and refill on continuous feeders blending/mixing

- Continuous Mixing

- Gravimetric feeders for ingredient feeding as well as probiotics and trace elements

- Ingredient Dosing/Batching

- Micro/Macro Ingredient Batch Weighing

- LIW Feeders and GIW Batching Systems

- Material Transfer

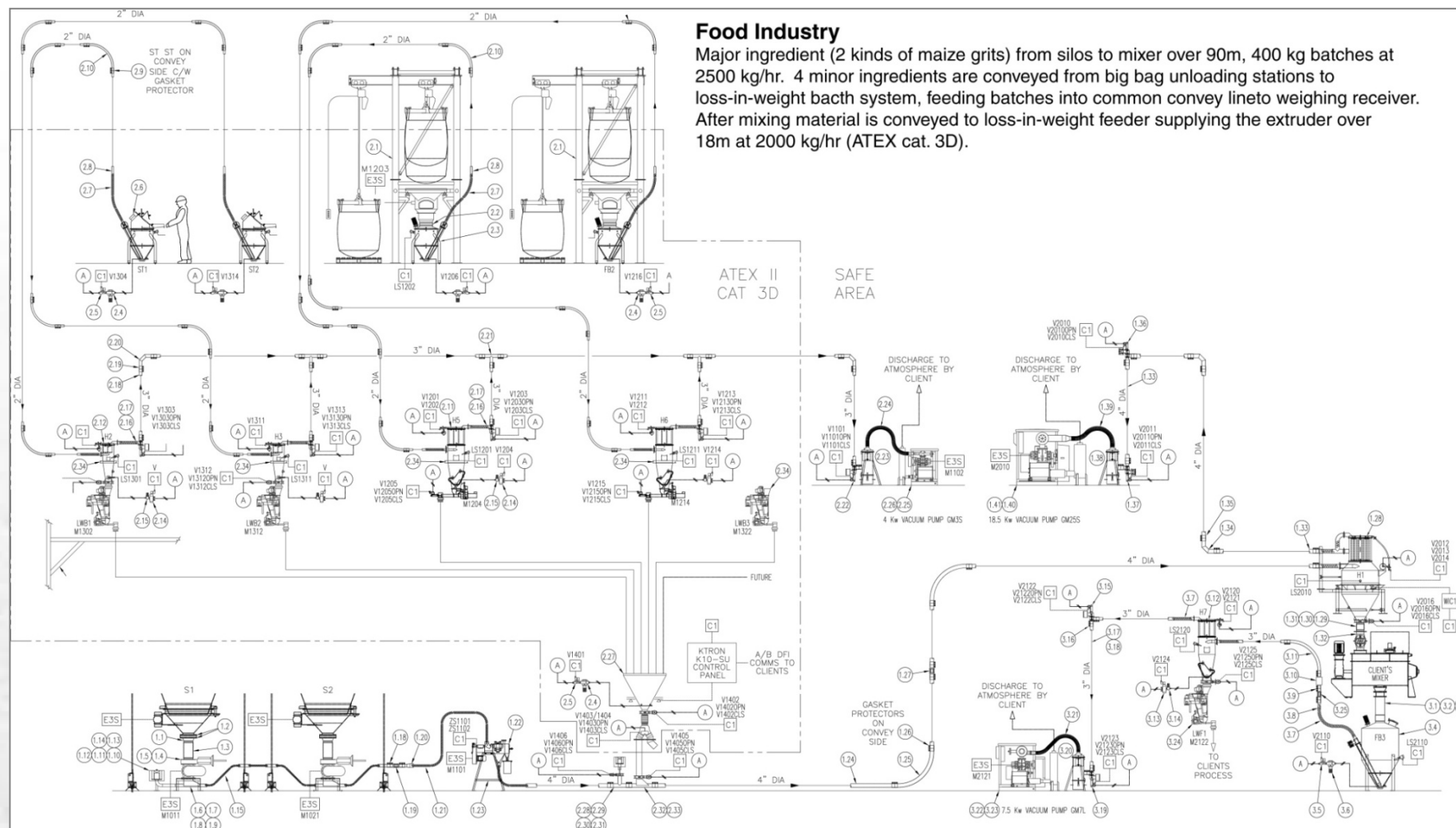
- Dilute Phase Vacuum and Positive Pressure systems

- Dense Phase Vacuum for short distances/rates and preblends



Applications/Industries

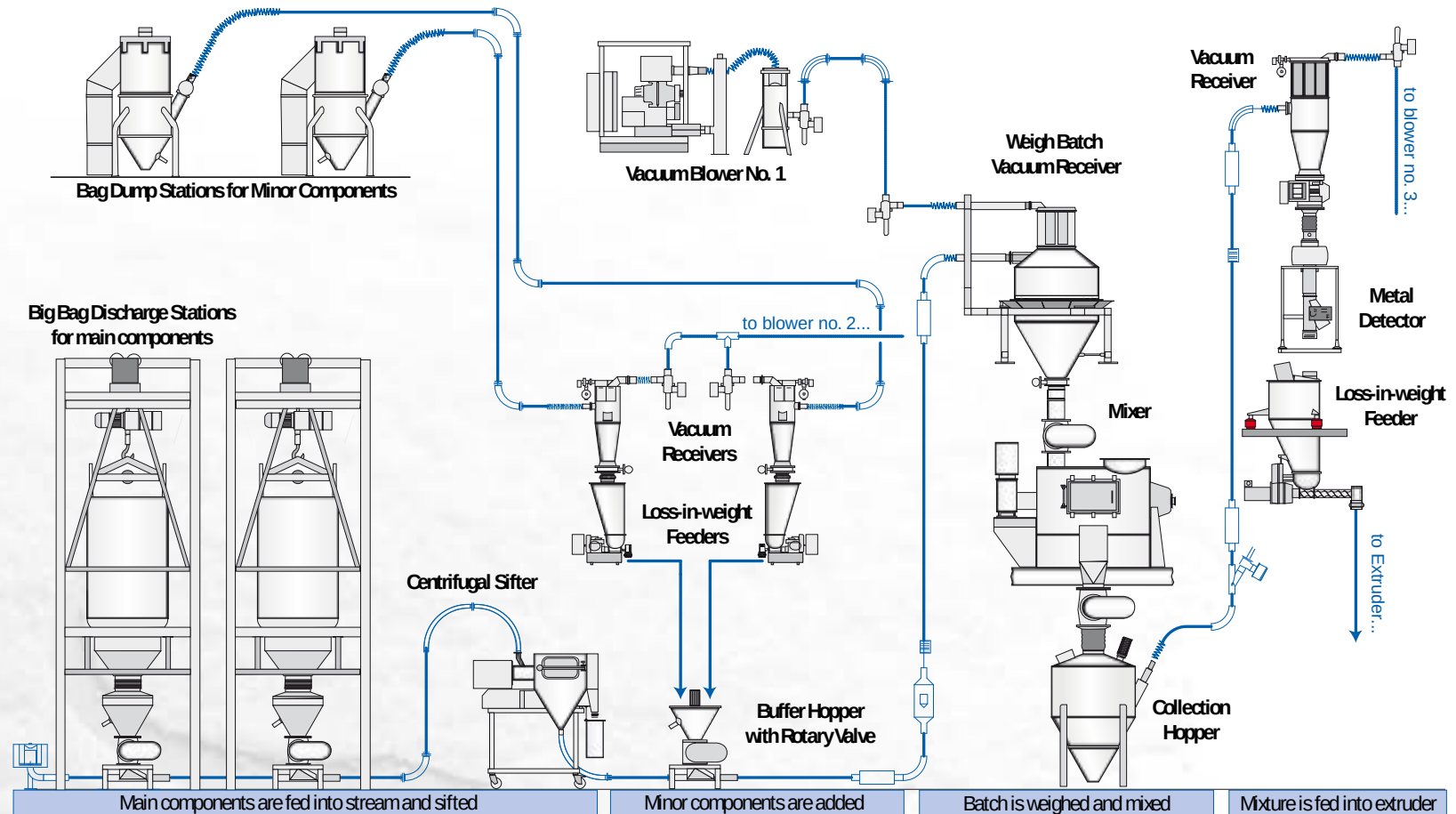
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Snack Food Conveying and Batching

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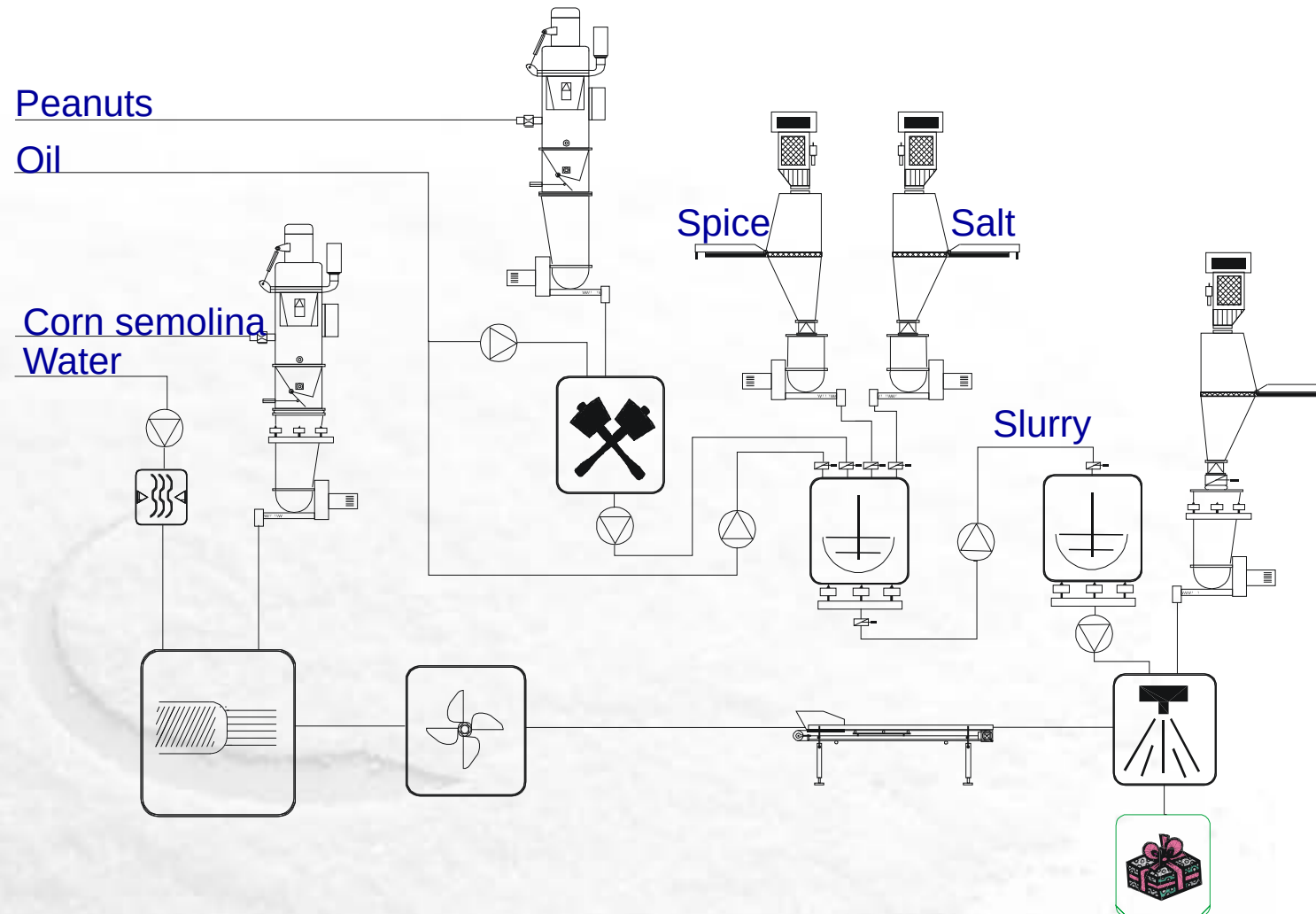
Batch weigh system where 2 ingredients are fed via rotary valve via a common convey line to a mixer. On the way, the material passes through a centrifugal sieve to separate foreign matter. After mixing material is conveyed to receiver refilling a loss-in-weight feeder, supplying the extruder. Conveying distance from silo to weigh batch receiver is approx. 90 m, convey rate 2000 kg/hr.



Screw Feeders Used for Extruded Snacks

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LIW Feeders for Addition of Seasonings

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Snack Food Conveying

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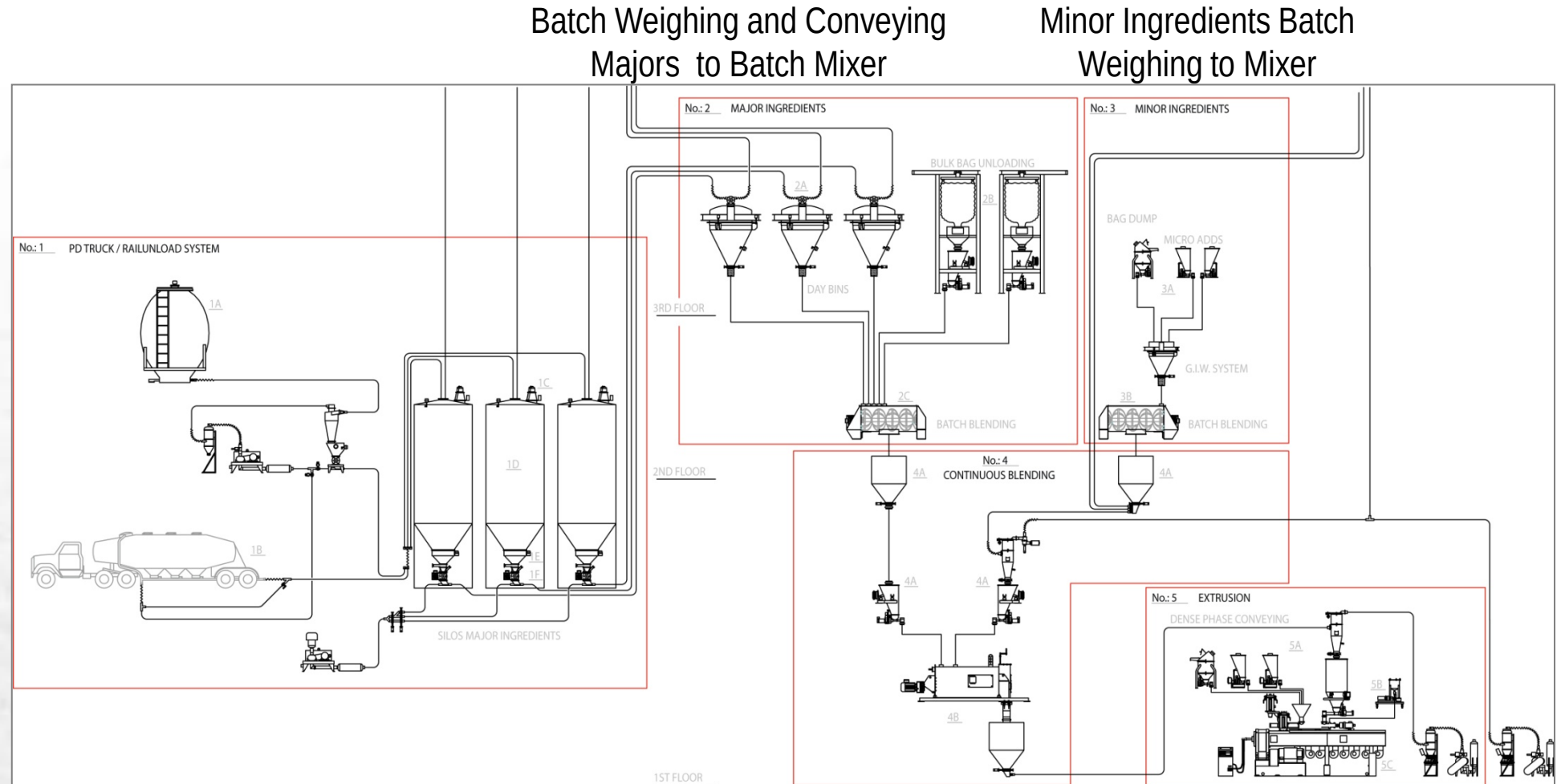
- Many snack foods can be conveyed and money saved
- Extruded products before and after cooking
- Gentle conveying by either vacuum or venturi ,fan and cyclone
- Systems are self-cleaning due to the smooth bore pipe work and crack and crevice free receiver



Typical Flow – Snack Food Processing

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Major Ingredients Truck /
Railcar Unloading

Batch Mixed Ingredients to Continuous Mixer and
Dense Phase Convey to Extruder



Typical Cereal Processes

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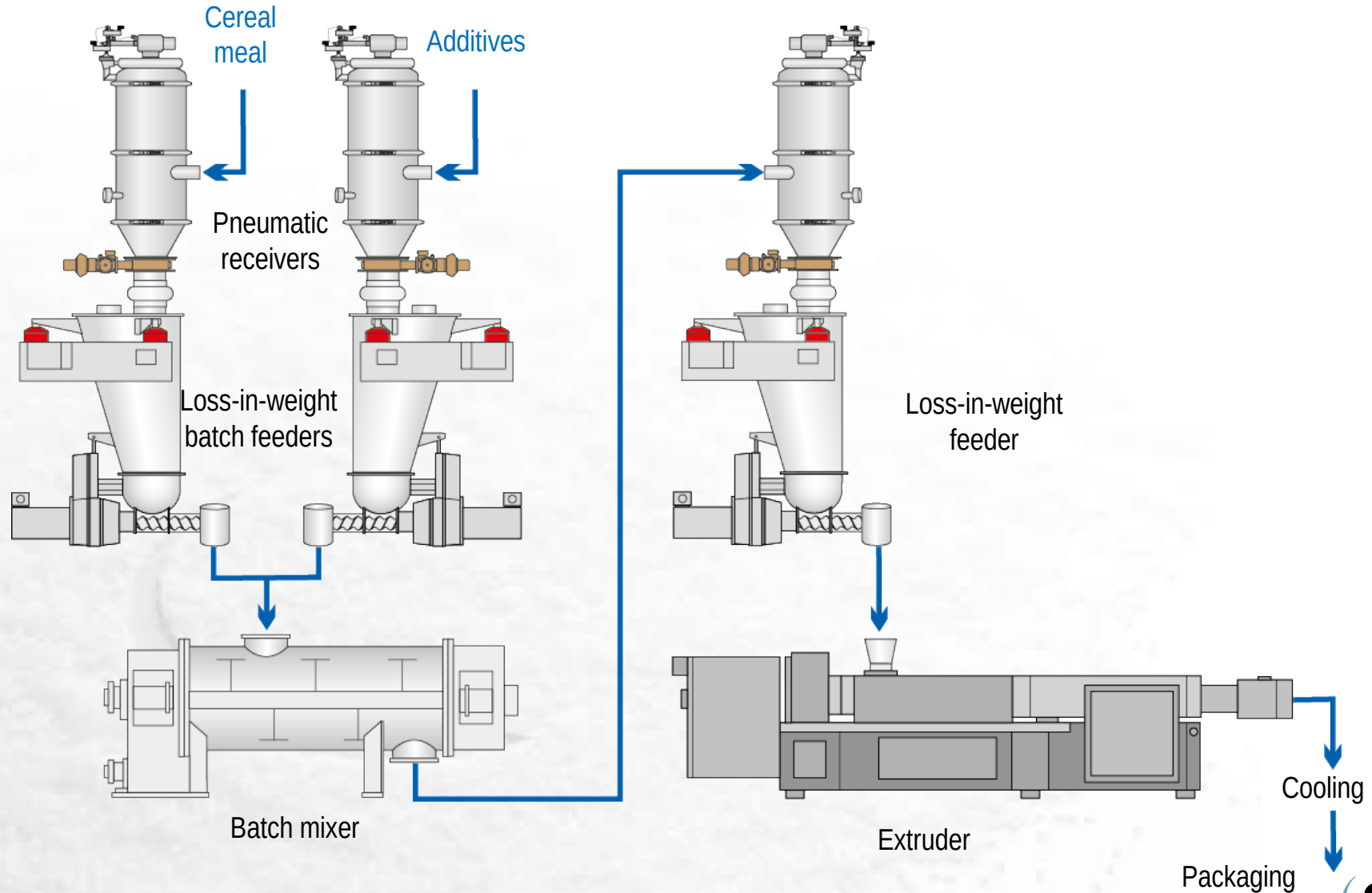
- Extruding cereals with or without additives
- Coating cereals
with solid and liquid components (flavors, vitamins etc.)
- Mixing cereals with dried fruits (raisins, apples) and nuts
- Batching grains and flours for cooking
- Proportioning sugar, flavors, & syrups
- Proportioning other products, nuts, fruit, etc
- Flavouring
- Adding vitamins and dry powder probiotics



Feeders & Conveyors in Cereal Production

Applications/Industries

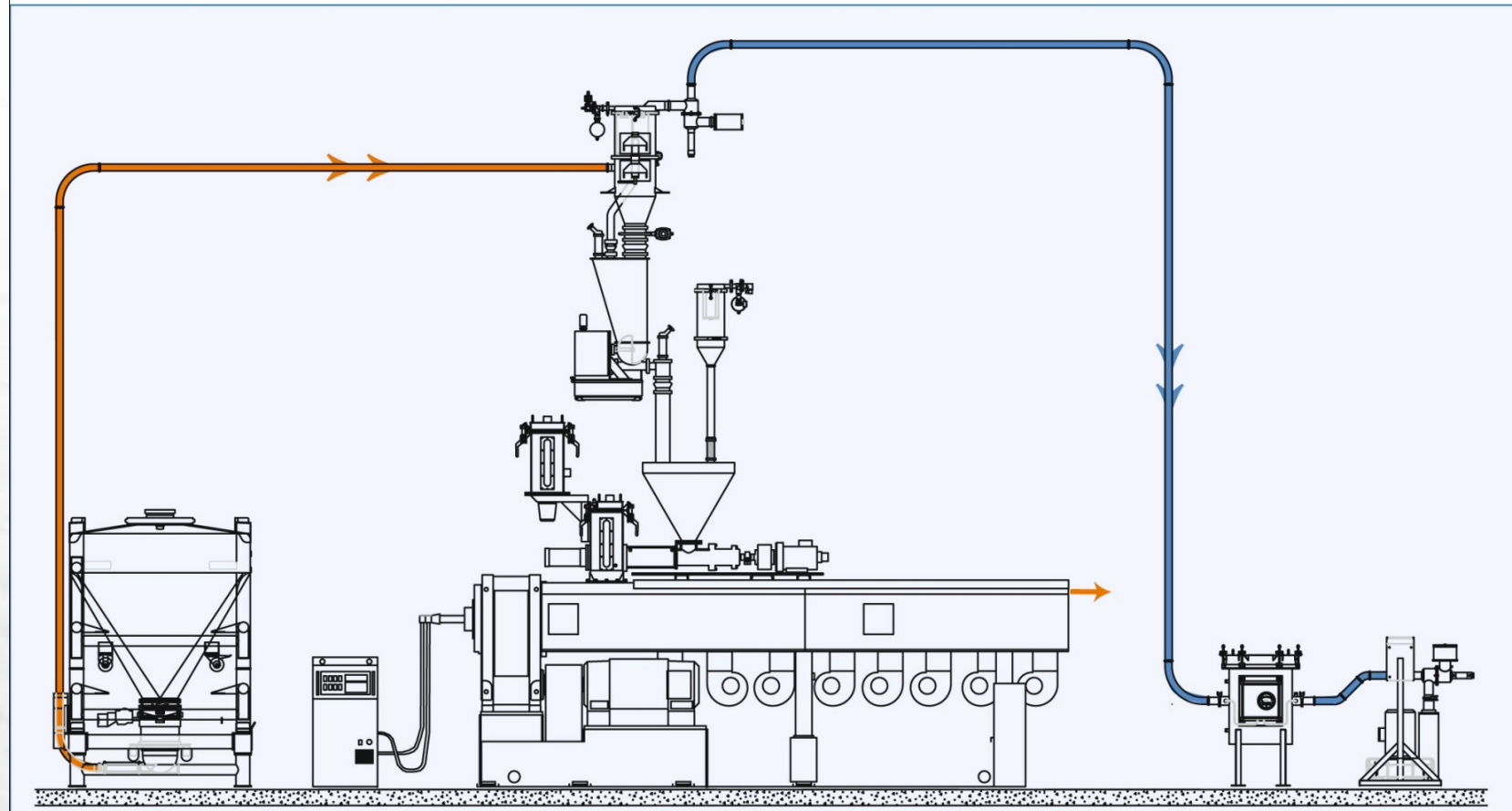
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Extruding Cereals

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Techniques to minimize damage

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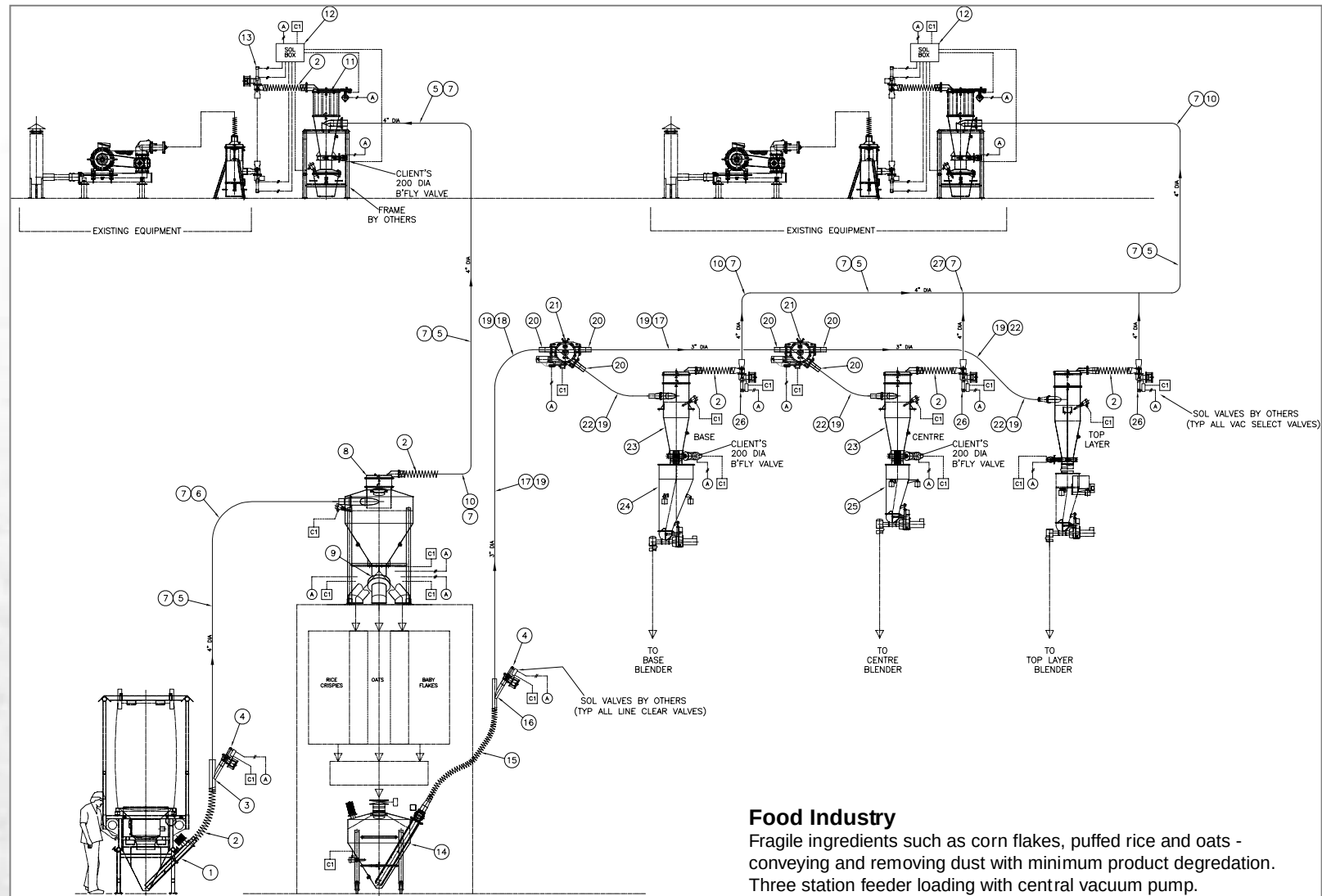
- Most damage occurs when motion stops
- Determine what damage is acceptable
- The lower the velocity the less the impact speed
- Cushioned vessels with rubber curtains minimise damage
- Increasing pipe diameter reduces convey velocity
- Large radius bends are essential



Conveying fragile ingredients

Applications/Industries

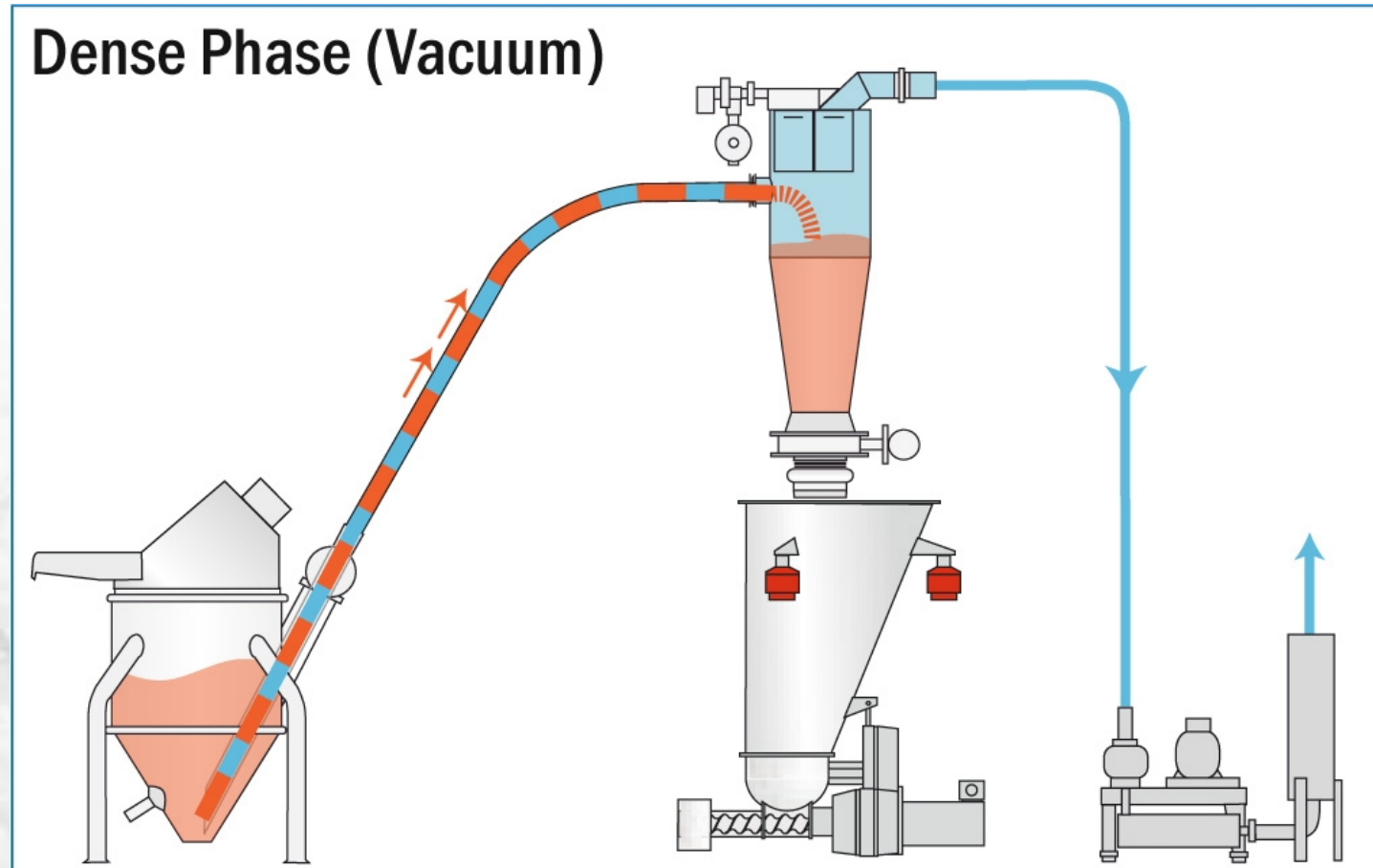
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Dense Phase Conveying Systems

Applications/Industries

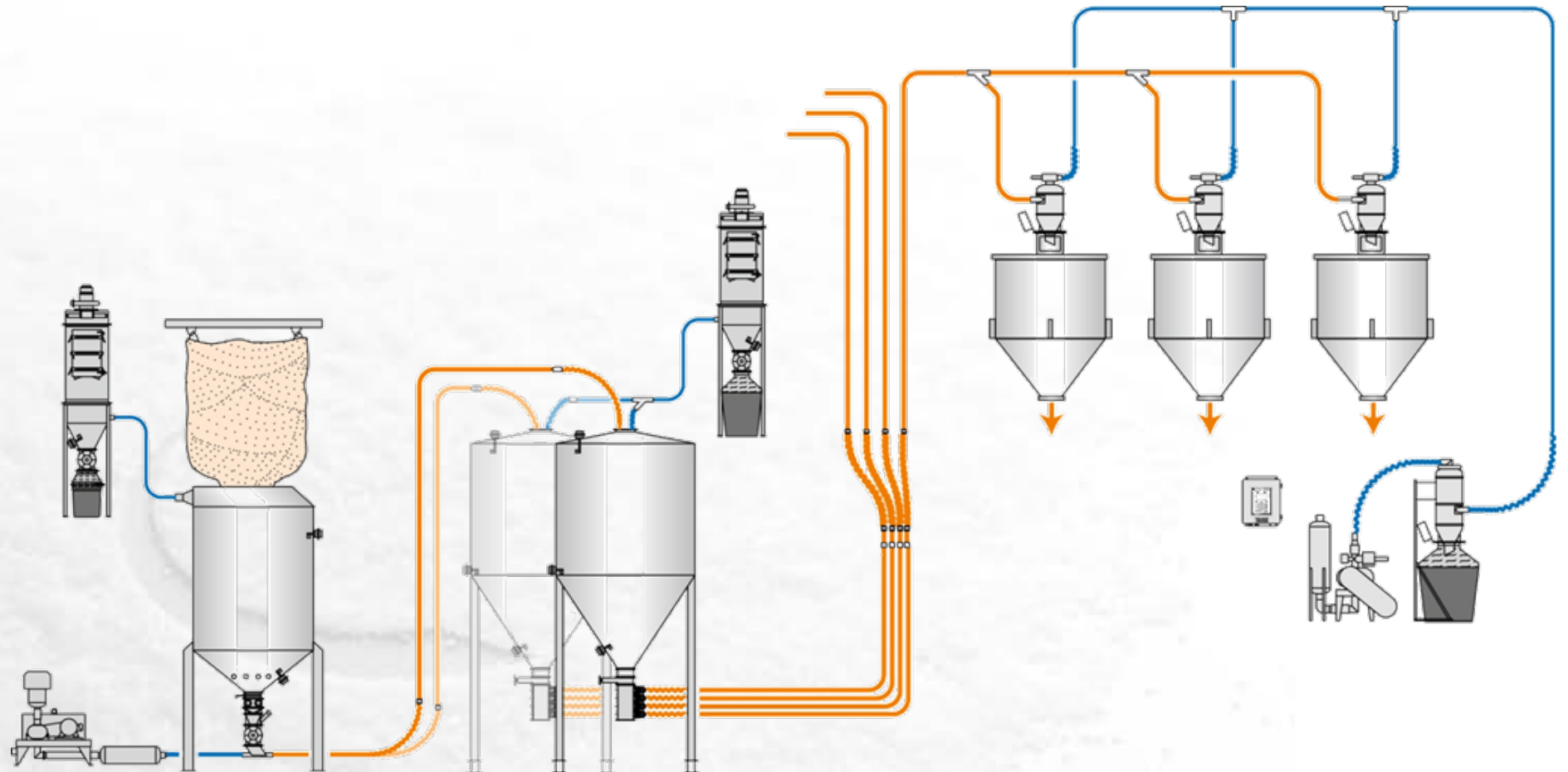
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Popcorn Transfer System

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Feeders for Pasta Extrusion

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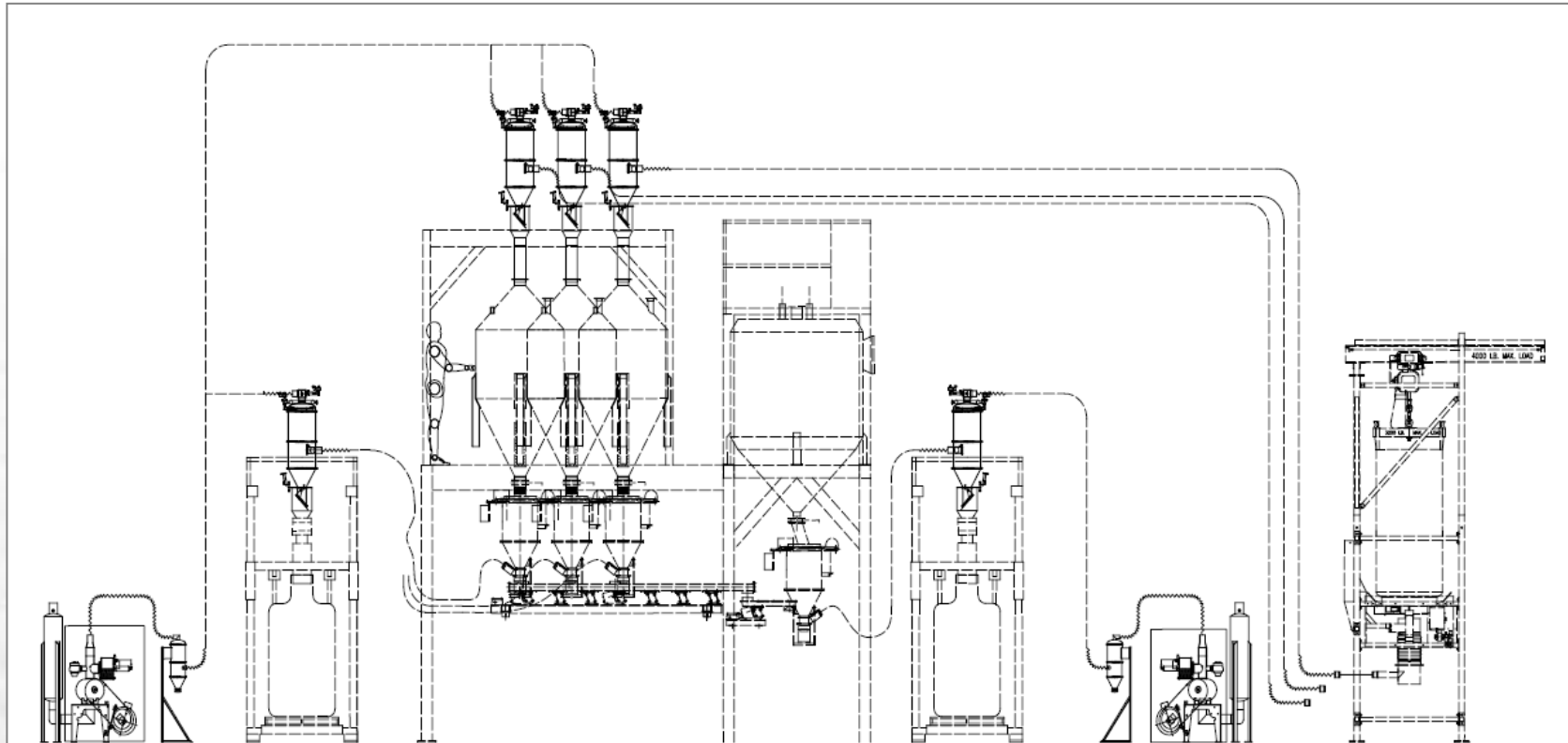
- Feeders are required for both powder and liquid component feeding
- Metered and accurate feed rates affect overall screw fill of the extruder which affects product quality
- Feeders used in continuous extrusion are LIW with high degree of accuracy and control



Conveying Extruded Pasta

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Food Industry

This project was supplied to Food Processor in the south. Rice, Orzo Pasta and Lentils are conveyed from Bulk Bag unloaders via a vacuum sequencing system to process dispensing feeders. A second system transfers the dispensed product to a Bulk Bag loader for refilling.



Varied Pasta Ingredient Conveying

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