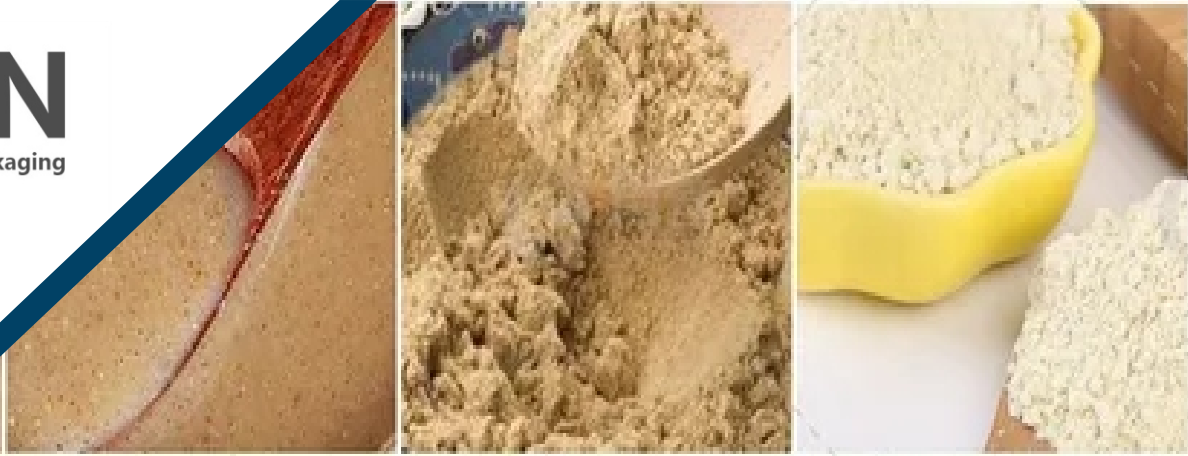




# **NUTRITION POWDER PRODUCTION LINE**

Your Trusted Partner for Consultancy and Turnkey Project Execution



## COMPANY OVERVIEW

Salvin Industries is a leading engineering, technology and consulting conglomerate, working closely with diversified industries spanning across food processing, agriculture, plastics, chemicals, metals healthcare, packaging, Dealer, distributor, super stocks, marketing plan, product analysis and other industries and business sectors offering complete turn-key solutions including advanced engineering, Industry 4.0 solutions, digital transformation and expert technical and management consultancy. With 10+ years of experience and global presence in 8+ countries, Salvin Industries is serving from the most demanding to the most distant customers across the globe. We empower them for rewriting their future with our depths of knowledge, unique ideas, technical expertise, creative solutions and enduring results, all at the most optimal costs, right at their doorsteps.

Armed with the eminence in technological expertise, global capabilities and a process driven approach, we have the ability to take on any challenging project. Crossing the geographical borders & cultures and living up to our core values Excellence, Respect, Care & Joy, we propel innovation to engineer solutions that build & foster equality. Working together as one team with all our business partners & associates, we are transforming industries, fueling economies, developing sustainable solutions and thereby elevating societies, globally. We realize the need to respond to the dynamism & speed with which the world is changing all around us and understand the need to anticipate

# NUTRITION POWDER PRODUCTION LINE

This process line uses rice, corn, beans and kinds of grains as raw materials. Through extruding, inflating, drying, crushing and mixing, it could produce many kinds of nutrition powder, such as baby rice powder, sesame paste, beans powder and so on. This line could finish all the process automatically from the feeding to the end. It has features of easy operation, without leak of powder dust, sanitation, saving energy and easy to add all kinds of raw materials and nutriment.

Shandong Arrow nutritional rice noodle production line adopts twin-screw extrusion technology to replace the new technology of traditional cooking rice noodle production. Traditional nutritional powder processing methods have many disadvantages such as low efficiency, problems, and small-scale production. In the nutritional powder food production line, the twin-screw extrusion technology makes up for all these deficiencies, which means that it can not only process grain raw materials, such as buckwheat, oats, etc. It can also produce more nutritious and healthy food that is beneficial to the body. All parts of our nutrition powder machine are made of food-grade stainless steel, which is very advanced and of high quality.



# NUTRITION POWDER PRODUCTION LINE

## THE PROCESS

### RAW MATERIAL RECEIVING & STORAGE

In this first stage, raw grains and powders arrive at the factory in bags or big bags. The material is emptied into a dust-controlled dump station that sucks in any flying dust, keeping the work area clean and safe. From here, a powerful blower pushes the material through sealed stainless steel pipes into large storage silos. These silos are fitted with sensors that show how much material is inside and gentle air pads at the bottom keep the powder flowing freely without blocking. The entire system is enclosed, so no dust escapes and no outside contamination enters.



### SIEVING & METAL DETECTION

Before any ingredient is used, it passes through a vibrating sifter fitted with fine stainless steel mesh. This removes any oversized particles, fibre strands, or foreign objects that may have accidentally entered during handling. The sifter is quick to open and clean when changing between different ingredients. After sifting, the material passes through a metal detector. If even the smallest piece of metal is detected, a gate instantly swings open and pushes that contaminated portion into a separate locked bin. This protects both the expensive machinery ahead and the safety of the final product.

### AUTOMATIC DOSING & WEIGHING

Every recipe is carefully controlled by the central computer. The major ingredients, such as rice flour or corn flour, are weighed in a large hopper sitting on highly accurate load cells. The filling gate closes at exactly the right moment to achieve the target weight. Meanwhile, smaller ingredients like vitamins, minerals, and flavours are fed by multiple precision feeders, each one slowly trickling in the exact amount required. The computer checks every weight and only releases the batch when everything is perfectly within tolerance. This ensures every batch is identical to the last.



# NUTRITION POWDER PRODUCTION LINE

## THE PROCESS

### HIGH-INTENSITY HIGH-INTENSITY MIXING & CONDITIONING

All the weighed ingredients are now transferred into the mixer. Inside, rotating ribbons or high-speed plough blades tumble and toss the powder until it is completely uniform. If the recipe requires moisture, fine water or steam sprays are injected through nozzles while mixing continues. This evenly distributes the liquid throughout the powder, preparing it for cooking. The mixer discharges quickly through a large bottom door, and a hot water jacket around the mixer can be used to gently warm the ingredients, making them easier to cook in the next stage.



### TWIN-SCREW EXTRUSION – TWIN-SCREW EXTRUSION – COOKING & SHEARING



This is the heart of the entire production line. The conditioned powder enters the barrel of the twin-screw extruder, where two intermeshing screws rotate together, pushing the material forward under heat and pressure. The barrel is divided into separate zones, each heated to a precise temperature. As the material travels along, it is compressed, sheared, and cooked intensely. The starch granules absorb water and burst, becoming fully gelatinised and easily digestible. At the end of the barrel, the hot dough is forced through small holes in a metal die. The moment it exits, the sudden drop in pressure causes the water to flash into steam, expanding the product instantly into light, porous pellets or flakes.

### POST-EXTRUSION POST-EXTRUSION TRANSFER & COOLING

The freshly extruded pellets are still very hot and soft. They are immediately swept away by a strong stream of air through enclosed pipes. This air movement rapidly cools the surface of each pellet, stopping the cooking process and hardening the structure. At the end of the pipe, a cyclone separator spins the air away and drops the pellets gently onto the next conveyor. For very fragile or highly expanded products, a vibratory conveyor is used instead, gently shaking the product forward without breaking it.



# NUTRITION POWDER PRODUCTION LINE

## THE PROCESS

### MULTI-LAYER CONVEYOR

#### MULTI-LAYER CONVEYOR DRYING & COOLING

The pellets still contain internal moisture and must be dried to a stable level for long shelf life. They spread evenly across a moving mesh belt that travels through a tall, heated enclosure. The belt passes back and forth across multiple layers, with hot air circulating through the bed of pellets from above and below. This gradually draws out the moisture. The temperature and speed are carefully controlled to dry the product evenly without over-heating. At the end, a cooling section blows ambient or chilled air through the pellets, bringing them down to room temperature before milling.



### MILLING

#### MILLING / PULVERIZING

The dried and cooled pellets are now fed into a high-speed mill. Inside, rapidly rotating blades or hammers smash the pellets against a curved screen, reducing them to a fine powder. The screen size can be changed to achieve the desired fineness, from coarse granules to very fine flour. The milling chamber is kept under negative pressure, and a connected dust collector captures any airborne fines, keeping the work area clean and recovering every bit of product. For heat-sensitive nutrients, the mill can be operated with chilled air or liquid nitrogen cooling.



### CLASSIFYING

#### CLASSIFYING / SCREENING

After milling, the powder passes through another sifter to verify its particle size. This unit uses either gyratory motion or rotating paddles within a cylindrical screen to separate any oversized particles that escaped the mill. These oversized particles are automatically returned to the mill inlet for another pass. For products requiring an extremely uniform particle size or the removal of very fine dust, an air classifier is added, which uses controlled air streams to cut the powder at a precise particle size.



# NUTRITION POWDER PRODUCTION LINE

## THE PROCESS

### FINAL BLENDING FINAL BLENDING & MICRO-DOSING

Some ingredients, particularly heat-sensitive vitamins, probiotics, or flavours, cannot survive the heat of extrusion and must be added after cooking. The milled powder is transferred to a final blender, and these delicate ingredients are sprayed or sprinkled in while the blender rotates. A vacuum coating system can be used to draw liquid ingredients deep into the porous powder particles for even distribution. This stage ensures the finished powder is nutritionally complete and has the correct taste and aroma before packaging.



### FINAL CHECK FINAL CHECK & PACKAGING



The finished powder now passes through one last metal detector and checkweigher. Any pack that contains metal or falls outside the correct weight range is automatically rejected. From here, the powder is directed to the packaging machine. For sachets and pouches, a vertical form-fill-seal machine forms a tube of film, fills it with the exact dose of powder, seals the top and bottom, and cuts it into individual packs. For jars or tins, an auger filler precisely meters the powder into each container. Optional nitrogen flushing removes oxygen from the pack, extending shelf life. The finished packs are date-coded, flattened if required, and sent to cartoning.



# LET'S WORK TOGETHER



+91 97127 77034



[www.salvinindustries.in](http://www.salvinindustries.in)



[info.salvinindustries@gmail.com](mailto:info.salvinindustries@gmail.com)



210, Arved Transcube Mall,  
Bandhu Nagar, Vijay Nagar,  
Ranip, Ahmedabad, Gujarat 382480



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