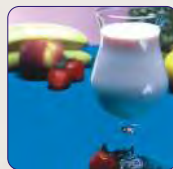
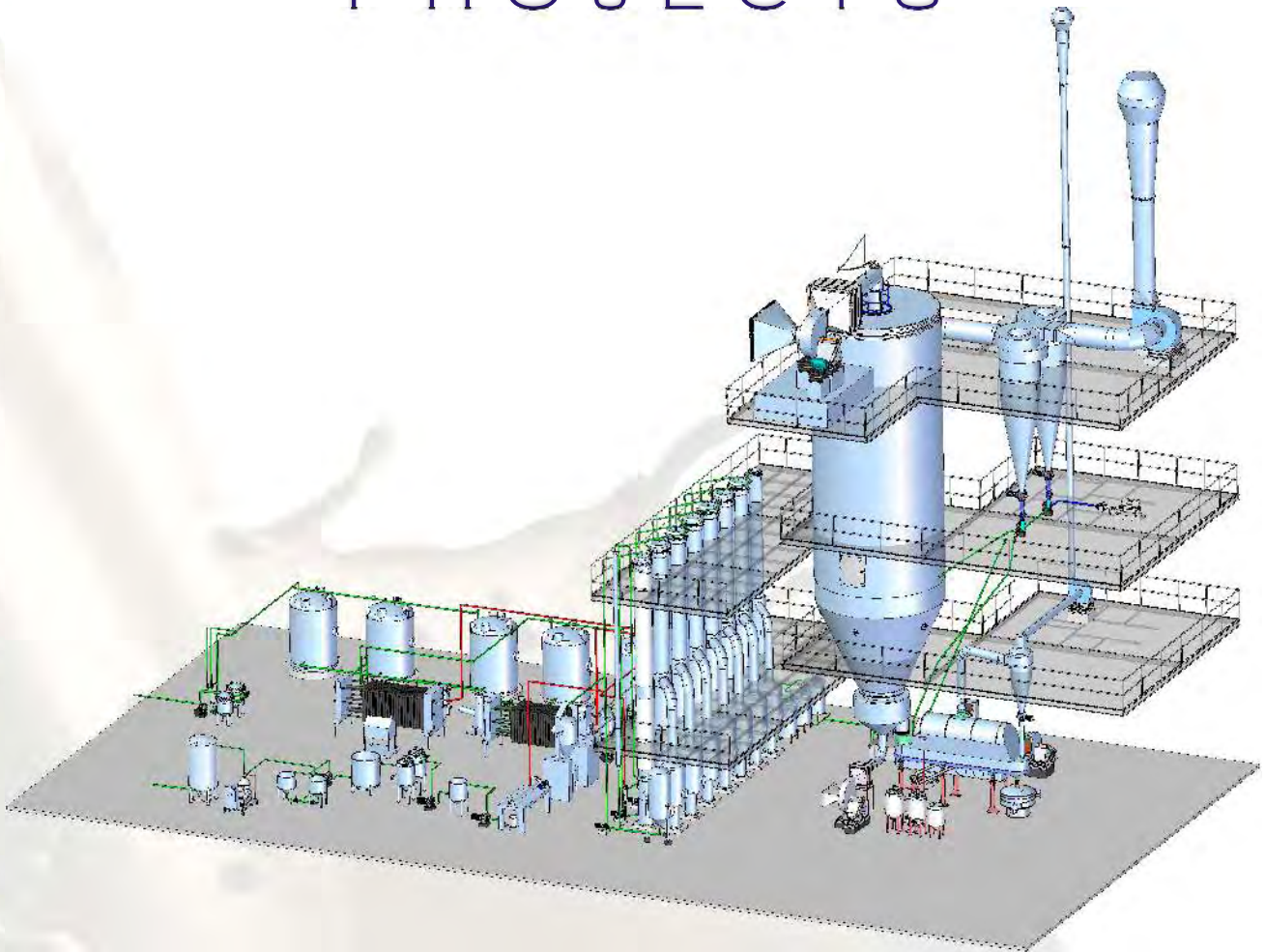


# DAIRY PROJECTS



**SSP PVT LIMITED**, a growing engineering company, specializes in **DESIGN, MANUFACTURING & IMPLEMENTATION** of Dairy Projects on turn-key basis. It has made its presence increasingly felt over the last three decades and has grown hand in hand with the latest technology and know how in the Dairy Sector.



## INTRODUCTION:

Milk is widely considered as one of the world's most valuable complete food. It is available in various forms, and is processed into ever increasing variety of nutritional products.

The knowledge gained from experience and process technology available with SSP extends to all kind of consumer milk products, whether they are manufactured by way of traditional processing techniques or by more sophisticated ones.

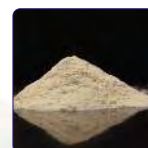
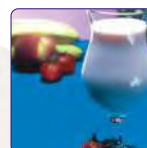
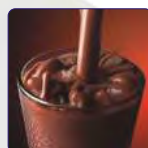
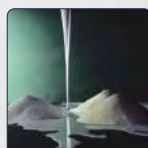
Already accredited with the supply of over a fifty plants, SSP is vigorously continuing with the development of equipment and application for various core products in the dairy industry. The **RESEARCH & DEVELOPMENT CENTRE** of SSP conducts application experiments for creating new areas of growth. It has also developed energy efficient evaporators and dryers with international standard compatibility. Thus, accumulation and feed-back of knowledge have naturally led to innovation in dairy process technologies, which are being made available to the industry through the cost-effective dairy projects of SSP. Latest generation production techniques and thorough engineering & quality control result in world class equipments adhering to the sanitary requirements and in compliance with international standards like ASME Section VIII, GMP and American 3A.

### Dairy Projects Available:

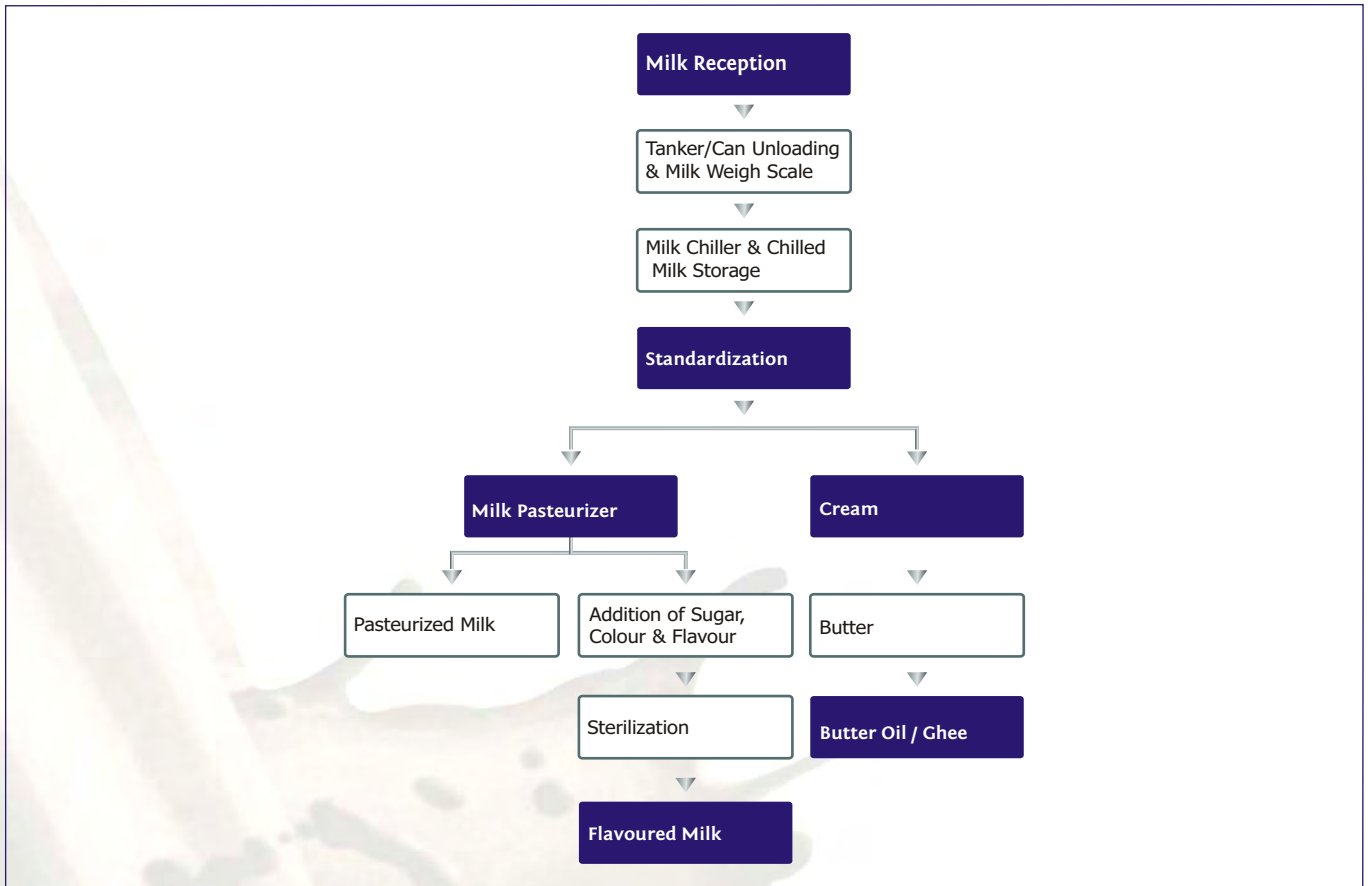
- Liquid Milk Processing Plant
- Milk Powder Plant
- Sweetened Condensed Milk Plant
- Evaporated Milk Plant
- Malted Milk Plant
- Casein & Whey Processing Plant

### Milk Products:

- Pasteurised Milk
- Flavoured Milk
- Cream
- Butter
- Butter Oil / Ghee
- Sweetened Condensed Milk
- Evaporated Milk
- Whole Milk Powder
- Skim Milk Powder
- Milk Shake Powder
- Ice Cream Mix Powder
- Dairy Whitener
- Baby Food Powder
- Malted Milk Powder
- Whey/Casein/Lactose Powder



## LIQUID MILK PLANT



## MILK POWDER PLANT

Milk Powder is a processed dairy product made by evaporating milk to dryness. Drying extends the shelf life of milk thus making it available even during the lean season apart from reducing the weight and volume and lowers the cost of transportation also.

The initial solid in the milk varies from 7.5% to 12% depending upon type of milk and the final moisture in the powder ranges between 2.5% and 5%. Since drying is an energy intensive process, SSP, offers the solution to make the process energy efficient & cost effective.

Milk Powder Plant offered by SSP consists of:

- Multistage Evaporator
- Two/Three Stage Dryer

### PROCESS DESCRIPTION:

Milk is concentrated up to 45-48% solid concentration in Multiple Effects Falling Film Evaporator with TVR/MVR System. Evaporation of water takes place under vacuum conditions and at low temperature. A Five Effect Falling Film Evaporator with TVR over 3rd effect will have specific steam consumption of 0.12 kg/kg whereas a seven effect plant with TVR over 4th effect gives specific steam consumption of 0.09 kg/kg which is equivalent to energy consumption in MVR evaporator.

During drying in spray dryer, the excess water present in free form between the particles of the dry solids gets evaporated easily. Whereas last stage of drying demands more energy as water contained in pores and capillaries of the solid particles need to be evaporated. These last drops of water are removed from milk solid in a Vibro Fluid Bed Dryer which requires less energy for removal of balance moisture.

The combination of multiple effect evaporators, spray dryer with fines recirculation system and use of a 'Vibro Fluid Bed Dryer', produces instant quality powder.

### LECITHINATION SYSTEM:

SSP also offers lecithination system integrated with the milk powder plant to manufacture whole milk powder. Addition of lecithine produces instant quality WMP.

SSP ensures supply of highly energy efficient plant which produces instant powder of highest quality in terms of texture and solubility index.

### QUALITY PARAMETERS OF MILK POWDER

	SMP	WMP
MOISTURE	3.5% - 4%	2.5-3%
SOLUBILITY INDEX ML.	0.1 - 0.5	0.1-0.5 at 45°C
SCORCHED PARTICULES	DISC. A/B	DISC A/B
WETTABILITY (SEC.) MAX.	30 - 45	45 - 60
*BULK DENSITY (g/cc)	0.4 - 0.6	0.5-0.55
DISPERSIBILITY	85%	85% (with lecithination)

\* SMP, WMP, BABY FOOD, DAIRY WHITENER



## SWEETENED CONDENSED MILK PLANT

Sweetened condensed milk is basically concentrated milk to which sugar has been added. The high sugar concentration in sweetened condensed milk destroys majority of micro - organisms. It can be made either from whole milk or skim milk. Normally it contains 9% fat, 43% sugar, 22% SNF and 26% moisture and is packed in 397gm tins or in barrels for industrial use.



The manufacturing process consists of the following stages:

- Standardization
- Sugar Addition
- Evaporation
- Cooling
- Lactose Seeding & Crystallization
- Packaging in sterilized Cans
- Storage

### PROCESS:

To manufacture sweetened condensed milk the pasteurized milk with added sugar syrup is fed to the evaporator and concentrated to desired level of concentration. The product is then cooled in such a way that lactose forms very small crystals in the supersaturated solution. After cooling & crystallization the sweetened condensed milk is packed in pre-sterilized cans or in barrels.

### UNIQUE FEATURES OF SSP'S DAIRY PLANTS:

- Low Power & Steam Consumption
- Fully automated PLC based plant with synchronization between various processes
- Condensate water can be re-used for CIP / Plant Cleaning / Boiler
- Automated CIP cleaning system ensuring the best product quality
- Less Downtime for Maintenance
- Lower  $\Delta T$  in the Evaporator ensures superior quality as the product is handled gently
- Production of Instant Quality Powder
- Flexibility in Controlling Bulk Density and Powder Quality
- Winch driven special Cleaning Lift in Spray Dryer
- Negligible Deposition of Powder in Chamber
- Spray Dryer expandable up to 100% Capacity
- Unique fines return system ensuring superb texture and dispersibility
- Negligible Powder Loss from Dryer

## EVAPORATED MILK PLANT

Evaporated Milk is a sterilized product. The product finds a large market in tropical countries. It is used where fresh milk is not available. It is also used in cooking and as a Coffee/Tea Whitener.

### PROCESS :

The manufacturing process for the evaporated milk involves precision standardization of the fat content and the dry solids contents. This is followed by heat treatment which partly destroys the microbes present in the milk. The heat treated milk is then fed to an evaporator, where it is concentrated up to 26% (8% Fat and 18% SNF). The milk is then homogenized prior to cooling. Checks are carried out on the coagulation stability of the milk before it is packaged in sterilized cans. The product is then placed in an autoclave for sterilization. Finally the cans are cooled before storage.

The different stages in the production of evaporated milk are:

- Standardization
- Evaporation
- Homogenization
- Cooling & Inspection
- Packaging
- Sterilization
- Cooling
- Storage



## MALTED MILK PLANT

Malted Milk is a powdered food product made from mixing of standardized milk, malt extract with wheat flour, and Cereal Grains in such manner as to secure complete hydrolysis of the starchy material, which is evaporated until it forms a high viscous solution, which is then dried in a Vacuum Tray Dryer / Continuous Vacuum Band Dryer .

The manufacturing process consists of the following stages:

- Blending of ingredients like malt extract, milk or milk powder, grain flour etc in required proportion.
- Concentration of the slurry in evaporator.
- Vacuum Drying of the concentrate.
- Pulverization of the dried product.
- Packaging of malted food.
- Storage.

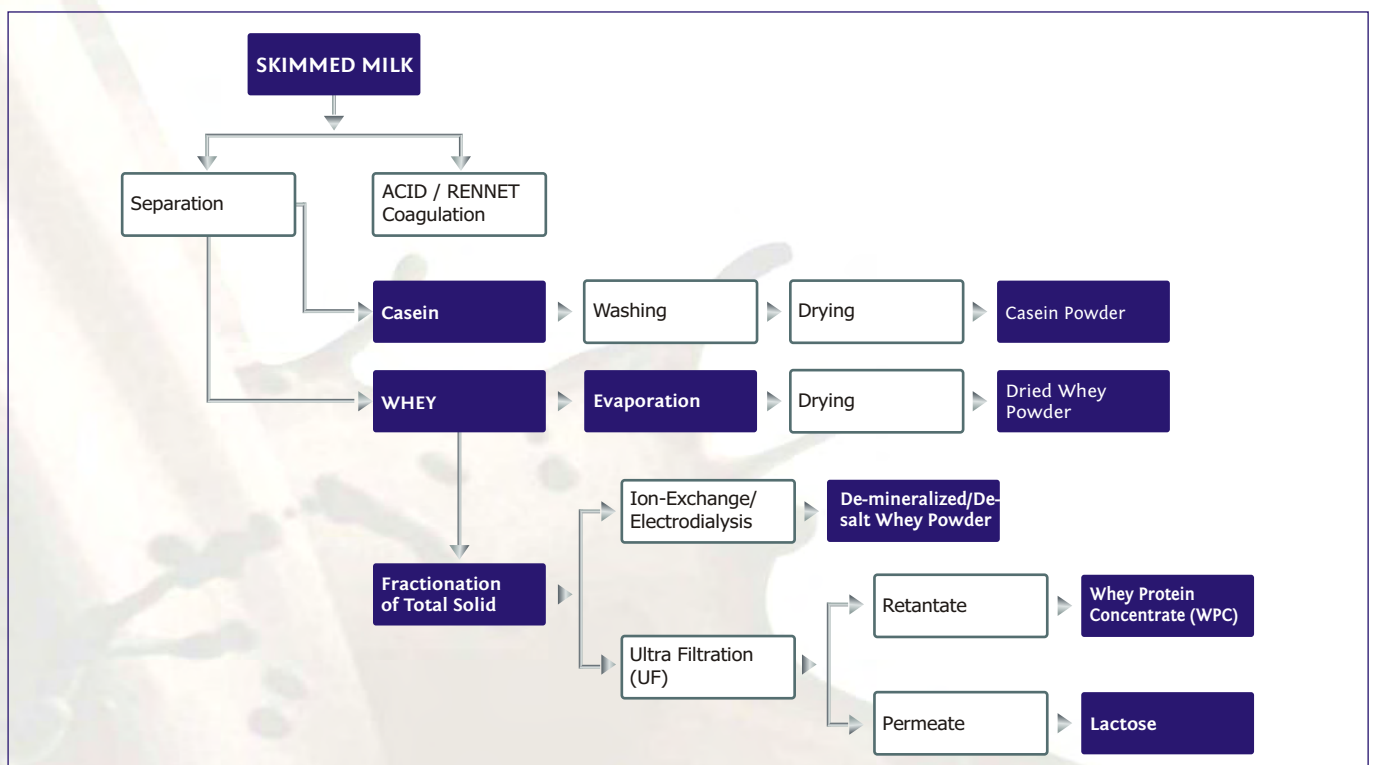


## CASEIN & WHEY PROCESSING PLANT

Whey comprises of 80-90% of the total volume of milk entering in the cheese making and casein manufacturing. Whey contains soluble proteins, lactose, vitamins & minerals.

Sweet whey is produced when cheese or casein is precipitated by rennet. Acid whey is produced when mineral acid is used to precipitate cheese or casein.

The Flow diagram of steps to process whey is as under:



## TECHNOLOGY

SSP is perpetually striving for improvement of design and quality of fabrication as per International Standards. It invests in advanced training to promote knowledge in the area of technical development, research and production, creating preconditions for innovations. Thus Customers are assured that SSP will respond to their specific needs in a quick and reliable manner.

Hi-energy efficiency and Hi-purity exhaust process developed by SSP have helped to reduce the load over nature. SSP guarantees that all matters relating to your project will be taken into consideration to ensure to tailor-made solution exactly suited to your needs.

## WHY SSP?

- More than 34 years of experience.
- Supplied projects worldwide in more than 43 countries.
- Supplied 350+ Spray Dryers and 600+ Evaporators till date.
- State of the art manufacturing facilities.
- Proven Technology - Highly Energy Efficient Plants.
- Customized projects as per client's need.
- On-Time Delivery, excellent operational training, and prompt after-sales.
- Receive 50-60% repeat orders every year.
- Follow International Standards of operation and production.

## SERVICES

SSP aims at achieving Complete Customers Satisfaction. We assume responsibility starting from advising customers for the right process solution and profitability to the supply of equipment, installation and commissioning. We organize training of plant

personnel and make them understand Do's and Don'ts regarding all aspects of process and machinery. We act as procurement office for spare parts and undertake everything needed for successful operation of dairy plants.



SSP:MKD:CTG:22:REV-001/01-12