Batching Process for Margarine

For the production of Shortening, Margarine and Table Spread, different raw materials (different oils and water) are taken in different quantities as per a pre-defined recipe, to which emulsifiers, anti- oxidants and other ingredients are added manually to make a homogenous emulsion ready to be fed to the processing section.

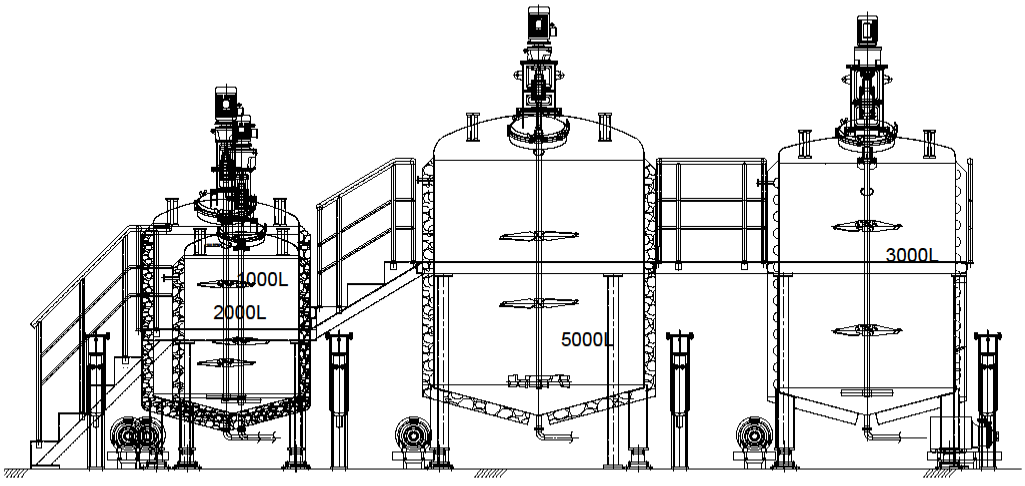
For batching, two tanks mandatory for all products are the **Premix tank** and the **Buffer tank**. The premix tank stands on three live load cells while the batching system automatically transfers different oils from different tanks as required by the recipe selected. Buffer tank continuously supplies the blend to the processing section while the next batch is prepared in the Premix Tank. **Shortening** can be prepared with the help of only the Premix and the Buffer Tank.

However, for the production of **Margarine**, it is required to add at least two more tanks of smaller capacities namely the **Emulsifier Tank** and the **Water Phase Tank**. Both these tanks also stand on live load cells and are integrated into the batching system to optimize production. Furthermore, for the manufacture of products with SMP or Cocoa optionally an additional would be required with a **High Shear Blender will be required** to blend SMP and form a homogeneous solution before transferring it to the Premix Tank.

Though these is the minimum requirement for the production of Margarine, it is sometimes preferred to have a Water Storage Tank with a dedicated hot water circulation system, twin tanks for Emulsifier and Water Phase and a Fat remelter.

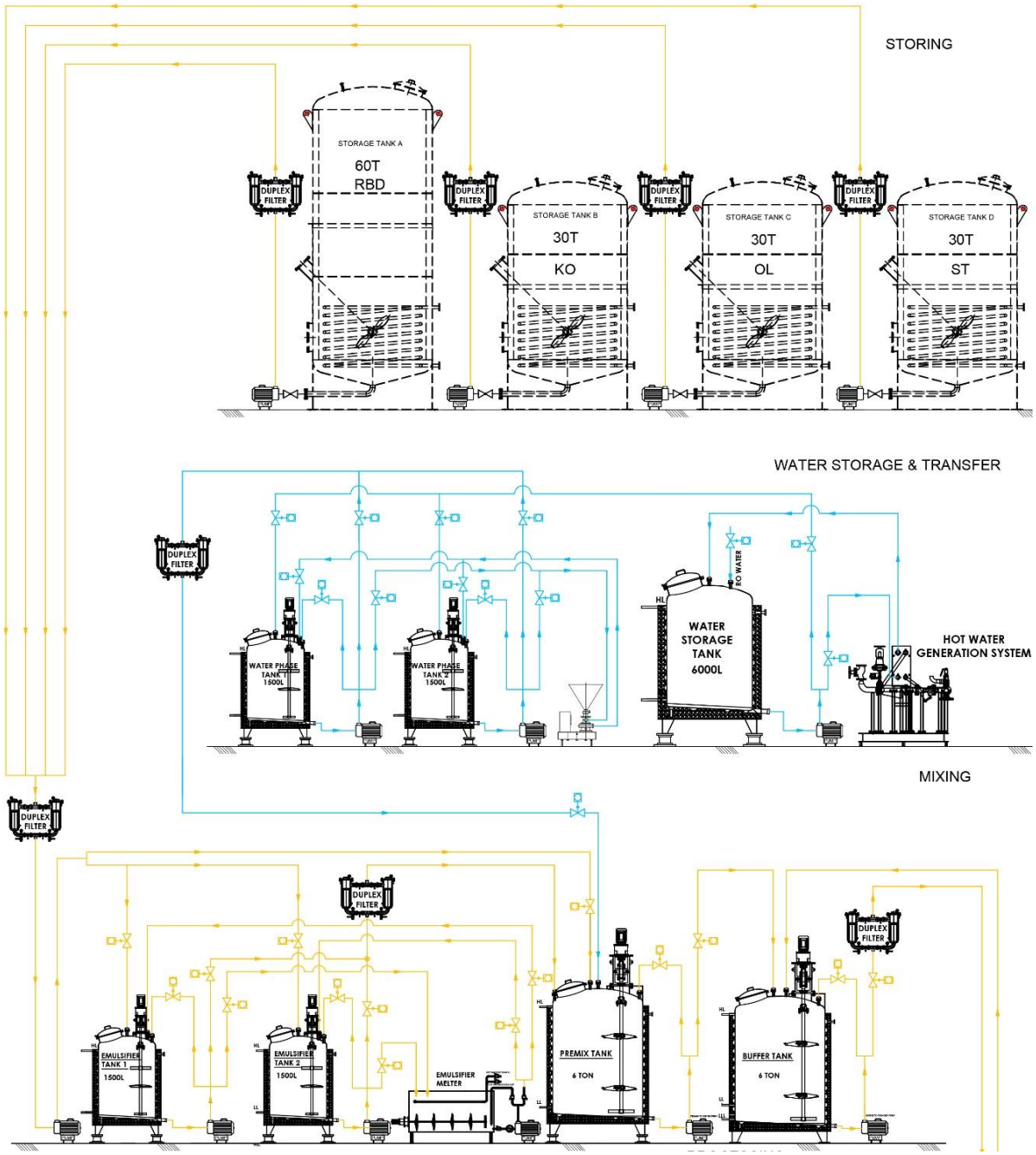
A sample Flow chart for Batching Systems for Margarine supplied by SIPEPL is as below, however the Batching system is made as per the requirement of the Customer after evaluating the different products he wishes to produce.

Layout of Batching System



BATCHING SOLUTION

Flow Chart



STANDARDS
INTERNATIONAL
PRECISION ENGINEERS PRIVATE LTD.
A-169, 4th Cross, 1st Stage,
Peenya Industrial Area, Bangalore - 560 058
Tel : +91-80-2837 1321 / 30, +91-80-4127 2891
Tel : +91-80-4117 0993, Fax : +91-80-4127 2892
e-mail : admin@sipepl.com
Website : www.sipepl.com

Features of SIPEPL's Batching Systems

Batching Tanks

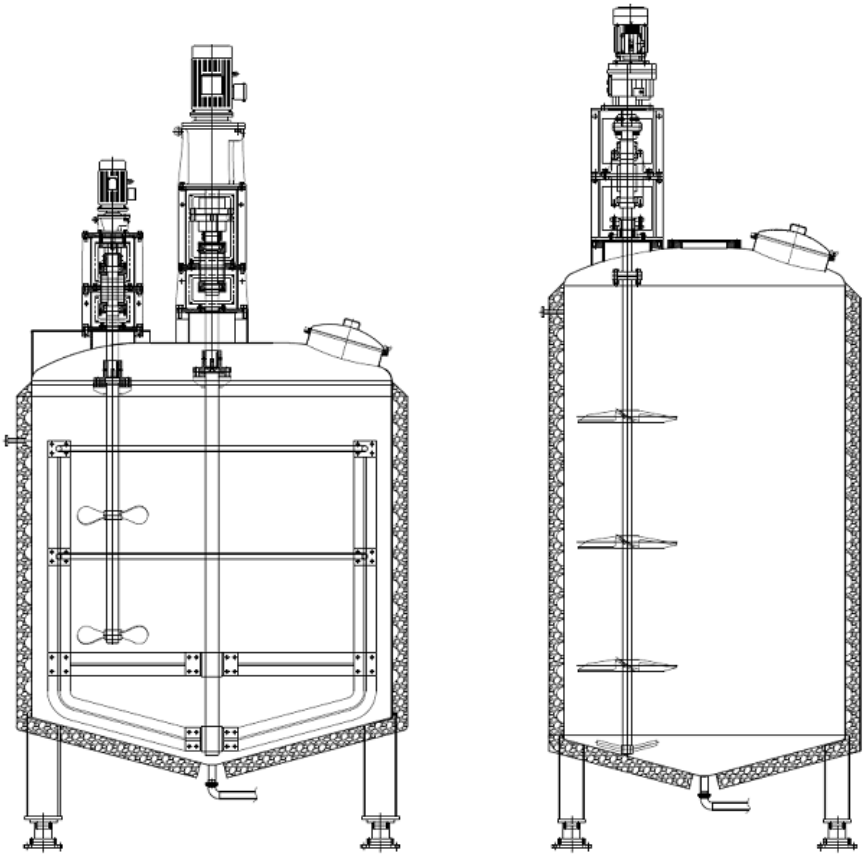
The batching tanks are stainless steel SS316L grade tanks mirror finished from the inside with limpet coils for circulation of hot or cold water for accurate temperature control of the product in the tank. The tanks are insulated and cladded on the outside to prevent heat loss and surface finished with glass bead blasting.

As a standard all tanks shall comprise of a Temperature Transmitter, High Level and Low Level Switches and DIN Union Fittings for Inlet and Outlet, Lifting Hook and a CIP Nozzle.

Agitator Configuration

Since the product is an emulsion of oil and water it is becomes imperative to keep it agitated at all times to ensure a stable emulsion. Agitation to also be selected to ensure the water-oil emulsion is even across the length of the tank. Thus the agitator plays a very important role in the final quality of the product. At SIPEPL, the agitators are designed as per the requirement of the product and the moisture content in the product.

For some products, a cost effective single agitator with narrow hydrofoil is selected, however for other sensitive and high moisture content products, a two agitator system is preferred. The anchor agitator and the propeller agitator. While the anchor keeps the emulsion stable, the propeller agitator is used for mixing during the batching process.



Batching Automation

A load cell based batching system is used for the Batching process to ensure the set quantity of oil is accurately transferred into the tanks. The load cell system shall comprise of 3-4 live load cells with weight indicator.

BATCHING SOLUTION

The batching automation is achieved by controlling the various transfer pumps and actuator valves in the Batching system by a pre-programmed weighing controller.

These batching controllers shall be connected to the Batching logic of SIPEPL's SCADA Package in which the Recipes and the sequence of operation are pre-programmed.

STANDARDS
INTERNATIONAL
PRECISION ENGINEERS PRIVATE LTD.
A-169, 4th Cross, 1st Stage,
Peenya Industrial Area, Bangalore - 560 058
Tel : +91-80-2837 1321 / 30, +91-80-4127 2891
Tel : +91-80-4117 0993, Fax : +91-80-4127 2892
e-mail : admin@sipepl.com
Website : www.sipepl.com

Platform Structure and Pipe Support for Batching Systems

The Pipe Supports and Platform for Batching Systems are Pre-fabricated in either Stainless Steel or Mild Steel and the piping for the Batching system is done in-house with tie-in points as an option to reduce site activities.

Site Picture of the Batching Section

STANDARDS
INTERNATIONAL
PRECISION ENGINEERS PRIVATE LTD.

A-169, 4th Cross, 1st Stage,
Peenya Industrial Area, Bangalore - 560 058
Tel : +91-80-2837 1321 / 30, +91-80-4127 2891
Tel : +91-80-4117 0993, Fax : +91-80-4127 2892

e-mail : admin@sipepl.com
Website : www.sipepl.com