

A leading dairy producer in India

The dairy giant was establishing a new 600,000-litre milk powder plant in Western India, aiming to design utilities that met the process requirements while striving for carbon neutrality. The Forbes Marshall Design Consultancy team was involved with the objective of establishing the utility loads, selecting the right utility generators, and designing the utility supply and return distribution networks. With sustainability as a key focus, the plant sought innovative solutions to integrate carbon-neutral operations into its infrastructure. We designed the heating, cooling, and chilling utilities to cater to the process requirements and enabled fuel switchover to biomass for carbon neutrality.

After careful study and analysis of the requirements, the appropriate utility capacities and parameters were selected, while applying reduce-reuse-recycle concepts. Safety within the utility network was ensured by recalculating and correcting pipeline loads for pipe-rack design. Additionally, we designed a zero-leak utility network, minimised pressure drops, and optimised the chilled water distribution to limit temperature variation to only 0.4°C across a 250-metre distance. For the biomass-fired boiler, we engineered a 1.2 km distribution network, including a 25-metre underground section beneath a national highway, enabling carbon-neutral steam generation. Pumps for chilled and cooling water networks were selected and modified to optimise head, flow, and operational costs.



Benefits Delivered

Fuel Saved

16% Reduction in Steam OPEX

