

HYGIENIC DESIGN ASPECTS OF PASTEURIZER TO PREVENT CROSS CONTAMINATION OF PASTEURIZED MILK

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Abstract

Design aspects of the pasteurizer shall be able to address effective pasteurization of each particle of milk as well as to prevent cross contamination of pasteurized milk.

To ensure effective pasteurization of each particle of milk the design shall address: holding coil design, flow monitoring and control, flow diversion valve (FDV) design, placement, safe mode installation, temperature sensors response time and fail safe connection.

The design shall also address prevention of pasteurized milk cross contamination like, balance tank design, holding coil contamination during every diversion, re-infection through back growth of microorganism from return line, cross-contamination due to pin hole/ hair line cracks in PHE plates/gasket, siphonage of raw milk into pasteurized line due to vacuum creation during diversion.

This article reviews various international standards on pasteurization process design aspects to prevent cross-contamination by raw milk/heat exchanging medias' due to pin-hole, leak/hair line cracks in plates and gaskets during production, diversion as well as power failures. This can be achieved by maintaining pasteurized milk at higher pressure than raw milk/heat exchanging medias' at all times.

Hygienic regeneration bypass assembly helps to maintain positive pressure in the pasteurized milk side during low temperature diversion and power failures. Regeneration bypass assembly also helps to optimize the time taken to regain the required pasteurization temperatures at holding tube outlet within 3 minutes compared to 12-15 minutes in pasteurizers without regeneration bypass assembly.

Key words: *Diversion, Regeneration by-pass (RBS), Stuffing pump, Deflator plate, Vacuum breaker, Positive pressure.*