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Care and Maintenance of Spray and Drum Dryers

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Outline

- Introduction
- Care and maintenance of drum dryers
- Care and maintenance of spray dryers



Introduction

Care and maintenance of drum Dryers

The success of uniform drying depends on the application of a uniform film thickness on the drum surface. The main points to be considered for proper operation of drum dryers are:

- (i) Drums must be properly aligned and have identical characteristics of speed, heat transfer, wear etc.
- (ii) Knives must be reground regularly (after every 100 h) and be uniform sharpness.
- (iii) Drums must be kept smooth.
- (iv) Condensate must be continuously discharged from the drum
- (v) Drum must be vented of air for better heat utilization from steam.
- (vi) Uniform level of milk in the reservoir must be maintained
- (vii) There must be close control of temperature and time of drying
- (viii) Accurate control of feed device is required so that milk is evenly spread between the rolls. The maximum concentration at which the film can be spread evenly is about 30% solids.
- (ix) Preheating of milk is advantageous, but temperature should not exceed 71 °C
- (x) The dried product must be scraped off carefully.



Care and Maintenance of spray dryers

The success of uniform drying in spray dryer depends on the care and maintenance of different parts of it. The main points to be considered for proper care and maintenance are as follows:

- (i) Atomizer is a heart of spray drying plant, clean the nozzles of pressure atomizer regularly
- (ii) The drive mechanism of disc type of atomizer should be properly lubricated
- (iii) The filter pads for inlet air for conveying the powder should be cleaned at regular time intervals
- (iv) The rotary valve for discharge of powder should be checked properly and it should not get blocked
- (v) Avoid powder deposits on hot surfaces to avoid fire explosion.
- (vi) Use magnetic hammers or vacuum to avoid powder deposition on inner wall of spray drying chamber



- (vii) Thermostats should be placed in the air inlet and outlet duct that sounds alarm and cuts off the air heating system if the air inlet and/or outlet temperature exceeds a certain predetermined value.
- (viii) A fire extinguishing system should be provided consisting of sprinklers in the chamber ceiling.
- (ix) The dryer can be equipped with fire detectors to prevent fire.
- (x) The spray dryer should be provided with powder recovery systems from outlet air like bag filter, cyclone separator, wet scrubbers etc.
- (xi) The spray dryer should be provided with heat recovery systems.
- (xii) All cyclone separators and bag filters should be cleaned properly at regular time intervals.
- (xiii) Other parts of the spray dryers should be followed with preventive maintenance.



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Thank you