

Department : **Mechanical**

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Guided By

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Project Title

OPTIMISING THE PERFORMANCE OF SPRAY DRYER

Abstract:

- Spray Drying is the continuous transformation of feed from a fluid state into dried particulate form by spraying the feed into a hot drying medium. The feed may be solution, slurry, emulsion, gel or paste, provided it is pumpable and capable of being atomized. It involves bringing together a highly dispersed liquid and a sufficient volume of hot air to produce evaporation and drying of liquid droplets. The air supplies the heat for evaporation and conveys the dried product to the collector; the air is then exhausted with the moisture. Three types of atomizers are commercially used namely rotary atomizer, pressure nozzle and two-fluid nozzle. The feed droplets while losing its moisture to hot air remain at temperatures much below the hot air temperature for a very short time. Hence spray drying is essentially known as "Low Temperature Drying". The dried product can be in the form of powders, granules, or agglomerates depending upon the physical and chemical properties of the feed, the dryer design and final powder properties desired. It is used for "In-House" manufacturing of critical excipients. The spray-dried products have improved mean particle size and particle size distribution, appearance, texture, flow property, compressibility, bulk density, dispensability and solubility. It has wide range of non-pharmaceutical and pharmaceutical applications. It is used for preparation of tableting constituents, color chemical powder. vaccines, vitamins, blood products, enzymes, hormones, algae, yeast extracts. Spray drying plants are tailor made to suit product to be dried and its properties desired. An attempt has been made to review the literature related to spray drier for the correct identification of the problem and related issues.

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