"Manufacturing of Milk powder Process"

Prof.S.C.DIGHE

Jafar Jamadar S. More Rakesh P. Parkhe Vaibhav C.

[1] Student, Department of Chemical Engineering & Dr.VittalRao Vikhe Patil polytechnic loni,Maharastra,India

2 Student, Department of Chemical Engineering & Dr.VittalRao Vikhe Patil polytechnic loni,Maharastra,India

3 Student, Department of Chemical Engineering & Dr.VittalRao Vikhe Patil polytechnic loni,Maharastra,India
4 Professor,Department of Chemical Engineering & Dr.VittalRao Vikhe Patil polytechnic loni,Maharastra,India

Abstract

Capstone offers decades of experience as a technology partner supplying complete turnkey plants to the dairy and milk powder industries. We design and install end-to-end processing lines for all kinds of milk powder products. Our role is to use years of expertise and engineering know-how to configure the best systems for handling and processing all the ingredients in your products. 's Caostoneexperience in designing and delivering modern dairy plants means that we can offer state-of-the-art technologies as well as process and plant optimization know-how to ensure seamless delivery of your new plant. Our solutions are designed to maximize plant flexibility and improve traceability and overall operational efficiency. Our complete process offering means that you can be assured of the safety of the finished product, enabling you to deliver brand confidence to consumers. Our customer relationship model provides continued support long after delivery of your new plant. With experience gained from hundreds of dairy projects, we are able to continually improve plant and technology design to meet the changing needs of the industry. These benefits are passed on to you through plant upgrades, optimization projects, and further training so that your plant continues to meet your processing needs.

Keywords: milk powder, dairy products, food standards

1. INTRODUCTION

Milk is a nutritious food. Raw milk from healthy cows is supposed to contain relatively few bacteria. Drinking of raw milk of healthy cows reduces the health risk but it is highly perishable. In history, mankind has made various attempts to preserve and concentrate milk to extend its shelf life. Marco Polo in the thirteenth century reported that soldiers of Kublai Khan carried dried milk on excursions. The belief is that part of the fat was removed from the milk before drying and dehydration were accomplished by solar heating. The first usable commercial production of milk powder (MP) was invented by the Russian chemist M. Kirchoff in 1832. In 1850, Birdseye concentrated milk with added sugar until a solid was obtained. In 1855, T. S. Grimwade filed a patent on the process of drying although William Newton had patented a vacuum-drying process as early as 1837. The real beginning of the concentrated and dried dairy product industry began in the nineteenth century when Nicolas Appert, a French inventor, described his procedure for concentrating and drying milk. In 1909, Nicolas Appert developed dried milk in tablet form by air-drying milk solids concentrated to a 'dough' consistency. During the second half of the nineteenth century, attempts were made to produce dried milk, which involved the addition of other dry products to concentrated milk. Sugar, cereal products, and sodas, singly or in combinations, were added. The MP is a perfect solution for those who lack immediate access to adequate refrigeration facilities. MP results from extracting water content out of milk. The main purpose of converting milk into MP is to convert the liquid perishable raw material to a product that can be stored without substantial loss of quality, preferably for some years.

2. Milk Powder Process:-

Even though milk powders are well-defined products, we recognize that every manufacturer has specific process requirements. We add value to your business by delivering application, process, and plant design expertise and solutions that are tailored to your needs, and which will also meet consumer demands for final product quality. Process design and the selection of appropriate technologies will vary, dependent upon your final products. Work with capstone and you will have the benefit of working with an experienced partner who can design a plant that is safe, flexible, and can handle every ingredient for your recipes. Milk powder process 5 As the primary ingredient for milk powders, milk is typically pasteurized after the reception. The

protein and fat content is also standardized according to the product recipe. Solutions of lactose, milk permeate, and vegetable oil can be added before pasteurization if required. Vegetable oil can, alternatively, be added before drying. The standardized milk is heat-treated according to the process specifications, and then the bulk of the water is removed using an evaporator. After evaporation the concentrated mix is spray dried to obtain a powder with defined chemical, microbiological and physical properties. In this brochure, we will briefly describe key aspects of the different sub-processes for milk powder manufacture – from raw material reception to the packaged end product – and suggest how our solutions can support your production process and help to address possible challenges. An overview of the basic production process is shown below.

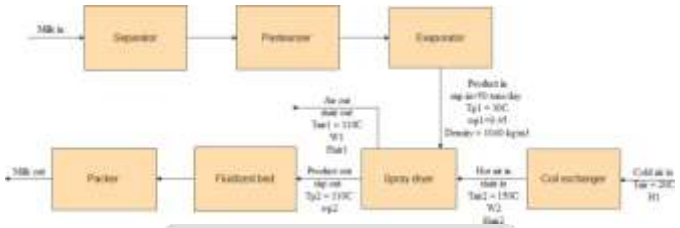

Fig -1: Figure

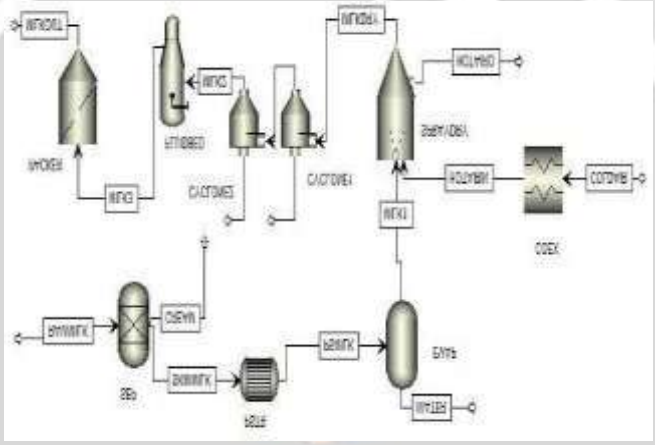

Fig – 2: Figure

3. CONCLUSIONS

Efforts are still on their way to develop more efficient and optimized models for milk powder production, however, each unit presented in this report were proven to be essential. Hence, the focus in the studies remains on the optimization and heat integration to produce better integrating products at lower costs. This paper has tried to outline milk processing requirements for satisfying demand in broad terms. It is felt that for the diary industry to prosper there is a great need to have the farmer, the extension worker, and the government work hand in hand so that the problems which arc there now can be looked at together. It is only when these problems are understood by all the parties concerned then they can be solved easily

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