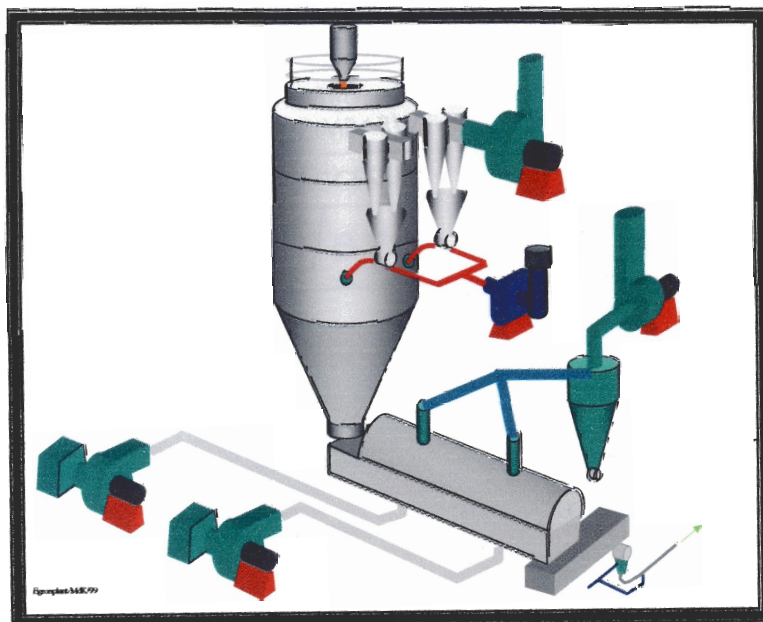


**FACULTY OF INDUSTRIAL TECHNOLOGY**  
**DEPARTMENT OF CHEMICAL ENGINEERING**

**Establishing Best Operating Conditions For Spray Dryers**  
**(Case Study: Nestle Zimbabwe)**



**RESEARCH PROJECT (TCE 5006)**

**AUTHOR:** CHAVAKIRA LOUIS V (N006 559B)

**SUPERVISOR:** Mr C T MANGUNDA

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## **Summary**

The research project looked into the unit operation of spray drying of instant milk products at Nestle Zimbabwe. Altering process parameters enables the production of quality milk powders with consistent physical properties and at optimal throughput. A combination of process parameters that increases the production rate of milk powder and brings within target the specific weight were established during the course of this project.

The use of automated process control to regulate the exhaust air temperature from the Egron milk powder spray dryer at Nestle Zimbabwe, rather than the current manual adjustment of the feed flow rate was recommended in order to increase spray dryer capacity by increasing the temperature differential between inlet air and outlet air temperature.

The use of heat recovery equipment was considered not feasible for the milk powder plant since the exit gas is laden with elutriated product (dust) which would contaminate fresh product into the tower as well as the heat exchange (recuperator) surfaces.