



# Blends Meat Stick Length Optimization



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## ABSTRACT

Deli meat production is a continuous process which has more than one hundred variables that can affect the product. Through the implementation of Lean Six Sigma's Define, Measure, Analyze, Improve and Control methodology, helped understand the interaction of variables to optimize the length of blends deli meat stick and reduce meat rework. Particularly, the data collected benefit from the use of statistical process control tools to identify variation in the stuffing production line and predict the performance of the slice production line. As a metric of success, the results display how the slice production line improve the process capability index from 1.13 to the global baseline of 1.33 using three factors: temperature, time, and length in the stuffing production area. Finally, a new factor, "the position of the slide blade", that can be evaluated to gain more efficiency in the slice production lines was introduced.

## INTRODUCTION

The business unit two of a recognized meat processing company in the Midwest produces about 945,000 deli meat sticks per year of different stock keeping units (sku's). In recent years, the unit has seen an increase in meat rework and a decrease in stack unit per meat stick in all stock keeping units. One of those stock keeping unit (sku) is blends deli meat 16 oz or known as sku 966. Blends deli meat represents 26 % of yearly production, 35% of overall meat rework and stack unit average loss of 1.5 units per stick.

## PROBLEM STATEMENT

Average stick length for SKU 966 (Blend Deli Meat 16 oz) is 70.29 inches which is converted to 34 stack units. After meat stick is slice and pack, the average waste per stick is 4.25 inches send to rework.

## OBJECTIVES

The objectives of this project were to optimize the length of blends deli meat stick and reduce meat rework.

## METHODOLOGY

Lean Six Sigma is a methodology that can be used to assess a process and to reduce defects and improve quality [1]. Because of how is structured, different tools can be combined like statistics and on-the-floor observations. Below results of each phase of the methodology and the tools used to optimize the length on blends deli meat stick.

### CURRENT SITUATION

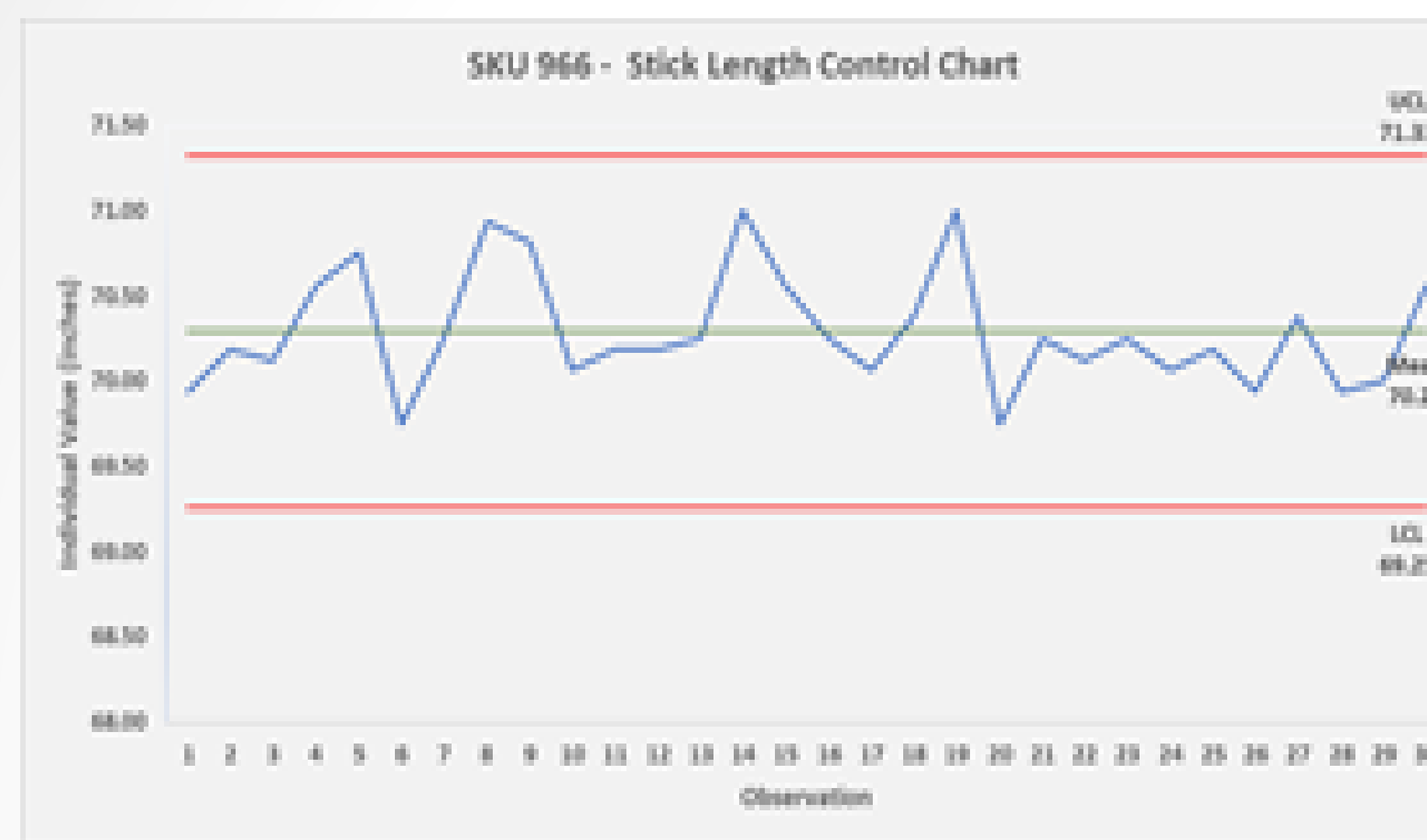


Figure 1  
SKU 966 – Stick Length Control Chart

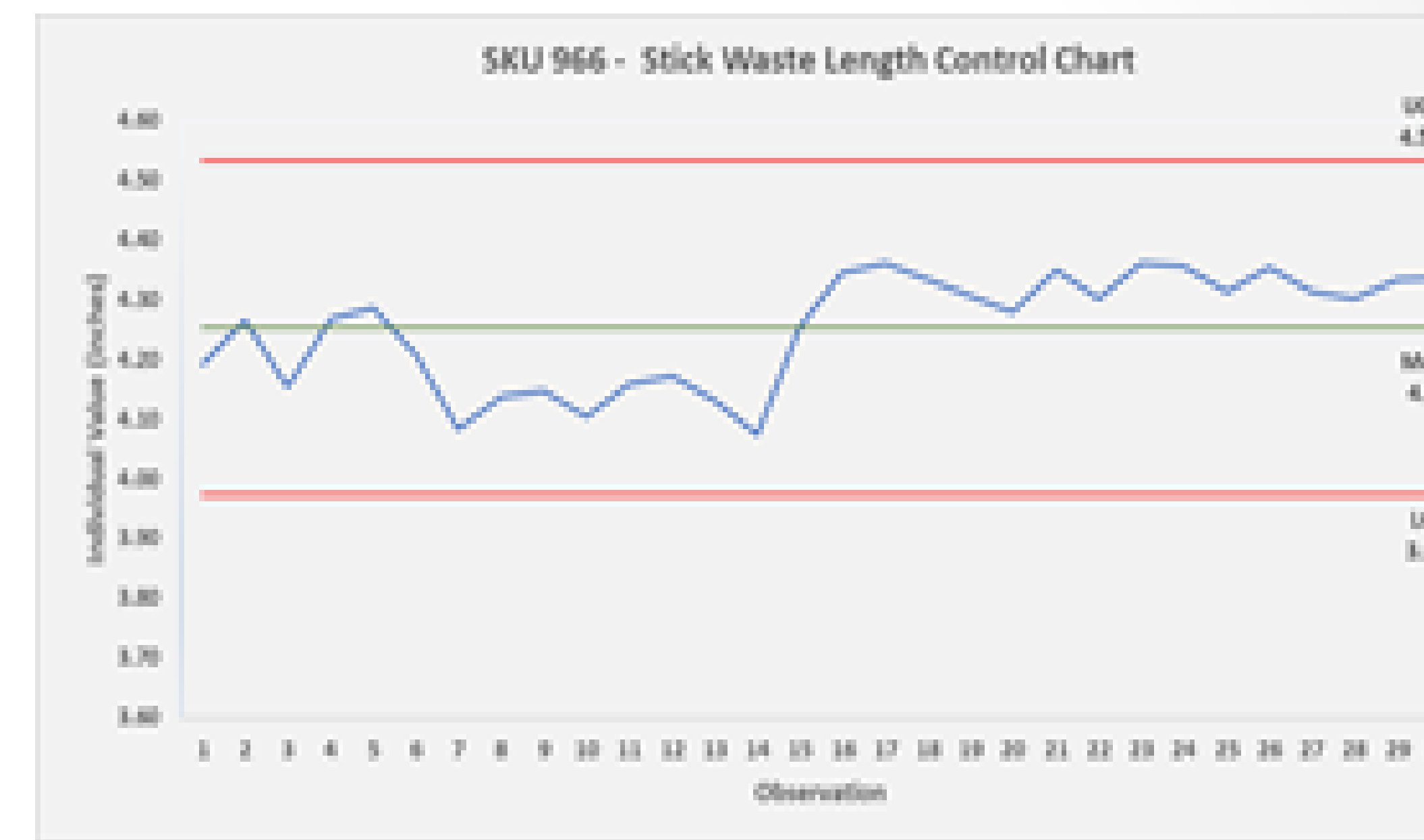


Figure 2  
SKU 966 – Stick Waste Length Control Chart

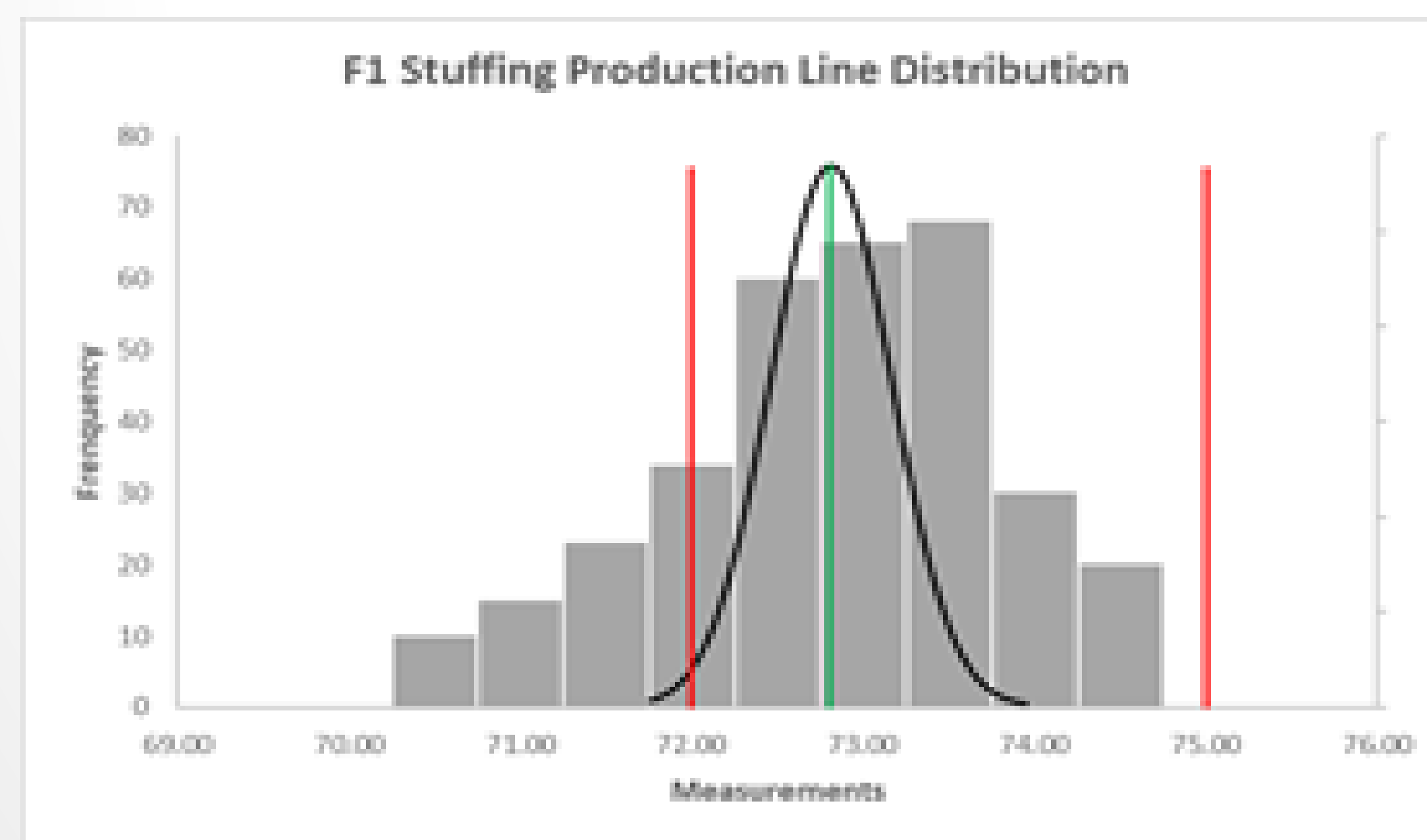


Figure 3  
F1 Stuffing Production Line Process Capability

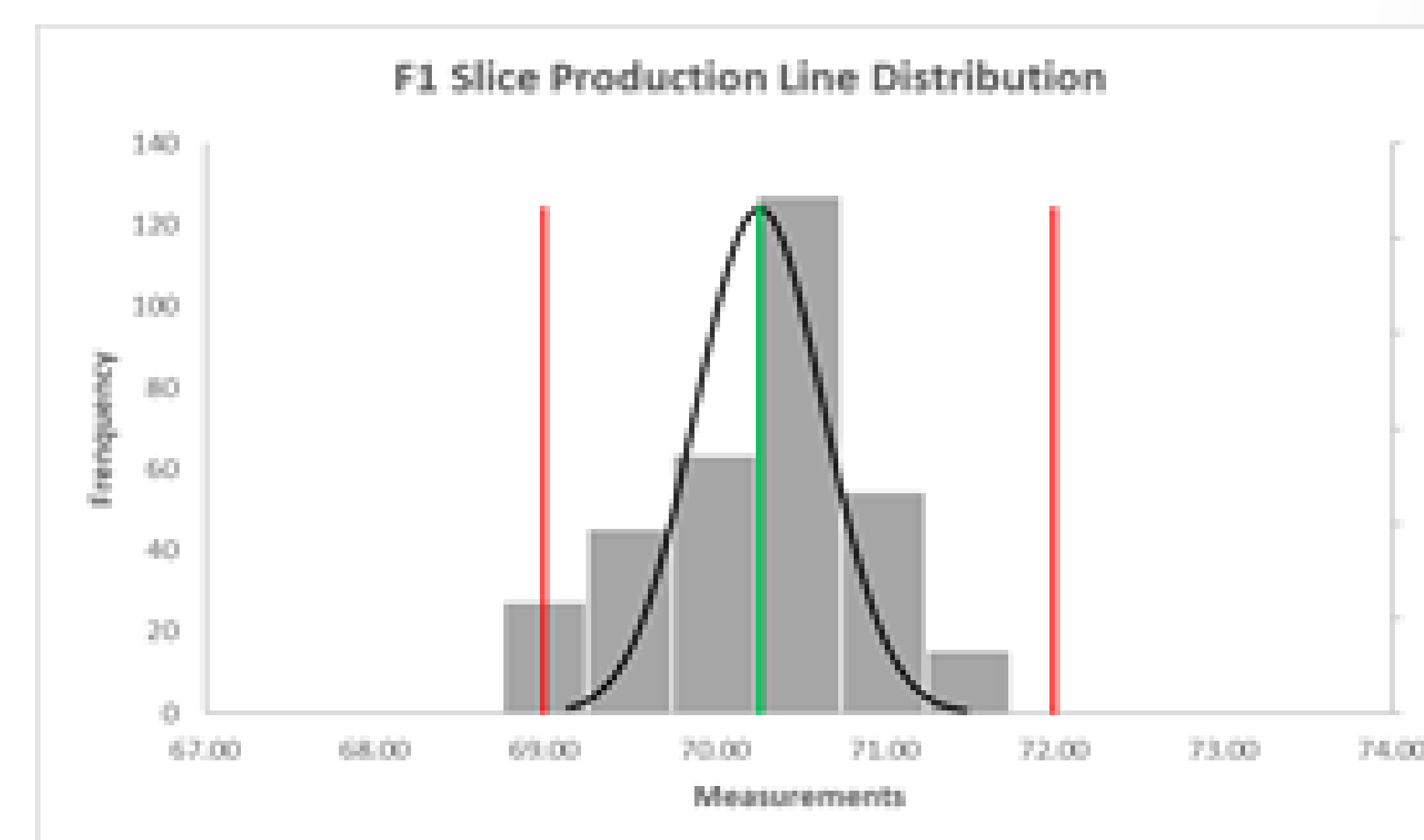


Figure 4  
F1 Slice Production Line Process Capability

### DESIGN OF EXPERIMENT

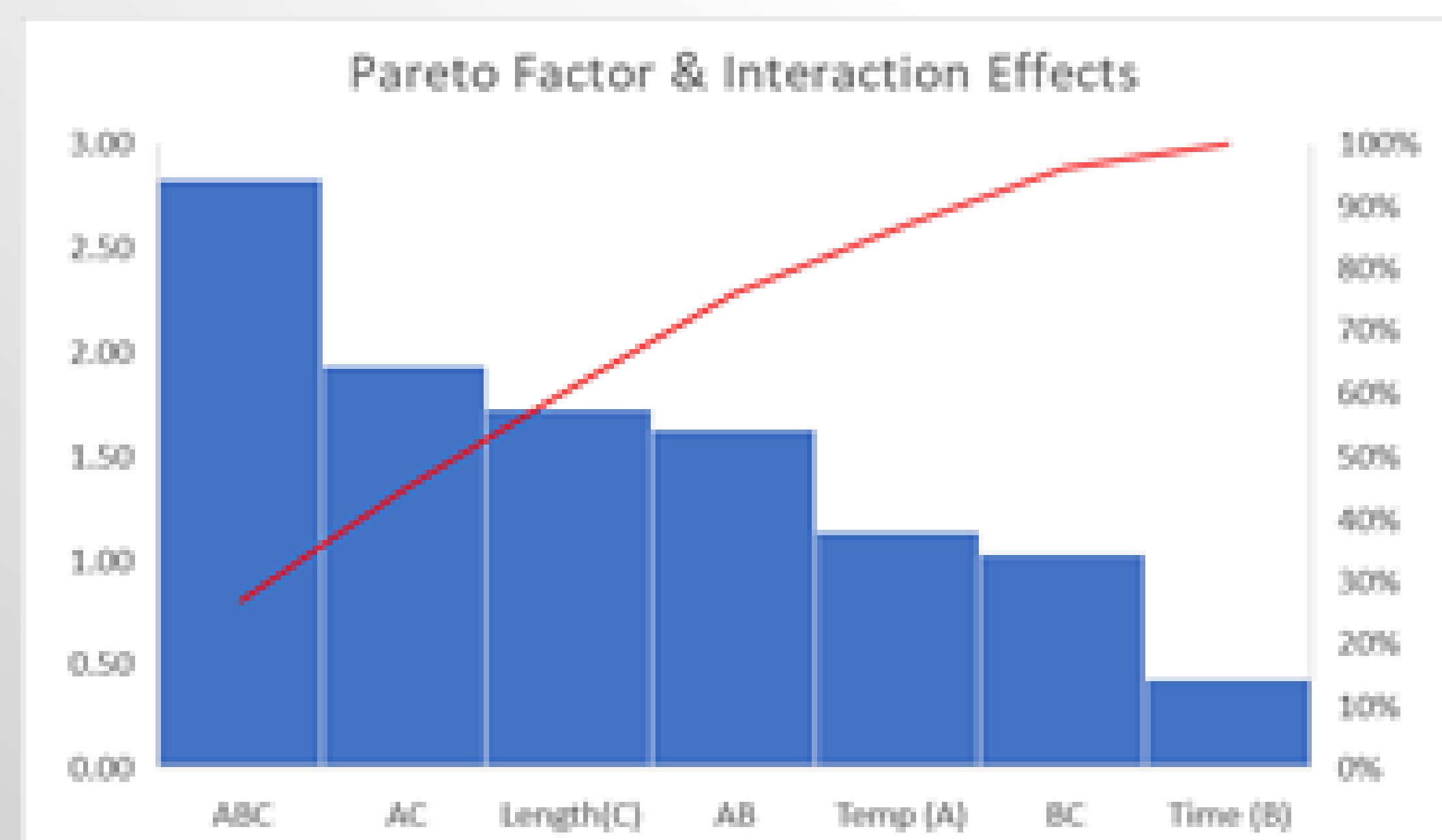


Figure 5  
DOE Full Factorial Experiment Results

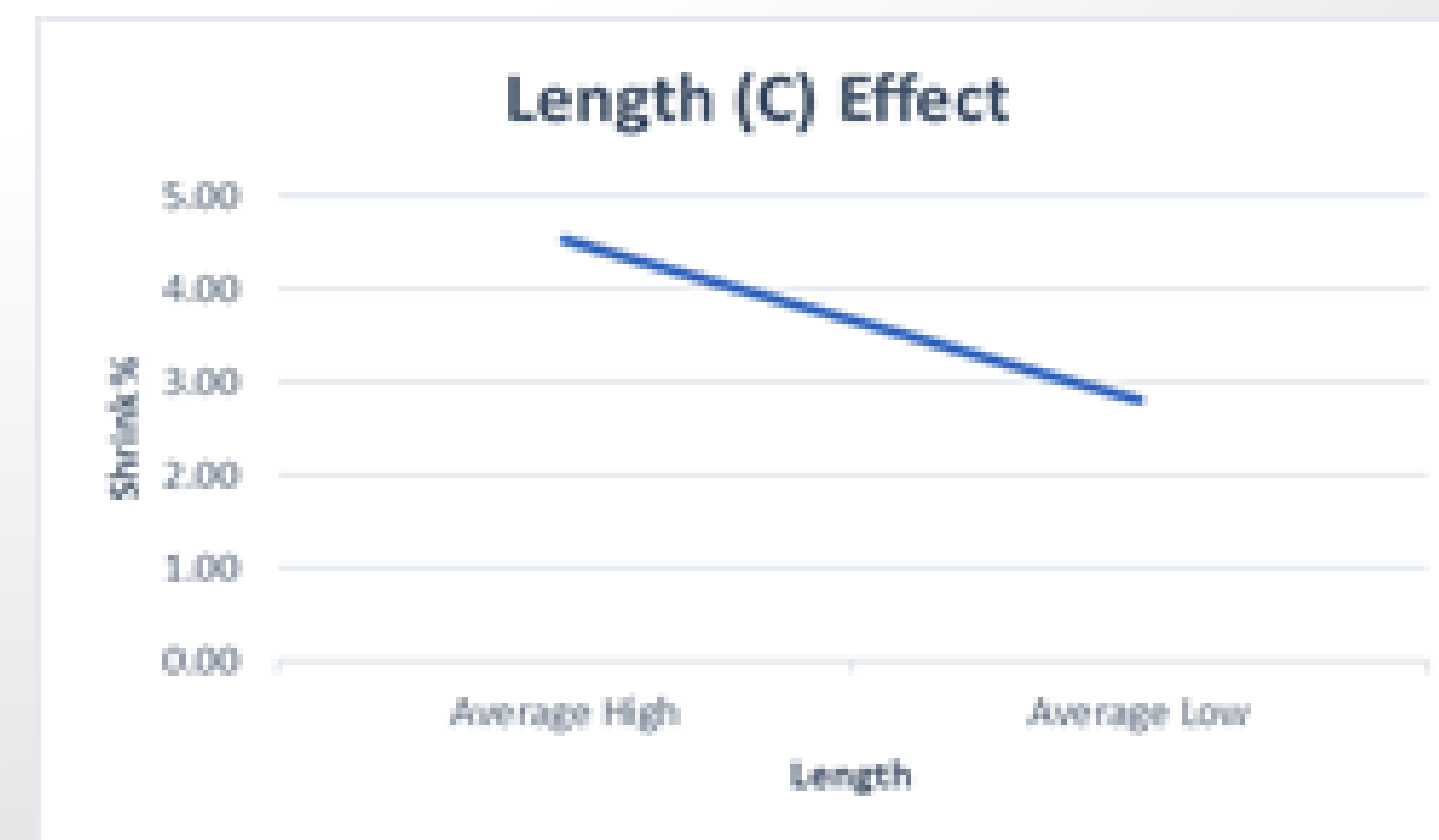


Figure 6  
DOE Length Effect Results

## RESULTS

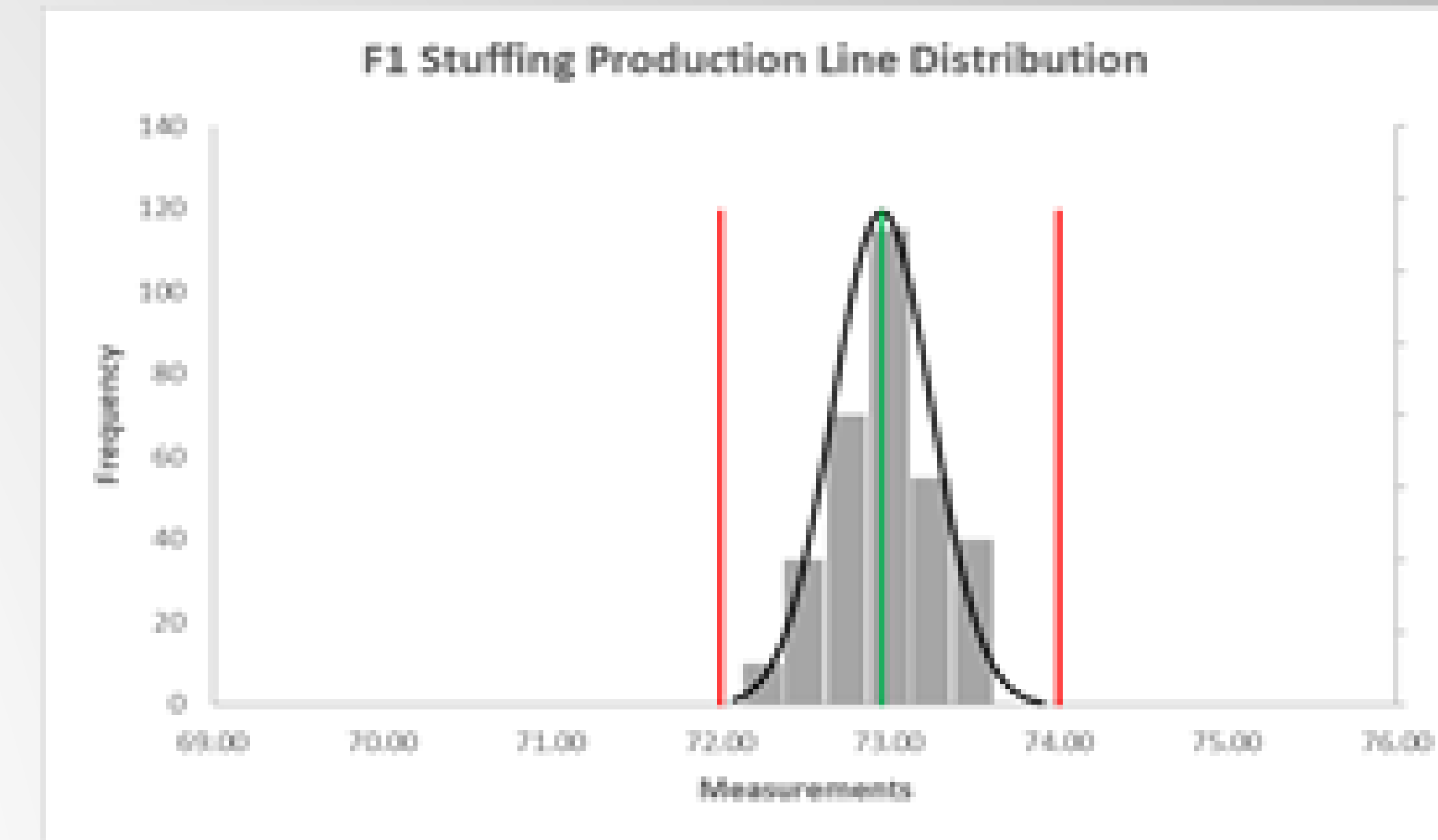


Figure 7  
F1 Stuffing Production Line Process Capability – Improve

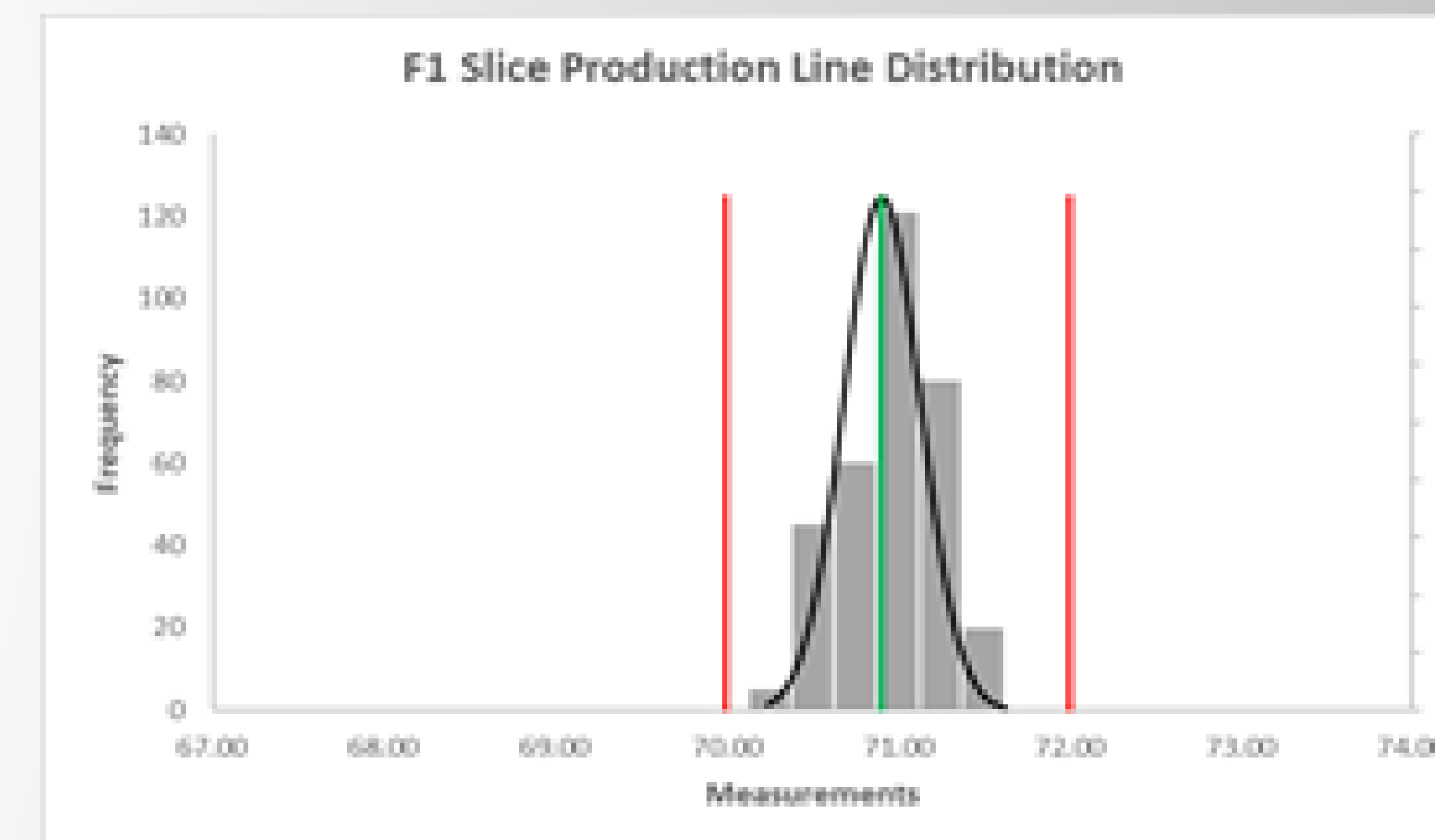


Figure 8  
F1 Slice Production Line Process Capability – Improve

## CONCLUSION

The data collected benefit from the use statistical process control tools to identify variation in the stuffing production line and predict the performance of the slice production line. Moreover, the overall blends meat rework decreased by 7 %. Savings cost and reduction of meat rework given by the improvement are approximated 185,000 per year. Finally, a new factor was introduced: "the position of the slide blade". It can be evaluated to gain more efficiency in the slice production lines

## REFERENCE

- [1] Shaffie, S., Shahbazi, S. (2012). McGraw-Hill 36-Hour Course: Lean Six Sigma, McGraw-Hill Ed
- [2] Toldrá, F (2010). Handbook of Meat Processing, Wiley-Blackwell Publishing