



Case Study

Reducing Waste Saves \$1.5 Million Annually

The Opportunity

A large yarn manufacturer was having to throw away six million pounds of yarn a year worth \$9 million. At the same time, customers were complaining that they weren't getting enough yarn because of an oversold market. The plant manager demanded a 25% reduction in waste.

The Approach

The manufacturing process consisted of spinning yarn on a tube (weighing about 25 pounds). Operators then checked these tubes for defects such as stains, broken filaments, excessive bulging, etc. Finally, anything less than 10 pounds was considered waste because it was not a full yarn tube.

Project participants were formed consisting of five operators, a manufacturing engineer, and a graduate of QualPro's process improvement certification program. A QualPro consultant served as an advisor.

The Test

Project participants used QualPro's 12-Step MVT Process[®]. They brainstormed over 60 ideas for improvement and then narrowed the list down to those ideas that were quick, easy, and inexpensive to use. They measured pounds of waste, spinning machine yield, quality defects (number of stains, number of undersized packages), and spinning machine breaks with the goal of reducing waste.

<i>Idea</i>	<i>Old</i>	<i>New</i>
Operator Refresher Training	No	Yes
Letdown/Winding Tension	7/12 grams	12/16 grams
Relative Viscosity	40 mvp*	44 mvp
Number Chest Warps	8.5	9.5
Chest Steam Pressure	300 psi	250 psi
Steam Orifice Size	Current	+20%
Chest Exit Tension	8 grams	10 grams
Primary Finish Supplier	A	B
Primary Finish Concentration	4%	6%
Primary Finish Speed	60 rpm	70 rpm
Secondary Finish Supplier	D	E
Secondary Finish Concentration	3%	10%
Secondary Finish Speed	10 rpm	25 rpm
Air Flow Rate	300 ft ³ /min	250 ft ³ /min
Air Flow Temperature	Moderate	Low
Draw Ratio	2.8	2.4
First Draw Roll	-250 ypm	+250 ypm

* Mill vacuum pressure

The Results

The company was able to reduce waste almost 20%, which saved over \$1.5 million per year! Average package bulge was reduced from .45 inches to .30 inches. Waste was reduced by increasing primary finish concentration, using primary finish supplier B, using the 250 psi chest pressure, using the secondary finish supplier D, providing operator refresher training, lowering the secondary finish concentration, decreasing the air flow temperature, and the combination of 250 psi chest pressure and keeping the chest exit tension at the current level. The operator refresher training helped bulge, but reducing chest exit tension was found to hurt bulge.