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# Trends in Industrial Engineering Applications to Manufacturing Process


 Springer


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# Chapter 15

## The DMAIC Methodology as a Tool for Process Improvement: The Case of a Mexican Manufacturing Company



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Guadalupe Hernández-Escobedo, Karina Cecilia Arredondo-Soto,  
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and Emilio Jiménez-Macías

**Abstract** Quality allows manufacturing companies to remain competitive, yet some manufacturers still struggle with a high percentage of defective products. In this chapter, we introduce the case study of a Mexican manufacturing company experiencing problems in the manufacture of radio frequency (RF) and optical fiber amplifiers as a result of defective T3 transformers and optical fibers. Consequently, the company's First Time Yield (FTY) index is lower than 97.5%, the minimum acceptable value. The main goal of this chapter is to implement a method for reducing the defect rates and increasing FYT using the define–measure–analyze–improve–control (DMAIC) methodology, Pareto charts, and the Ishikawa diagram. Our findings revealed that by using these three tools, the number of defective T3s and optical fibers decreased from 90 to 14 (83.3%) and 56 to 12 (21.4%), respectively, during

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the January–May 2019 period. Similarly, FYT increased from 87.7% to 97.5% in that same period.

**Keywords** Manufacturing industry · Defects · FTY · DMAIC · Pareto chart · Ishikawa diagram · Damaged T3 · Damaged optical fibers