

# Synaptic

## Enterprise Cost Reduction

### A Case Study



**How did a \$25 million electro-mechanical manufacturer cut more than 20% from the cost of their front-running product platform...**

**...and realize even greater process improvement savings throughout their business?**

**Synaptic Enterprise Cost Reduction delivers an average of 10% to 15% reduction in Bill of Materials cost -- with savings in the 20% to 25% range not uncommon.**

**By drawing on all functions across the enterprise, SECR<sup>SM</sup> breaks down silos to build a value and quality culture.**

## **The Engagement**

### **The Client's Challenge**

Synaptic's Client, a manufacturer of residential / commercial municipal water meter telemeters, was faced with the twin challenges of anemic margins and an Annualized Failure Rate (AFR) in excess of 8% for its front-running product platform. Moreover, many of the company's operational processes were recognized to be far afield from best practices.

Combined, these issues led to a vicious cycle of accelerating declines in sales, profitability, and market share -- as well as presenting significant warranty expense and product liability exposure.

A timely resolution was essential to the survival of the business.

### **The Client's Choice**

Our client recognized that a collection of "Band-Aid" remediations was not going to solve a systemic, enterprise-wide set of dysfunctional processes that, in the words of their CEO, "had metastasized over years."

We presented to the client's Management Team a custom-tailored, enterprise-wide package of Training, Consulting, and Business Process Outsourcing services based on our Synaptic Enterprise Cost Reduction (SECR<sup>SM</sup>) methodology to drive out product cost via Value Analysis techniques, to bring processes into conformance with best practices via Kaizen, and to improve Quality via Root Cause Analysis.

Clinching the deal was Synaptic Consulting's brand promise: we deliver clearly articulated, pre-defined results and form a "teach-by-doing" relationship with every client -- empowering them to repeat the process on their own in all future efforts. We can make this promise because of our lengthy track record of successful engagements with manufacturers ranging from startups to \$100+ million multinationals.

# Delivered Results

## **Reduced Annualized Failure Rate (AFR) to <1%**

Because cost-reduction without a high level of Quality is pointless, Synaptic and the Client brought a laser focus to the existing 8% AFR through an intensive Root Cause Analysis. Together we discovered numerous design issues such as components driven beyond their rated specifications, connectors insufficiently rated for applied stresses, and a PCB ground plane providing insufficient protection against Electrostatic Discharge (ESD) from lightning storms and power surges.

After our engineers corrected these issues in the new design, AFR dropped to well under 1% -- providing a powerful four-fold benefit of improved customer satisfaction, greater compliance to the Client's brand promise, reduced warranty expense, and reduced product liability exposure.

## **Reduced Product Bill of Material (BOM) Cost by >20%**

Synaptic's innovative design succeeded in reducing the client's BOM cost from \$76 to \$59.40 -- well exceeding the initially agreed upon 15% goal. Most significantly, chip count was greatly reduced through the use of a Programmable System on a Chip (PSoC). The retrofit of such highly integrated devices is a long-standing capability of Synaptic's Hardware and Firmware Engineering teams. Other elements revealed in the Value Analysis workshop and remediated in redesign included an over-specified housing, an unnecessary battery backup (municipal water authority customers agreed that any water used during a blackout would be insignificant), and the elimination of a costly external antenna by a significantly less expensive increase in transmitter power and an on-PCB "racetrack."

## **Reduced Manufacturing Labor Costs by >10%**

Part of the reduction in manufacturing labor costs was a direct outgrowth of the reduction in parts count described above. Additionally, adding build-in test points eliminated the need for labor intensive end-of-line manual probing with external diagnostic equipment.

## **Reduced Warranty Expense by >87%**

Sound hard to believe? At the Client's standard warranty expense of \$120 per unit, and at an Annualized Failure Rate (AFR) of 8%, annual warranty expense came to \$9,600 per 1000 units sold per year. With the AFR reduction to <1%, Warranty Expense per thousand units per year dropped to <\$1,200 -- a reduction of 87.5%!

This reduction was achieved by Synaptic discovering and correcting flaws such as driving I/O components beyond their rated specifications, incorrect solder bath temperatures, connectors insufficiently rated for stresses commonly applied to them, and a PCB ground plane design providing insufficient protection from Electrostatic Discharge (ESD) resulting from events such as lightning storms and electric utility power surges.

## **Reduced Packaging Cost by >40%**

By developing an environmentally responsible, impact-engineered packaging, Synaptic reduced client cost by over 40% while at the same time significantly improving undamaged and unmarred deliverability. Innovative use of molded-in, integral shock absorbing features eliminated the use of inserts, bubble pack, etc, and gave the client a "one step box fill." Testing to strict ASTM standards and conducting extensive field evaluations provided high confidence in the change.

## About the Author:

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