CASE STUDY: MEDICAL DEVICE OEM

CIREXX DEVELOPS FLEX CIRCUIT TO SURVIVE AUTOCLAVE STERILIZATION

CLIENT / INDUSTRY

Medical Equipment Manufacturer

PROJECT SIZE

$50,000 Project
4 Units

THE CLIENT

A large global surgical equipment manufacturer headquartered in the upper Midwest, with developed expertise in printed circuit board and flex circuit design and fabrication and in-house assembly operation.

INTRODUCTION

The medical manufacturer was experiencing low Mean Time to Failure ("MTTF") with Flex circuits which they narrowed down to accelerated degradation during the autoclave sterilization process required for the instruments after every surgical use.

NEEDS ASSESSMENT

The customer needed a Flex circuit construction that would withstand the many cycles (1,000 or more) of autoclave sterilization with minimum or no degradation – defined as mechanical integrity as well as electrical performance. The solution had to be commercially available across common markets economically matched with already stringent price points in production.

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OUR PROCESS

- Develop an Experimental Plan designed to isolate the best materials and process combinations for the different configurations
- Evaluate and test the properties of several materials including the newly developed DuPont HT polyimide films for Flex circuits
- Develop Stack Ups of various material combinations prominently featuring the NEW DuPont HT
- Fabricate test vehicle configurations in a DOE methodology and measure, test and validate the results
- Determine and report on the best combination of materials for this application which will not only meet the performance criteria, but also the commercial and economic requirement

SOLUTIONS

Cirexx performed all the tasks in a QUICK TURN mode, rapidly producing results that allowed both company's engineers to proceed swiftly through the Experimental Plan and kept diligent records throughout to add to the empirical database. Cirexx relied on the work that they had done in conjunction with DuPont during the development of the HT material to form the initial database for how it could be used in this application.

"Cirexx helped the customer achieve a much longer MTTF for their products and an improved reputation in their industry and amongst their customer base."

FINAL OUTCOME

Cirexx and the customer have developed material combinations - most employing HT material - to be used in different design applications. The customer is enjoying much longer MTTF in the field and this has interpreted into an improved reputation for their products amongst their customer base.

"HT" is registered trademark of E.I. DuPont de Nemours Company

HIGHLIGHTS

- Cirexx understood the problem and developed an Experimental Plan to assess options and isolate the best solution
- Cirexx had the resources – technology, facilities and methods – to respond effectively and quickly
- Cirexx solution was cost effective in a price sensitive market