Case Study

Medical Sustaining Engineering

Challenge

Component obsolescence issues causes increased supply disruption with mature medical product with the OEM engineering team focused on designing the next generation products – not adequate bandwidth to prioritize sustaining engineering.

Solution

Engage NEO Tech Engineering Services to extend the reach of their engineering team to assess PLC issues, identify alternatives, re-design boards and prepare prototype for validation – completing the project in timely and cost effective manner, with the added benefit of complete seamless documentation and updated CAD files in the same systems used by the OEM.

Background and Challenge:

A major medical OEM building radiology equipment offers an extensive line of imaging equipment and associated supporting injector systems. The occurrence of supply disruption challenges has increased as their injector products are relatively mature after being on the market for several years. Various electronic components originally specified have become obsolete and no longer available. In order to continue to sell these medical products in the market the OEM decided that the product line needed a mid-life design upgrade to extend the product life at least another 7 years. The OEM engineering team had the capability to perform this redesign activity but their priorities were focused on designing the next generation flagship products, so they decided to seek an outside partner to perform the mid-life upgrade and product life extension.

What they were seeking to have done

The OEM needed to analyze the life-cycle status for all of the PCBA in three product families which encompass over 30 separate PCBA. It was their target to extend the future life for another 7 years. The activities included a complete BOM lifecycle status assessment. Where problem parts were found, new drop-in replacement parts were identified where ever possible, but also include both hardware and software re-engineering when available options required this and included producing new prototypes for the OEM validation.

Why they chose NEO Tech

NEO Tech was the incumbent supplier building the PCBA, and we were intimately familiar with the designs and related supply chain challenges making us a logical candidate for the redesign activity. We also performed some of the initial VAVE and DFM analyses that raised the awareness at the OEM that some of the mission critical components were headed for end-of-life. When initial engineering discussion

identified many of the problems ahead if no action was taken, NEO Tech was chosen as the preferred engineering solution partner.

What was accomplished

NEO Tech performed a full product life-cycle analysis on the electronic materials specified on the several product families.

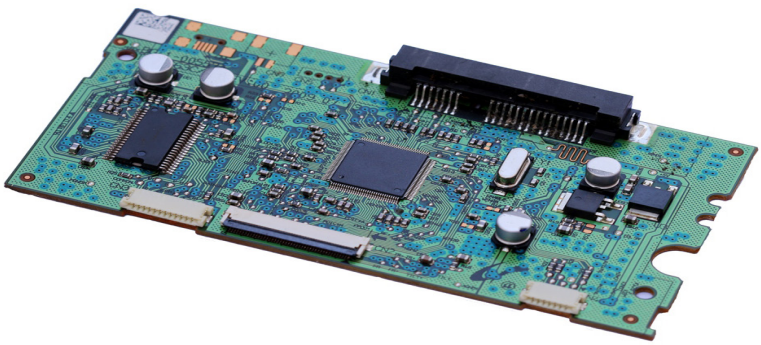
- Reduce risk of part obsolescence and unplanned redesign for the 7 year expected life.
    - o Identified alternative drop-in replacement parts for most problem parts found.
    - o Where PLC data was not known using commercial databases NEO Tech component engineers validated directly with the manufacturers.
    - o +5 of the PCBA required redesign to accommodate new components. These layouts were complete and prototypes produced for customer validation.
    - o Many alternatives were added to what were formerly sole sourced parts. This reduces future PLC risk, while also adding cost and procurement flexibility.
- Optimize procurement cost and material lead-times.
- Achieve environmental compliance.
- Conform to current legislation.

Output included all replacement component details and redesign board packages that were formatted to directly upload into the OEM's ERP and product data management systems using the same CAD systems as the OEM's internal engineering teams use. A key enabler of success of the project was the close interaction between the engineering team doing the life cycle project connected with the manufacturing and supply chain teams with the history building the product. This cooperation facilitated the information flow between engineering and the supply base and allowed completion in a compressed timeframe.

Upon Project completion the OEM was highly satisfied with the NEO Tech efforts in both the quality of the output and the ability to complete the needed activities in a short period of time. This included completing the component engineering replacement of all at risk components and complete redesign of over 5 of the PCBA that needed to have the design and fabs redesigned as replacement parts required new placement geometries. Internal NEO Tech quick turn prototype capability enabled our development engineering team to validate and confirm all component and design changes met the intended function. Having this capability in-house is a key element of being able to complete the engineering activity in the time constraints requested by the OEM customer.

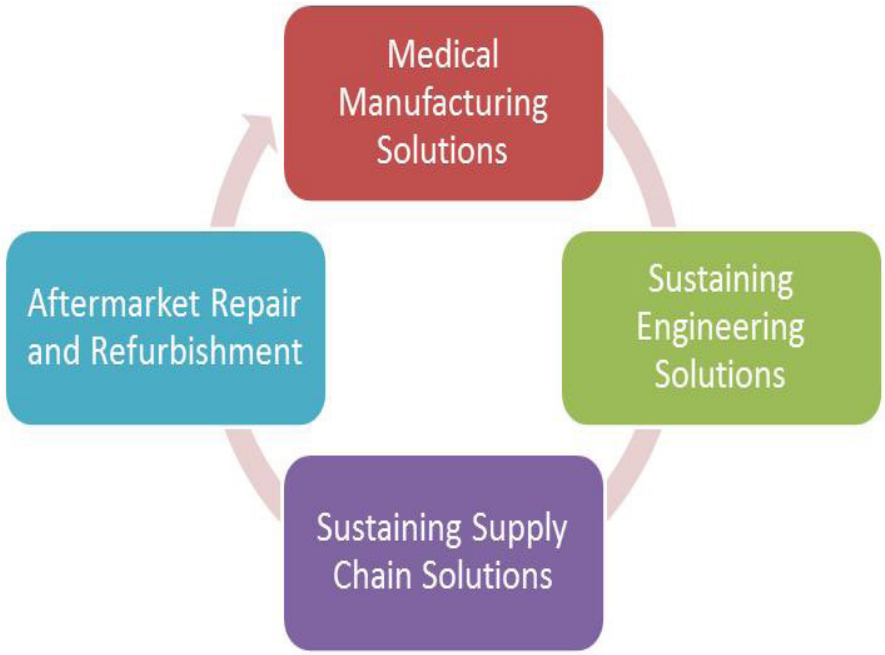
NEO Tech Aftermarket Services Breadth offered the OEM Needed Capability he Results

NEO Tech leverages our extensive engineering, supply chain and aftermarket services expertise to sustain our customer's products throughout their lifecycle. By providing customized aftermarket services, we optimize the supply chain and extended product life cycles that enable OEMs to further benefit from the cash generated on their original product development investments. Our history of servicing products in FDA regulate medical markets provides our customers solutions that deliver superior customer satisfaction. Our broad range of aftermarket solutions is customized to enable your product's success long after launch into the marketplace.



Sustaining Solutions and Aftermarket Services:

- Repair
- Refurbishment
- Upgrade
- Advanced exchange
- Reverse logistics
- Sustaining Engineering Solutions
    - o Lifecycle management
    - o Redesign for cost reduction and improved reliability
    - o Redesign for obsolescence mitigation
    - o Failure and root cause analysis
    - o Managing ASIC discontinuation with reverse engineering and replace with FPGA solution re-design including component selection and firmware engineering
    - o Product revitalization
    - o Design for excellence
- Sustaining Supply Chain Solutions
    - o Electronic component lifecycle management
    - o Proactive obsolescence management
    - o End-of-life component management
    - o Alternate component sourcing



Conclusions

Developing products that meet time-to-market, manufacturability, reliability, profitability and sustainment goals is more challenging than ever. Continuously changing technology, global supply chain and economic uncertainties, concern for the environment and extended life cycles are causing unprecedented component selection challenges. Identifying the right components and supply chain partners, while avoiding obsolescence, compliance and counterfeit risks can make the difference between success and failure. NEO Tech sustaining engineering and supply chain sourcing professionals can identify the best components to recommend and achieve our customers' requirements their products.

Medical industry OEMs can rely on NEO Tech for sustaining engineering services that have proven in this case study to extend the reach of their internal engineering organizations.