PROJECT PROFILE

SUSTAINING ENGINEERING – CHAMBER DOOR REDESIGN

CLIENT REQUIREMENTS

This multi-national client's complex analytical medical device was experiencing premature mechanical failure of the door mechanisms in approximately 5% of their product sales. Initial client solutions worked for some machines to end of life, but on other machines repairs worked for only a few months, some longer. The overall solutions developed internally by the client were unreliable. Several current Palladium personnel were retained (prior to the incorporation of Palladium Product Development & Design) to design a single solution which could be retrofitted to existing machines and also be built into new machines to eliminate the weakness, without negatively affecting the machine performance. As it was a production machine, with set tooling and BOM, no new components could be introduced to the design and only minor modifications of the existing components would work due to manufacturing, design and budget limitations.

SOLUTION

The outsourced engineering design team first performed a gap analysis of the design and design requirements including functional testing, investigation of all existing known issues and all solutions previously implemented and tested. This was followed by a complete material review, in-depth tolerance analysis, including vendor components, operational use and thermal expansion analysis, etc.. Several issues were identified and a new design concept was developed and tested. The new design did not impact on operations or functionality and was successfully implemented on all new and existing machines.

PROJECT HIGHLIGHTS

- Performance reliability of 10,000 cycles as a minimum was achieved
- No assembly adjustments were required once installed
- The new solution was easily implemented in the field on existing devices.

SUSTAINING ENGINEERING SERVICES

Palladium Product Development & Design provide sustaining engineering for many products, industries and companies such as the case history described above. Many of the same personnel involved with the mechanical analysis and solution described above (some with over 20 years industry experience) are still active with Palladium and providing services to past clients they have served, as well as taking on new clients with upgrades and product improvement programs. Design modifications related to manufacturing/machine design, modernization, researched product quality improvements and inclusion of client/user feedback are routinely implemented as a result of these analyses and design engineering services.