



Situation Analysis:

Companies often contract with specialty equipment designers for custom machines to perform specialized, even proprietary manufacturing processes. By definition, the resulting equipment is a prototype and requires rigorous testing and certification before acceptance. In this instance, a UNICCO aerospace customer contracted for two highly specialized machines costing approximately \$4M each. The machines would automate critical technical operations in order to increase both quality and productivity. The equipment procurement was supervised by the company's engineering department, which was charged with overseeing the design and construction, and, ultimately, signing off on the purchase.

Background:

Procurements of this type carry a significant amount of risk under the best of circumstances. In this case, however, the equipment did not perform to specification. In fact, UNICCO's customer's engineering department spent, literally, years working with the vendor trying to certify and accept the machines.

Ultimately, the vendor went bankrupt and was bought by another company. Finally, the engineering department negotiated a settlement with the new owner to accept the machines, even though the projected uptime was nowhere near what had originally been specified.

Project:

Once accepted, the machines were turned over to production for integration into the manufacturing process. UNICCO, the company's maintenance contractor, became responsible for preventative, predictive and on-call maintenance. Jeff Hames, UNICCO Site Director, commented, "We took over the machines assuming that they were running on one level and immediately discovered that that wasn't the case." Because of the history with the supplier, the task of repairing and re-engineering the machines fell to UNICCO.

Even basic maintenance was a challenge. "Because of years of field modifications, the 'as-built' drawings and specifications for the machine, its components and software were out of date and useless. When we had a problem, it literally took days or weeks to get it back up and running again," explained Hames. Hames hired a reliability engineer who conducted a Failure Mode and Effects Analysis (FMEA), which determined that some of the key drives and motors were mismatched, causing misalignments and equipment failure.

Hames and his team designed the new drive system and developed a proposal for the client, detailing the parts cost (about \$100K) and steps to fix the motor/drive issues. The customer authorized the expenditure. UNICCO performed the entire retrofit project under the existing maintenance services contract.

Results:

UNICCO installed the new components and related software. The retrofit was a tremendous success. In the 2½ months following the redesign, the machines experienced only 6 hours of downtime. They now operate to the original specifications and have finally allowed the customer to implement the long-planned production improvements.

PROJECT SUMMARY

Industry: *Aerospace*

Situation: *Custom \$4M capital equipment requiring redesign/retrofit*

Project: *UNICCO conducted FMEA, identified problem, designed solution, upgraded equipment*

Results: *Customer able to improve production quality/uptime*