Bearing Cap Modification for Engineering Change

The Problem

A manufacturer produced several hundred bearing caps from hard tooling and had further demands to build additional assembled components. At that point, it was discovered that a two point fastener system for the bearing cap provided insufficient loading, resulting in an oil leak.

As a solution to this problem, a third boss was added to the design. Unfortunately, the customer did not have time to change the tooling and build replacement parts; therefore, due to time constraints and cost considerations, a decision was made to modify the existing bearing caps by adding the third boss (see Figure 1).

Figure 1 – Original Bearing Cap

Third boss to be added here

The customer also specified that the repair satisfy a **torque value of at least 15 Nm** and that **no thermal energy (heat) be added** to the component during the corrective process.

The Solution

After a thorough review of competitive processes, the **SST Cold Spray** coating technology was selected. Three test components were sent to CenterLine's SST Division in Windsor, Ontario, for a trial application. CenterLine reviewed the application's requirements and recommended the SST-A0027 blend material for building the additional boss.

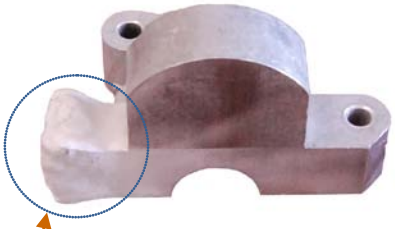


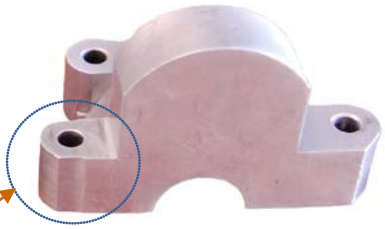
Figure 2 – SST Cold Sprayed

Third boss as sprayed

Using an SST Series P Spray Machine equipped with an SST Manual Spray Gun, the bearing caps were first surface prepared using 80 grit aluminum oxide blast media, and then sprayed with CenterLine's SST-A0027 aluminum blend material (see Figure 2). Since the SST Cold Spray process has no limitation on deposit thickness, approximately 500 mil (0.500 in.) of sprayed material was added to the component to provide sufficient stock for the required machining of the surface, and drilling of a clearance hole. After the spraying process was completed, the finish machining process was performed by CenterLine and the client was provided with a finished part that met all of the required specifications (see Figure 3).

Customer Benefits

Since the final test components passed the customer's quality and performance specifications, CenterLine was contracted to modify several hundred bearing caps. These were cold sprayed and finished by CenterLine. To the customer's advantage, the rapid turnaround time allowed the initial production schedule to be maintained, while the cost for modifying the original bearing caps was minimal.



Third boss finished

Figure 3 – Finished Bearing Cap

This project represented a truly successful effort between the client and the SST team, saving our customer's time and all of the additional design and production expenses that would have been associated with manufacturing a new set of bearing caps.

If you require more information about this project, please contact CenterLine, the SST Division.

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