



## SST Cold Spray Solves Turbine Masking & Seal Quality Issues

### Background

A major U.S. energy equipment manufacturer of large turbines was encountering quality issues when building and repairing turbine blades for large turbines (8 feet in diameter, 16 feet in length, and weighting approximately 20 tons). Their assembly specifications required that an aluminum seal coating be applied to the base of each turbine blade before the blade could be press fitted into the mating side of the turbine shaft.

### The Problem

The customer was using a thermal spray process to apply the aluminum seal coating. Although effective, this process created certain quality and cost concerns, notably:

- The thermal spray process required that only the coating target surface be exposed, as such, substantial masking was necessary for the rest of the part. The cost for tape and labor represented a significant portion of the overall cost for producing and/or repairing the blades.
- The thermal spray coating was at times uneven and porous, resulting in an unacceptable rough surface on the base of some turbine blades. A secondary operation was required to blast and re-coat the base of those blades. This rework led to additional manufacturing costs.

### The Solution

The customer partnered with CenterLine to develop an alternate procedure that would reduce the existing costs while eliminating the quality issues. An SST Series P Cold Spray Machine equipped with an Automatic Spray Gun was used to spray 6 to 12 mil (150-300 microns) of CenterLine's SST-A0050 aluminum / aluminum oxide powder at 350°C and 100 psi.

After several months of validation testing, the CenterLine SST Cold Spray process became a fully approved coating process for turbine blade assembly and repair. In fact, the SST Cold Spray process has been implemented as the **only approved aluminum seal coating process** at five (5) of the customer's facilities throughout the world.

### Customer Benefits

As the production time for part manufacturing and repair has been reduced significantly, the reported savings to the customer have exceeded \$250,000 per quarter. The investment payback has been almost immediate and the SST Cold Spray process is now considered a proven and reliable repair and production technology for the turbine industry.

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

