

**Case Study #1: Paint Bake Oven Upgrades/Performance Enhancement**

**Problem:**

1. Due to heavier metal construction, low-level sills on a vehicle body were not reaching the specification temperature in the Radiant zones (1-4).
2. Despite 100% output from the burner, Zone 5 is 10° F under the set-point temperature. Excessive natural gas usage.
3. Oven imbalance; exit of oven has 10,000 CFM @ 351° F air and fumes spill out resulting in excessive heat losses and adding smoke to the work environment and increasing the gas usage.



**Solution:**

1. Repaired oven exit air seal, increased exhaust volume, oven is negative and is no longer spilling hot air and reduce gas usage.
2. Modified sill duct, to increase the amount of heated fresh air on the low level door sills which increased the temperature rise and met the specifications.
3. Extended zones 5 and 7 low-level supply nozzles to further increase the low level body temperature and insure proper cure.

**Energy Savings:**

In addition to improving the cure of the sills, the solution resulted in a reduction of 7,800 CFM of fresh air supply to the oven resulting in \$105,418 annual savings from natural gas with the cost of implementation of the solution at \$ 125,880. **ROI in 14 months!**

