

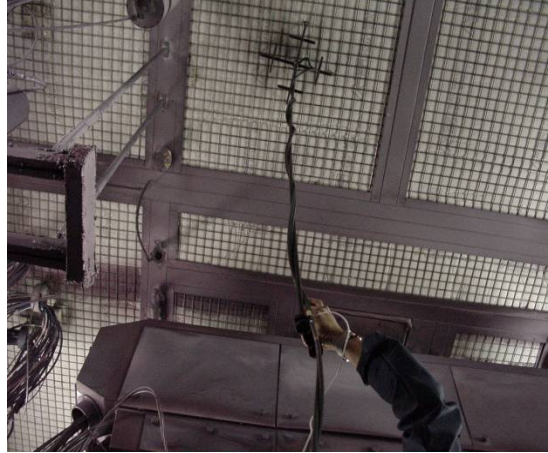


**Case Study #2: Paint Spray Booth Upgrades/Airflow Optimization**

**Problem:**

In a US automotive plant:

1. New application equipment requires lower downdraft velocities.
2. Operation of both paint spraybooth needs to be optimized, as it pertains to the downdraft air velocities and other parameters.



**Solution:**

1. PCE Monarch performed a baseline evaluation of the existing operating conditions of both paint spray booths and the associated air handling equipment.
2. PCE Monarch engineers identified opportunities for air volume reductions and equipment shutdown opportunities.
3. PCE Monarch implemented the solutions as a turn-key project, with necessary mechanical upgrades (fan resheaving, scrubber and waterflow adjustment, filter arrangement, booth balance) and control changes (VFD's, new control strategy, booth balance control).

**Table 1: Summary of resulting Annual Energy Savings**

Booth	(SCFM) Reduction	Heating Cost Reductions	Cooling Cost Reductions	Electrical Cost Reductions	Total Savings
Booth #1	34,389	\$58,067	\$8,362	\$14,695	\$81,124
Booth #2	48,254	\$117,863	\$12,090	\$20,621	\$150,574
<b>Total Reductions</b>	<b>82,643</b>	<b>\$175,930</b>	<b>\$20,452</b>	<b>\$35,316</b>	<b>\$231,698*</b>

\*Estimate is based on natural gas price of \$7 per MCF and electrical cost of 0.045 per kWh.

**Resulting annual energy savings = \$231,698.00**

**The cost for implementation of the required changes = \$205,194.00**

**ROI = 10 months!**

Additional savings not included in these were: improved product quality, reduced downtime, reduction in bulk material usage, reduced complaints from manual operators.