CASE STUDY

1583

APPLICATION GOAL

Reduce compressed air consumption and noise levels associated with the use of hose connections as blow off devices.

BEFORE EXAIR

An engineered steel tubing producer uses compressed air to blow coolant & metal chips from steel tubing, with a manifold made from male ends of quick connect hose fittings *(see photo, left.)* The noise level and compressed air consumption were excessive, and the situation was aggravated by lack of on/off controls to stop the airflow when tubes were not present to be blown off. Flow and sound level measurement with calibrated instruments revealed this setup was using 74.63 SCFM @13psig inlet pressure, and generating a sound level of 98dBA per line, and they run five lines.

AFTER EXAIR

Two **Model 1101 Super Air Nozzles** were purchased and Installed on one line *(see photo, right.)* Compressed air consumption and noise levels dropped dramatically to 20.90 SCFM @56 psig, and 72dBA, respectively. It may seem counterintuitive that the higher pressure to the Super Air Nozzles resulted in LOWER compressed air consumption & sound levels, but their engineered design uses the compressed air so much more efficiently. Also, the large open ends of the hose fittings causes a huge pressure drop in the hose. The hose is simply not big enough to deliver that amount of air.

In addition to the savings from changing to an efficient, engineered solution, a solenoid valve was also installed to turn the air on & off between production cycles. The cycle time varies, but they estimate that the solenoid valve is actuated only 60% of the time, further reducing the total air consumption to an effective rate of 12.54 SCFM.

SUMMARY:

Original sound levels were above OSHA maximum exposure limits for even relatively short periods. Standard 1910.95(a) specifies no more than three hours exposure to levels over 97dBA. The reduction to 72dBA is far below OSHA's 90dBA limit for eight hour exposure. The savings associated with the dramatic reduction in compressed air consumption are in the following table, which includes a row showing the total savings, once their other four lines are outfitted:

	Compressed air consumption	Consumption savings, annual	Cost savings, annual
QD Fittings	74.63 SCFM	23,246,496 SCF	$5,812.00
Super Air Nozzles	12.54 SCFM		
	Total for all five lines:	116,232,480 SCF	$29,058.00

Cost of compressed air usage is based on electric utility cost of $0.08/kWh and calculated for operation 24 hours/day, 5 days/week, 52 weeks/year.

EXAIR LLC • 11510 GOLDCOAST DR • CINCINNATI, OH 45249

(513) 671-3322 • (800) 903-9247 • TECHELP@EXAIR.COM • EXAIR.COM