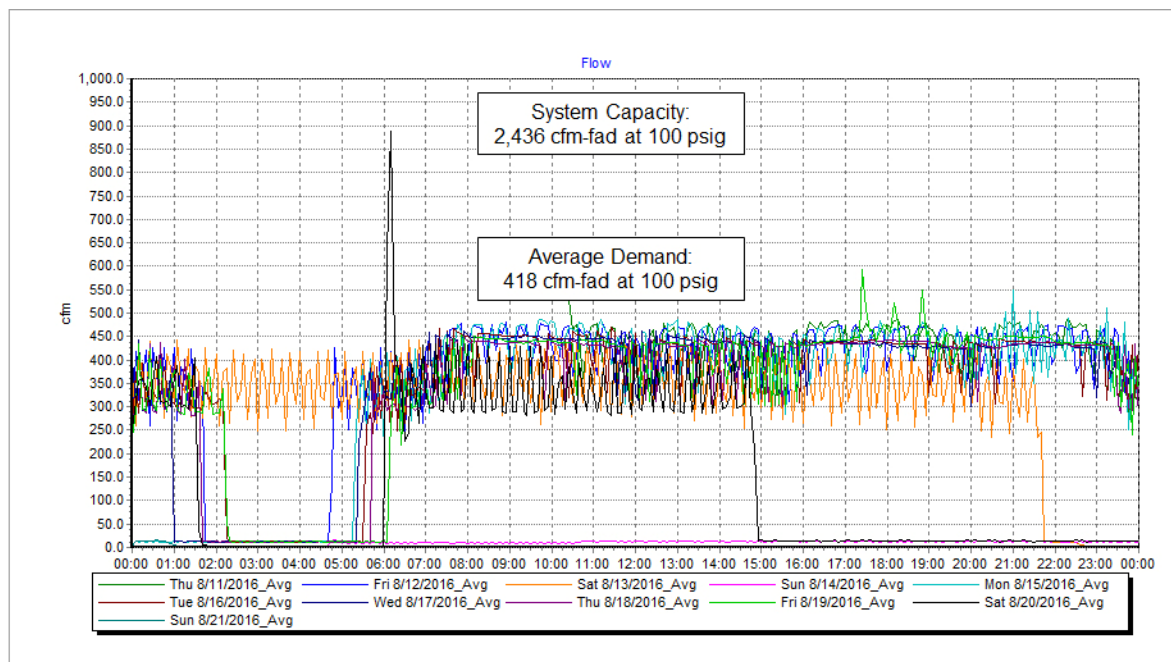


CASE STUDY

Case Study - Sizing

SITUATION: A video media processing center was interested in replacing their aging equipment in hopes of achieving energy savings as well as a local power company rebate. They relied on two 250 hp compressors to supply the air needed to run conveying and packaging processes. The system's available capacity was 2,436 cfm and annual energy costs were \$83,263.

SOLUTION: The end-user worked with a compressed air manufacturer to have a thorough compressed air assessment conducted. Based on the findings of the audit, they discovered their average flow was only 418 cfm—with a peak flow (excluding start-up) of 535 cfm. The specific power of their system was very high and inefficient at 33.28 kW/100 cfm. Additionally, the 2400 cfm refrigerated dryer was oversized and the 1040 gallon receiver tank was undersized.



Averaged over 5 minutes. This chart highlights the cumulative flow throughout the test as measured via the installed flow meter before the dryer.

CAGI is the leading organization representing manufacturers of compressed air system equipment, including air compressors, blowers, pneumatic tools, and air and drying and filtration equipment. This document is for information purposes and should not be used as a substitute for instructions from individual manufacturers. Always consult with individual manufacturers for specific instructions regarding their equipment.

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CASE STUDY

OUTCOME: As part of the audit findings, the compressed air manufacturer offered two solutions for the customer to consider.

Solution one: a single 100 hp variable frequency drive compressor rated at 545 acfm/FAD and additional storage. This would reduce the specific power down to 16.83 kW/100 cfm and offer \$41,159 in annual energy cost savings.

Solution two: two 60 hp compressors rated at 266 acfm/FAD each, a master controller to efficiently control the units, and additional storage. This would reduce the specific power to 17.73 kW/100 cfm, yield \$38,892 in annual energy savings, and offer some system redundancy.

Energy Cost (\$/kWh): \$0.090		Existing System as Measured	Proposal 1: 100 hp VFD + Storage	Proposal 2: 2 x 60 hp + master controller + Storage
Interval of Calculation: 5 Minutes				
Totals	Total Energy Cost (\$/yr)	\$83,263	\$42,104	\$44,371
	Total Energy Consumption (kWh/yr)	925,146	467,823	493,008
	Maximum Power Consumption (kW)	225.6	91.7	94.3
	Specific Power (kW / 100 CFM)	33.28	16.83	17.73
Savings Potential	Annual Energy Cost Savings (\$/yr)	-	\$41,159	\$38,892
	Annual Energy Consumption Savings (kWh/yr)	-	457,323	432,138
	Power Consumption Reduction (kW)	-	133.9	131.3

Working with a compressed air expert offers opportunities to thoroughly analyze needs and find lasting, energy efficient solutions that properly apply the right technology for the right application.