

Case Study



Washington and Churchill Elementary - Cloquet Schools

Location: Cloquet, MN
Mechanical Contractor: Central Sheet Metal
Engineering Firm: Hallberg Engineering
Rep Firm: SVL, Inc.

Highlights

- Estimated saving with Q Duct over the original metal duct with failing insulation = \$23,234
- The 9-year old metal duct was replaced due to failing insulation.
- Estimated 10 Year Energy Savings with Q Duct = \$255,574



Background: AQC Industries was brought on to assist the Cloquet Independent School District No. 94, located in Northern Minnesota, near Duluth. The scope of this project was the result of a \$15.9 million bond referendum that included work at five schools within the district, including Washington and Churchill Elementary School. The work included replacing failing and outdoor duct with external insulation. This project started at the beginning of Summer and completed on time, before the start of the Fall school year.

Challenge: The biggest challenge the team came across during this project was the deterioration of the existing 9-year old outdoor duct system. The duct was rotting, and insulation was compromised, resulting in diminished R-value. Hallberg weighed the costs of repairing the old system or installing a new Q Duct system; it was evident that Q Duct was the best solution. The cost to insulate the existing duct exceeded the investment of installing brand new Q Duct, saving the schools money and providing the ability to rest assured knowing that they were installing a quality product that will last years to come.

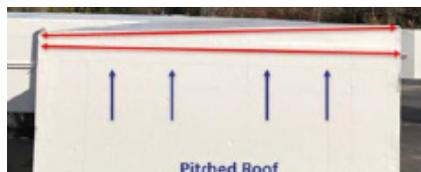


Preexisting damaged duct system at Cloquet Schools

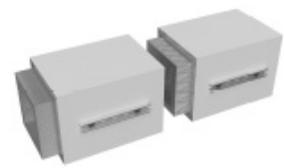
Solution: Because of the condition of the preexisting duct, Hallberg Engineering selected Q Duct to replace the existing duct. Q Duct was determined to be the best option available in terms of the least amount of leakage, best thermal integrity, competitive price point and durability. During the process, SVL assisted in budgeting, design drawings, and specifications for bidding. Both projects utilized Q Duct's new features, such as the sloped roof (Q Shed), to prevent water pooling and the quick support mounting system (Q Rail) that results in saving contractors time and money. With Q Duct, the owner will have the best outdoor insulated duct for the next 20+ years.



Q RAIL



Q SHED



Q LOK

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Result: Both schools were very pleased with the results. The SVL team complimented AQC for ensuring accuracy on the bill of materials, and the contractor installed the Q Duct system correctly. As with all AQC product installations, the installation contractors went through product training before installation. AQC also provided on-site installation training to oversee the process and to ensure any questions would be able to be addressed on the spot.



Project Energy Savings:

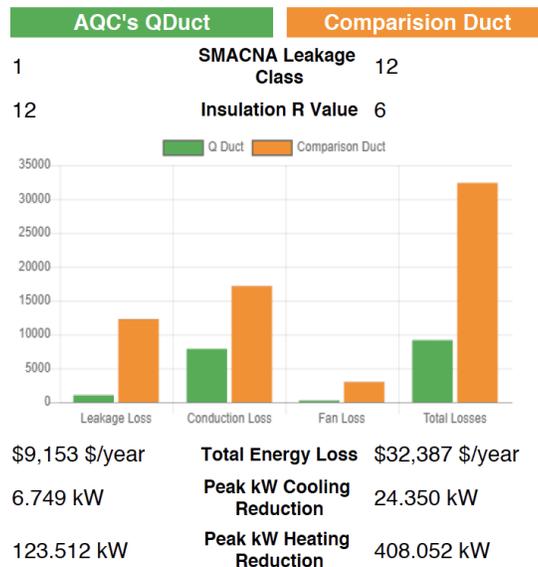


Calculate the Energy Savings

Project Information

Project State: MN
 Project City: Duluth
 Natural Gas Rates: 0.80 \$/CCF
 Electric Rates: 0.12 \$/kWH
 Duct Area: 23548 sq. ft.
 Pressure Class (in w.c.): 1

Degree Heating Days (Base 65F): 9425
 Degree Cooling Days (Base 65F): 209
 Heating DB (F): -19.5
 Cooling DB (F): 84.5
 Cooling System Efficiencies: 0.8 COP
 Heating System Efficiencies: 3.5 COP
 Heating: Gas
 Fan Efficiency (cfm/kW): 1000
 TDC/TDF, 4-Bolt Connector
 Thermal Short Circuit Area: 235.5 sq. ft.



Total Savings with Q Duct (10-year savings with 3% energy inflation and 24-7 operation)
 \$255,574

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