

## Fabric Duct Proves To Be Economical And Energy Efficient

Faced with having to spend upwards of \$1 million for the HVAC system that would go in its new plant, Star Precision officials decided it was time to think outside the box. They nixed the plans to use conventional metal ductwork and registers—as a consulting engineer had proposed—and opted instead to utilize an industrial-grade TufTex fabric duct system that cost about half as much. The decision was reached with the help of AC/H Professionals, the project's mechanical engineer, and Construction Concepts Inc., the general contractor. Both firms are located in Longmont, CO.

The fabric duct was manufactured by DuctSox of Dubuque, IA. It is, according to its maker, 90% lighter than metal. On jobs the size of the Star Precision plant—which is located in Frederick, CO, and required some 1,700 linear feet of 48"-diameter duct—that can make a tremendous difference in costs associated with support framing and the time it takes to



complete the HVAC installation.

The 5,000' of suspension cable required for the Star Precision project was installed by a crew of two in 12 days. Once that phase was completed, AC/H Professionals needed only another four days to hang the duct.

Machine tolerances and worker comfort were top considerations in designing and building an HVAC system for the 100,000 sq. ft. building. Among the components utilized were eight 23,000-cfm evaporative coolers. They supply the duct from an exterior brick mechanical space. The units are paired together with a plenum that

runs through the exterior wall and splits into a Y shape that supplies each pair of duct runs.

The fabric duct is also combined with a 45,000 sq. ft.-cfm evaporative cooler to cool a powder-coat paint booth. The segregated and separately controlled area maintains a 78-degree air temperature even though the drying oven has a 250,000-BTU capacity.

The main production floor's HVAC design uses a myriad of strategically-placed ceiling and wall fans to eliminate collected hot air at the roof level and exhaust enough air to produce a positive building pressure. Ceiling exhausts are thermostatically controlled to remove heat, however the wall fans have sheet metal duct drops 18" off the floor to eliminate air stratification and pull air from the 20'-high ducts.

"The abandoned original design called for all roof-mounted exhaust fans that when combined with the weight of the sheet metal duct might have surpassed the

ceiling load bearing specification," said Roger Bakel, AC/H Professionals' head estimator.

"Everybody that looks at what we've done with this HVAC design just can't believe the indoor air quality we've achieved, mainly because they've never heard of fabric duct," he added. "This is really a perfect product for gymnasiums, indoor pools, warehouses and industrial plants like this one."

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