

## Architect & Engineer Combine HVAC Function, Aesthetics & Value Engineering in Recreation Center's Indoor Pool.



ESQUIMALT TOWNSHIP, VICTORIA, B.C.—The architectural combination of metal, glass, and wood produces rave reviews at the new Esquimalt Recreation Centre indoor pool, but for the HVAC consulting engineer, Jimmy Ng, Stantec Consulting Ltd., Vancouver, the condensation-generating materials presented a dehumidification and air flow challenge.

Unless the air flow design had enough throw and consistency, the high humidity loads could have long term affects on the striking interior design of project architect, Cannon Design, Victoria, B.C. Condensation could possibly cloud the hundreds of square feet of window surfaces while deteriorating the metal and wood structure over the long run.

Besides the material concern, Ng also faced a myriad of moisture generating pools of water at different temperatures, and toys such as fountains and water canons that create a large humidity load. Combine those moisture elimination challenges with the Recreation Centre operations manager, Yves Bienvenu's request for value engineering, and Ng realized natatorium's HVAC design would test his design team's expertise.

Part of Stantec's value engineering included eliminating under deck ductwork – commonly used to keep the bottom of windows and walls free of condensation. Instead, Ng's strategy involved using only overhead ductwork, which saved 15 percent in total HVAC costs. "Under deck ductwork is certainly nice to have

and mandatory in a cold climate, but I didn't think we needed it if our overhead system was designed correctly," said Ng.

The specification of white fabric duct from DuctSox, Dubuque, Iowa, instead of spiral metal duct saved another 20 percent in ductwork materials and installation labor. DuctSox's premium Sedona™ model was less expensive than metal duct, which needs protective epoxy paint coatings in the corrosive environment of humidity and pool chemicals.

Although he knew it would save money, due to his lack of exposure to the product, Ng was concerned with air delivery performance of fabric. Gerry Lentz, owner of manufacturer's representative, N-Viro Air Corp., Victoria, worked with Ng to have DuctSox factory engineer each duct section with the necessary Sonic Vent perforation sizes and placement to assure proper air throw and consistency.

Ng was able to control proper space temperature by customizing the fabric duct to divide the room's air distribution into four zones. The room's perimeter system – designed to bath the walls in 85°F, 55-percent relative humidity air – uses linear Sonic Vents at the 6 o'clock and 4 o'clock positions.



The other three zones are over the smaller vessels. The fabric duct is hung from corrosion-proof aluminum H-track hanging system. "With the problems of metal in a corrosive environment along with the costs involved with applying and maintaining the necessary protective epoxy coatings, fabric duct seems to be a perfect air distribution system for indoor pools," said Ng.

Balancing the fabric duct took only a half-hour, according to Ed Low, A.S.C.T., president of Flotech Mechanical Systems Specialists, Victoria, because airflow and static pressures were factory engineered into the fabric duct diameter and each linear vent that run the length of each duct run.

The space's indoor air quality is maintained by a heat-recovery dehumidifier that removes 400 lbs. of moisture/hr. while also providing cooling or heating for the space. It uses heat recovery to provide free pool water heating for the room's largest pool. •

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