



Movable HVAC Ductwork Fits Research Labs' Reconfigurable "Flexible" Design.

Fabric duct offers \$188 million design/build project reconfigurable, draft-less air distribution with easy clean-ability.

TORONTO, ONTARIO— One reason the \$188 million Toronto Medical Discovery Tower (TMDT) has become a prototype for 21st Century medical research laboratories is its state-of-the-art flexible design.

Laboratories on fourteen stories of the 15-story building were innovated with FlexiLab, a new design that features reconfigurable lab utilities supply and space capabilities

to accommodate the fast evolving world of medical research. FlexiLab was conceived by ABE, a joint-venture between mechanical contractor Black & McDonald and general contractor, EllisDon. "This project's major challenge was to design labs for unidentified lab research projects that could change many times throughout the useful life of the workspace," said Samir Raza, project manager for electro-mechanical systems, Black & McDonald Limited.





The HVAC design challenge for the London, U.K.-based AMEC's Oakville, Ontario branch was keeping seemingly permanent types of utilities such as ductwork and lab gas supply piping flexible enough for future reconfigurations. AMEC's senior mechanical engineer Zaro Dimitrov, who has designed several research laboratories and specified thousands of linear feet of fabric duct previously, thought combining both for the first time would complement TMDT's goal of configuration flexibility.

Thus, the ABE design team, which was responsible for the \$88 million interior laboratory fit-out of TMDT, specified low clearance, D-Shaped (half-round) Sedona, a premium fabric duct model from DuctSox, Dubuque, Iowa. Sedona uses a proprietary Flush Mount suspension system that anchors to any suspended ceiling system via T-Bar adaptor/connectors. "If a workstation within the space is moved, they can easily relocate the HVAC ductwork to accommodate the

"If a workstation within the space is moved, they can easily relocate the HVAC ductwork to accommodate the new heat load..."

new heat load without worrying about diffusers and throws because the air flows through the fabric," added Raza.

DuctSox's Low-Throw model in which air is delivered through a porous fabric, accommodates the research laboratory industry's requirements of gentle, even, and no-draft air disbursement so as not to disturb or generate cross-contamination of specimens, according to Ian McDermott, manager of research facilities, University Health Network (UHN)—a TMDT tenant. A gentle airflow of 30-ft/minute—which is nearly half the airflow of conventional ductwork

systems—combined with a required 12 air changes per hour presented an additional air distribution challenge.

The easy clean-ability of fabric duct also suits the strict cleanliness requirements of labs. ABE is being retained to fulfill a five-year maintenance contract, which calls for the fabric duct systems as well as other parts of the labs to be cleaned every six. Each lab's fabric duct runs can easily be disassembled, commercially laundered, and reassembled in 24 hours or less, according to ABE officials. If a particular lab's airflow can't be sacrificed for 24 hours, then it is substituted with spare fabric duct during the laundering period.

Even with all these advantages, fabric duct's relative unfamiliarity in North America made it a challenging sales presentation. Dimitrov, who spent the first 10 years of his career in Europe where fabric duct has been an HVAC

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design staple for more than 35 years, teamed up with Steve Cukrovani, engineering salesman, at manufacturer's representative, HTS Engineering. Dimitrov's extensive experience in HVAC lab design combined with HTS Engineering's past business relationship with ABE members helped convince project officials that laboratory requirements and fabric duct benefits were synergetic.

TMDT represents significant new research space for UHN, a Toronto-based group of three teaching and research hospitals. "With the TMDT, I think UHN and ABE have defined what the prototype for state-of-the-art 21st Century medical research design will look like," said Raza.

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