

# Case Study: Bell Canada

## Laser Duct Smoke Detectors



Bell Canada, a company that supplies innovative solutions and services, had a problem. It needed smoke detectors that would provide reliable, very early warning to protect its telecommunications rooms – high-asset areas with high air flow. Because these areas are very sensitive to particulates, even small traces of smoke could cause significant damage and operations disruptions.

Bell Canada turned to System Sensor, which had the product to do the job: its new laser-based model 7251 DH\* intelligent air duct smoke detector, the company's latest addition to its high-sensitivity detection line-up. The product combines the System Sensor high-sensitivity laser sensor with its industry-leading duct smoke detection capability.

The detector not only provides very early warning; it screens out false alarms with a set of sophisticated logic algorithms. It was created to work in areas like telecommunications rooms and computer server rooms, which have high air flow and several air changes per hour.

These types of environments are different than a static air environment where fire generates smoke that rises to the ceiling in a concentrated form. In a telecommunication center, the high air flow causes air mixing and smoke dilution. That makes detection by any means other than high-sensitivity detection slow and less responsive. NFPA 76, *Standard for the Fire Protection of Telecommunication Facilities*, requires Very Early Warning Fire Detection to detect small, incipient-stage malfunctions that could lead to fire conditions. A manual response in this early stage normally terminates the malfunction.

At elevated air flows and in some other locations, the smoke does not have an opportunity to rise to ceiling-based detection. This makes the detection of the air flow at return grilles a very important part of the smoke detection system. Very Early Warning Fire Detection requirements for return air call for an air aspiration port or spot detector for every 4 square feet of return grille area. This often results in an overabundance of detection technology in vulnerable placement areas.

\*The 7251 DH has been upgraded to and replaced by the InnovairFlex™ DNRHS high sensitivity duct smoke detector.

Telecommunication equipment spaces are frequently tight. Placing spot detection or air aspiration tubing in front of air handling equipment to monitor the air flow often creates issues with potential injury and equipment damage. It can also create interference with HVAC equipment maintenance if the narrow aisles become partially obstructed.

System Sensor responded to Bell Canada's request for Very Early Warning Fire Detection performance with the conventional duct detection configuration. Once the new duct detection technology was listed by Underwriters' Laboratories of Canada, Bell Canada installed the duct-detection system in one of the



facilities that had recently been upgraded to laser spot detection. The ceiling-mounted detectors were installed to comply with NFPA 76 prescriptive requirements. The return air early detection system design was based on NFPA 76 performance-based requirements. To determine how well the new system worked, Bell Canada conducted the performance-based testing requirements outlined in NFPA 76 Annex B.

### Very early warning fire protection

The DNRHS high sensitivity duct smoke detector provides very early warning of fires to protect high-value assets and mission critical operations from fire and the spread of damaging smoke through air management systems. The detector's intelligent laser sensor can detect minuscule amounts of smoke at air velocities from 300 to

4,000 feet per minute – ideal for environments with high-velocity, high-volume air changes. And its unique pivoting housing fits both square and rectangular footprints, so you can be sure the detector will fit your installation.

For more information, visit [www.systemsensor.com/flex](http://www.systemsensor.com/flex).



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