Finding Typical Leakage Areas

More times than not the zones we test will fail the initial enclosure integrity test. This happens in spite of our best efforts to inform the owner and/or general contractor the necessity of proper sealing of the zone including furnishing them with copies of our hand out *Sealing of Rooms of Containment of Fire Suppression Agents.* (Still a good idea in spite of the poor success record). This handout covers the typical leakage areas as does the punch list on page 4 of the *Test Data Form.*

The page 4 punch list in *Test Data Form* is design to be used by the technician conducting the test to help locate leakage areas and to assist the owner and/or general contractor in proper preparation of the zone.

Use of the ***Dragon Puffer***, air flow indicator is a reliable and safe way of locating the leakage areas. It also makes a very vivid and un arguable image of the leakage. Review the instructions on use of the ***Dragon Puffer***. Note that the nozzle must be brought very close to the suspected leakage area. You can not hold the ***Dragon Puffer*** in the middle of the zone hoping to follow the smoke to the leakage.

The last phase of the normal test procedure is with the zone pressurized. This makes it easy to turn the fan back on and pressurize the zone which will accelerate the smoke out any leakage areas.

To review the possible leakage areas as listed in the *Test Data Form* punch list:

Walls floor to deck
Walls caulked at floor
Walls caulked at (overhead) deck

In order to retain the suppression gas the entire “envelop” of the zone must be sealed. This means the wall need to go from the lower slab to the upper deck and be sealed and caulked at both joints even in cases where there is a dropped ceiling and the protected zone is only below the dropped ceiling.

The wall floor joint is particularly important as the suppression gasses are heavy and will leak out the lower leakage areas. It is also an area that is often overlooked and not sealed. Use the ***Dragon Puffer*** with the fan pressurizing the zone and apply smoke to the wall floor joint and look for any leakage areas. to properly seal the joint the vinyl cove molding or carpet

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Similarly the wall to over head deck must be examined for leakage.

Doors weather-stripped
Doors, drop seals
Door closers installed, adjusted

Again using the ***Dragon Puffer*** apply smoke to the edge of the door and especially the bottom of the door. If weather-stripping and a bottom seal has not been installed or properly adjusted you will see the smoke streaming out of the zone. We strongly recommend quality jam mounted weather-stripping (not foam tape) and drop seals (not brush or plastic sweeps) than can be adjusted and will last.

The door where the fan is installed should be examined visually for leakage areas before or after the test. Light coming through the door to jam joint is a sure sign of leakage.

Widows caulked

Use the ***Dragon Puffer*** to apply smoke to the glass-frame joint and around the perimeter of the window frame. Often there is leakage at the corners and the glass-rubber gasket joint leaks.

Exiting conduits sealed
Exiting cables sealed
Cable trays sealed

Use the ***Dragon Puffer*** to apply smoke to these areas. Cable bundles are difficult to seal and may need additional caulk in the core of the bundle.

All holes, penetrations sealed

Obviously—do not need the ***Dragon Puffer*** for this.

Floor drains trapped and filled

Use the *Dragon Puffer* to apply smoke to any floor drains. If the trap has not been filled you will see the smoke pouring down the drain. Fill the trap with vegetable oil which will not evaporate. A floor drain that is used to drain condensation from the HVAC equipment will most likely have enough continuous water to keep the trap filled.

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Dampers installed on exiting ducts
Dampers working and adjusted

Use the ***Dragon Puffer*** to apply smoke to diffusers or inspection ports to determine if the dampers are working and adjusted. One must be careful however as even small leakage around a closed damper may be enough to create a stream of smoke from the ***Dragon Puffer*** but not enough leakage area to be significant. This can be confirmed by visual inspection of the closed dampers through an inspection port.

Block wall painted

Even though unpainted block walls are a leakage area, there is not enough flow though any singled area to be visually detected by using smoke. However visually one can confirm that block walls, both below and above grade blocks, are porous.

Your software **EIT Quick Test 2001** has an optional punch list in the same style as the punch list in the Test Data Form. The testing technician has the option to include the punch list with the test report.

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