

**Solid Fuel (Wood) Fire Kitchen with ESP – Washington, D.C.**

FCS19-1002

October 24, 2019

**Location: Rosewood Hotel, Washington, D.C.****Background:**

A fire condition was reported at 11:37am on Thursday, October 10<sup>th</sup> at a solid fuel wood fire kitchen at the Rosewood Hotel in Washington, D.C. The chef noticed that the Electrostatic Precipitator (ESP) exhaust air cleaning unit was not active, and power cycled it to bring it back online. Within 10 minutes of powering on the ESP unit, the kitchen became filled with smoke and the fire suppression system deployed.

This restaurant uses a high risk, solid fuel, cooking process. The grease exhaust ductwork was field fabricated with horizontal runs and turns near the ESP. The ESP unit is equipped with a fixed agent tank based fire suppression system. A by-product of ESP air cleaning is that the unit periodically produces sparks between the collection plates of the ESP cells. These sparks, when combined with creosote, create a high-risk environment for fires. The flashpoint of creosote is approximately 160°F and the burning point is approximately 200°F, making it very susceptible to ignition.

**Details:****Cause of Fire:**

- A high-risk cooking process involving solid fuel appliances. This process produces a high volume of grease and creosote in exhaust ducts.
- Complicated duct including horizontal runs, turns near the ESP, and field welding.
- ESP air cleaning that produces sparks creates a fire hazard due to the accumulation of creosote which has a very low flashpoint and burning point.
- Inadequate wash down controls and fire suppression systems in the duct and ESP units. It is unclear if the washdown system of the ESP unit was working properly.
- The fire originated in the ESP.
- The fixed agent fire suppression system discharged but did not extinguish the fire.

**Damages:**

- DC Fire and EMS reported the incident took approximately an hour and a half to get the situation under control.
- A spokesman from the Fire Department labeled this incident as a “labor-intensive process” which puts a strain on the fire department and related emergency service resources.
- The fire caused significant damage to the kitchen exhaust ductwork and ESP unit. For the Fire Department to completely extinguish the fire, the grease duct was cut so that handlines could be advanced through the opening to properly suppress the fire and cool the ESP units.
- The ESP cells were destroyed by the extreme heat of the fire.
- The restaurant is closed indefinitely.

**Recommended Changes and Lessons Learned:**

- Solid fuel, creosote, and superheated grease are major fire hazards. These applications require properly sized self-cleaning hoods, modern CORE Fire Suppression solutions, and factory-built double wall listed duct (non-welded).
- Electrostatic Precipitators should NOT be used for solid-fuel applications.
- CORE Fire Protection with unlimited water from the fire sprinkler system should be installed in the pollution control units to adequately defend against future fires.
- Downstream duct fire detection and suppression should be utilized to detect and eliminate fires that originate in the duct.
- Legitimate preventive maintenance (PM) contracts with a reliable service company must be in place to ensure proper system operation and maintenance.

**Supporting News Reports:**

<https://www.washingtonian.com/2019/10/10/fire-causes-significant-damage-to-wolfgang-pucks-new-dc-steakhouse/>

**Supporting Photographs:**



Shown above: Fire department access holes made in the ESP (left) and damaged ESP cells (right).

**Questions:**

Please send any feedback or improvement suggestions to [app\\_eng@captiveaire.com](mailto:app_eng@captiveaire.com)