ADVICE FOR FACILITIES MANAGERS: GENSETS AND HVAC

VOLCANIC ASH IS: HARD, HIGHLY ABRASIVE, MILDLY CORROSIVE AND CONDUCTIVE WHEN WET.
AIRBONE ASH CONCENTRATIONS CAN BE AS HIGH AS 9 g m⁻², SEVERAL TIMES GREATER THAN SAND AND DUST STORMS

A volcanic ashfall can cause electricity outages (see companion poster on Advice for Power Transmission and Distribution System Operators). Therefore use of emergency power generation equipment on electrical transmission (Generator Sets or GenSets) may be necessary. Air intakes on GenSets are vulnerable to airborne ash and need to be protected. Air intakes on heating, ventilation and air-conditioning (HVAC) systems are similarly vulnerable.

COMMON IMPACTS:
- Ash ingress through air intake and condenser units: ash ingress may cause ash accumulation in the radiator and air filters, reducing airflow and and HVAC condenser system performance. Reduced airflows may cause stalling and overheating.
  - High humidity significantly increases ash adhesion and thus blockage
  - Filters are generally not designed to cope with the suspended particle volumes seen in volcanic ash falls
- HVAC systems with low fan speeds block more readily
- Horizontal air-intakes and condensers ingest significantly less ash than vertical systems
- Ash may cause accelerated corrosion and wear, usually over timescales of weeks to months:
  - Exposed, sensitive components outside the GenSet or HVAC casing, such as fuel valves or electrical switches, can be vulnerable to wear, contamination and corrosion
  - Ingestion of ash into the engine is rarer, but can wear moving parts and block fuel filters, lines and valves

See companion posters on “Advice for power transmission and distribution system operators” and “Advice for power station managers” for additional information on effects of ash on power supply systems.

WHERE TO FIND WARNING INFORMATION
See www.geonet.org.nz for ashfall forecasts in the event of an explosive eruption.

HOW TO PREPARE
At-risk facilities should develop operational procedures for managing ash fall events, including a priority schedule and standardised procedures for inspecting/ maintaining/ cleaning:

Physical mitigation options:
- Install hoods over air intake to reduce direct ash ingestion (see bottom left figure)
- Add temporary filtration to external air intakes, monitor and replace as needed
- Seal or cover sensitive equipment, such as external fuel valves and switches

Cleaning Guidance:
- Vacuum or gently (30 psi or less) blow away excess ash from air intakes or condensers, then wipe down with a cloth. Air filters should be removed before cleaning
- Wet methods for ash cleanup are not recommended, as they may promote clogging of radiator fins, or cause short-circuits

MORE INFORMATION
THE FOLLOWING RESOURCES PROVIDE FURTHER INFORMATION ON VOLCANIC HAZARDS:
http://www.geonet.org.nz
http://www.gns.cri.nz
http://www.ivhhn.org

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