What's the Risk?

Vacuum Pump Exhausts

THE ISSUE

Vacuum pumps are common in many commercial and agricultural buildings. When a vacuum pump operates, it produces heat, vapours and noise which must be vented outdoors through an exhaust system. A common area of concern is for the exhaust system to be installed with parts of the system in contact with combustible materials such as foam insulation or wooden structural components. Any contact of the exhaust system with combustible material increases the risk of fire.

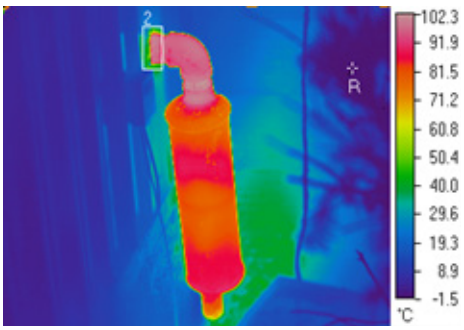
WHAT'S THE RISK?

In some instances, the exhaust gases produced are so hot that they can cause wood or other flammable materials near the exhaust system to undergo a chemical change called pyrolysis. This is the thermochemical decomposition of organic material at elevated temperatures. Pyrolysis can decompose materials and lower the autoignition temperature near an exhaust system increasing the fire risk even without direct contact to a flame. Thermal imaging scans of vacuum exhaust pipes have conclusively shown the temperature of the exhaust systems to be at or above the critical 100°C threshold.

WHAT CAN BE DONE?

The following measures can help reduce the risk of fire:

- Ensure the vacuum exhaust is installed with proper clearances to combustibles and does not directly touch plywood, wood framing or combustible insulation
- Route all exhaust piping away from combustible material and never route the vacuum exhaust through a concealed attic
- Where it must pass through a wall, use a well constructed wall pass through



Left:
Vacuum pump exhaust system with temperature of at Least 102°C

Right:
Vacuum exhaust system embedded in combustible polyurethane sprayed foam insulation

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