

AON SPRINKLER CERTIFICATION



Aon New Zealand

Aon Sprinkler Certification
Aon Building, 1st Floor,
34 Triton Drive
Albany
Auckland
Telephone: 09 – 486 9761

Aon Sprinkler Certification Technical Note		
Note Number: TN-16-23	Issue: 1	Date: 11 July 2016
Subject	Diesel Pump Room Ventilation	
Notice: Aon Sprinkler Certification Technical Notes provide guidance notes which may be used in certification of sprinkler installations by Aon New Zealand. If sprinkler installations are being certified by any other sprinkler system certifier, these Technical Notes may not apply.		

Aon has received some anecdotal reports that some diesel pump sets are being installed without adequate ventilation.

Diesel engines reject approximately the same amount of energy as heat as they generate power.

Hence, if an engine generates 30kW of power, it is rejecting approximately 30kW through the exhaust, cooling system and heat radiating from the engine.

- This is exacerbated with air cooled engines, where the waste heat generally discharges into the room.
- A radiator cooled engine should be ducted so that the waste heat discharges outside the pump room.

To ensure that the NZS4541's maximum allowable temperature rise of 18⁰C over a 1 hour period is not exceeded, the pump room needs to be provided with an adequate level of ventilation. In addition, ventilation also is required to allow for the aspiration requirements for an engine.

The current edition of NZS4541 does not explicitly state that commissioning tests need to be carried out with the pump house doors closed. However, the requirements for annual and biennial service explicitly requires that after the service is complete, that the pumps are run for at least 2 hours, with the pump house doors closed.

Aon is requesting that Inspection Contractors carry out a check of the adequacy of the ventilation design of pump houses containing diesel driven pumps, by running the pumps under load (through the test return) for a period of one hour, with the pump house doors closed, and with any powered ventilation systems functioning in their emergency state.

It is essential that during these tests, that the condition of the pump and engine is monitored, to ensure that overheating of the pump or engine does not occur.

The design of the pump house ventilation system needs to be considered prior to construction of the pump house commencing. The design needs to consider

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- Power absorbed by the pump at full load, (and thus power/heat being generated by the engine.)
- Proposed method of engine cooling.
- Ventilation type
 - Forced
 - Power source
 - Controls
 - Natural
 - Inlet air
 - Exhaust air
 - Net areas of ventilation grills (as opposed to gross areas.)

Input from a services engineer may be required to ensure clauses 607.3.6 & 607.10.9 are complied with while still complying with clauses 607.3.5 & 607.10.10.

Designers are reminded that pump house ventilation cannot rely on an electrical mains powered ventilation system. Ventilation systems relying on electricity will need to be backed up with an alternative power source, such as an emergency generator.

If the ventilation system relies on louvres, these may need to automatically open on pump operation, if they are required to be normally closed to allow the room to be heated. They should de-energise to open.

The interfaces between any ventilation system and the sprinkler system should be routinely tested as a Compliance Schedule item.



Chris Mak
Technical Services Manager