

AON SPRINKLER CERTIFICATION

Aon New Zealand
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Aon Sprinkler Certification Technical Note		
Note Number: TN-14-11	Issue: 1	Date: 14 January 2014
Subject	Diesel Fire Pump Batteries	
Notice: Aon Sprinkler Certification Technical Notes provide guidance notes which may be used in certification of sprinkler installations by Aon New Zealand Limited. If sprinkler installations are being certified by any other Sprinkler System Certifier, these Technical Notes may not apply.		

Aon Sprinkler Certification has received a number of questions regarding the new provisions in NZS4541:2013 for diesel pump batteries. We are being asked why NZS4541 does not allow latest battery technology to be adopted.

Following the explosive failure of a number of diesel fire pump batteries in Australia and New Zealand, the committee reviewed the possible options for specifying batteries within NZS4541. They considered three options:

1. The use of acid paste batteries. These batteries are more expensive but this may be offset by a reported service life of up to 10 years. However, they are susceptible to damage if their correct charging rate is exceeded.

The committee was not satisfied there was enough information available to confirm long term reliability of these units in a fire pump controller installation/ compatibility with current charger logic. Some industry research will be necessary in this context before the next amendment.

2. Sealed "maintenance free " automotive batteries (aka valve regulated lead acid batteries - VRLA) . **These are not designed for applications that involve continuous float (trickle) charge.** (Overcharging dries out the electrolyte and the level drops. On start up the high current draw evolves large volumes of oxygen and hydrogen beyond the relief valve capacity, which then over pressurises and ruptures the battery casing. In addition internal damage and deposits may result in a spark then ignition of the hydrogen/ oxygen mix in a catastrophic explosion).
3. Standard lead acid batteries designed for stationary engine use. If inspected and- maintained properly these are proven to provide reliable service, both in conjunction with current controller/ charger logic and generally to give adequate warning of potential failure modes. The maintenance provisions of NZS4541 have been strengthened to reflect the need to check charger rate, electrolyte level and SG at specified weekly/ monthly intervals and record this properly. Also to undertake the correct two year offset battery replacement regime over a four year cycle and indelibly mark the battery installation date.

The battery requirements specified in NZS4541 are based on proven history. While more modern technology may be available, this has yet to proven suitable in a float charge/ stationery engine application or will not comply with the requirements of NZS4541.

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A handwritten signature in black ink, appearing to read "Chris Mak", is positioned above the printed name and title.

Chris Mak
Technical Services Manager