VRLA Batteries in the Data Room

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Valve regulated batteries (VRLA) have been widely used as energy storage devices in back-up applications. This battery technology is considered to be "sealed" due to the fact that no addition or loss of electrolyte is part of their normal operation. Typically a vented "flooded cell" style of lead acid battery will discharge as much as 60 times the amount of gas that a VRLA battery does. VRLA batteries are suitable for use in data rooms and can use the ventilation that is provided for Human Occupancy.

In 2001 the International Fire Code (IFC) was changed to create specific rules for VRLA batteries. It recognizes that VRLA batteries employ a different structure that flooded batteries and specifically states that for VRLA batteries "The battery systems are permitted to be in the same room with the equipment they support". Further, the 2003 Uniform Fire Code has removed any requirement for spill containment for battery systems with less than 1000 gallons of FREE FLOWING electrolyte. The intent here is to exempt immobilized electrolyte systems (VRLA) from such rules. Both the IFC and UFC require thermal run away prevention for VRLA batteries which is standard in Emerson battery charging systems.

In terms of ventilation requirements, due to recombination, the VRLA system outgases very little hydrogen. The National Electric Code (NEC) and NFPA-75 define specific & IFC requirements for ventilation for IT equipment spaces. No additional air changes are required because of the presence of VRLA batteries in the IT space over and above what is already required. In terms of Hydrogen accumulation, VRLA batteries do not vent unless they are forced into failure mode. The IFC requires continuous ventilation that will handle the unlikely event of an excessively gassing battery, no matter what type it is. Fire codes require continuous ventilation at a rate of not less than one cubic foot per minute per square foot area of the VRLA Battery system, or per square foot of the entire room for a vented system. The fresh air requirement per person in an office space is 26 meters^3/hr. While the air requirements for a typical 80KW Battery System is 1.2 meters^3/hr. Clearly, no additional ventilation is required.