

# GPUs: THE HANGAR SAFETY PITFALL

*Ray Beutel, Chairman of Unitron, is concerned with safety. Here he considers whether 28VDC start/maintenance carts are a hangar safety code violation.*

It seems that 400Hz Ground Power Units (GPUs) used for hangar and ramp maintenance have always been in compliance with the US National Electrical Code (NEC) and the European Standard, IEC 60079-10-1. And yet their counterpart, the 28VDC start/maintenance cart appears to remain defiantly non-compliant to certain aspects of these regulations when used in a hangar environment.

This is most likely due to ignorance on the part of the user regarding the NEC in cases where the 28VDC mobile unit is unsuspectingly moved into the hangar from the ramp, where it becomes a potential safety hazard.

Specifically, there is the well-known “18in rule” that requires there be no electrical connection allowed within the 18in area above the hangar floor known as a Class 1, Division 2 area. This area is considered hazardous because fumes from spilled jet fuel may not have yet dispersed sufficiently to avoid ignition were an arch to occur; in this context, from a loose electrical connection within a mobile power unit (GPU or cart). For a more thorough explanation of this ruling, one can reference Article 513 of the NEC and IEC 60079-10-1 of the European Standard. I have never seen a 400Hz GPU used in a hangar that doesn’t adhere to this particular safety rule; however, in stark contrast, almost every 28VDC start/maintenance cart used in a hangar isn’t compliant. A simple, clearly visible, warning sign placed on these units would help the using community a great deal.

To date, 28VDC start/maintenance carts have been designed for non-hazard areas such as the ramp just outside the hangar or outside



of the airport terminal area. Both of these areas are outdoors (no rising fumes concerns), where these units are used for both starting and operating functions. Common sense as well as regulations tells us that you don’t “start” an aircraft in a hangar but simply use 28VDC for maintenance purposes. In fact, it is standard hangar design practice to specify 28VDC, without starting capacity, be it hard mounted either on the wall or free standing, in both cases applying the 18in rule, if Class I comes into play.

There is strong evidence that the industry desires also to have a 28VDC mobile unit, designed for hangar use, rather than having to rely on fixed mounted configurations solely. Little attention has been paid to the NEC and European Standard violations that occur when a start/maintenance cart is inappro-

riately used. Some decisions may be driven based on economics; thus from this perspective it seems right to own a mobile power unit that can meet both starting and maintenance needs and can be used both inside and outside of the hangar.

The good news is that these fully compliant 28VDC GPUs are now available for both indoor and outdoor use without violating the NEC rules, and more importantly, without the risk. The hangar operators need to be aware that fully compliant 28VDC carts having both start and maintenance capability are available now so they are no longer faced with using mobile 28VDC start/maintenance carts that are in violation of the NEC and IEC 60079-10-1. I’m sure their insurance companies will be happy to know the hangars can now be made safer.