



## *The Use of Nonincendiary Devices in Hazardous Work Environments*

*Stephen J. Thomas / Subject Matter Expert*

*One of the initiatives in which I was involved while working in the refinery was the introduction of tablets in the field for use by maintenance technicians and operators. There were a few connectivity issues that we resolved, but one of the major problems that derailed the effort was the cost of the equipment. It wasn't the cost of the tablets because the ones that we were going to use were relatively inexpensive. The problem as we started looking into this effort was the cost of the intrinsically safe tablet cases. These were required by our safety department because of the possibility of a spark from the battery in a damaged tablet or conducting a battery replacement in the field; either of which could act as a source of ignition in a hazardous work area.*

*For those of you who are considering tablets for work in the field in potentially explosive environments this restriction needs no longer apply. The tablets from our past where the battery could be removed with the potential for a spark being a source of ignition no longer applies since newer equipment have batteries that cannot be removed. The result is that unless someone physically destroys the equipment the chance for a tablet being a source of ignition is remote. This same philosophy also applies to newer model cell phones which are used in the field every day. These are called nonincendive devices. What is a nonincendive device? The National Electric Code defines nonincendive equipment as...*

*"Equipment having electrical / electronic circuitry that is incapable, under normal operating conditions, of causing ignition of a specified flammable gas-air, vapor-air, or dust-air mixture due to arcing or thermal means."*

*Now this doesn't mean that a case is not required, but the expensive intrinsically safe case requirement of the past is no longer a requirement in hazardous work locations. It can be replaced by a case that will prevent damage if dropped for a far less cost.*

*A caveat is needed here. While all of the current tablets and cell phones are designed where the battery cannot be removed thereby limiting the potential for an electrical spark, you still need to provide what is referred to as a "drop proof" case for the equipment. This case further limits any potential sparking from the device if for some reason the device was damaged.*

*The issue is that all drop proof cases do not necessarily provide the same level of protection. There is a military standard that defines the method for testing a case to assure it is drop proof and will maintain the structural integrity of the device it contains. "MIL-STD-810G... states that the drop surface should be 2-inch thick plywood over concrete. The device in the case will sequentially be dropped on to each face, edge and corner for a total of 26 drops. After each drop, the device is visually inspected for functional and structural*

*integrity.” (reference Digital Trends). This article further goes on to state that while there is a standard it is not strictly enforced, and case manufacturers are allowed significant leeway in their testing procedures. As a result of manufacturers applying different interpretations to the standard, the drop proof case they are selling may not be as nonincendive as you may think. This is a problem because even though the case is identified as “drop proof” it may not provide the level of protection of the enclosed device you need. This is an important point when selecting the correct case because you need to maintain plant safety while enabling use of the device in a hazardous work environment.*

*There is great value to your organization to employ the use of tablets in the field and allow for cell phone use to improve the level of communication. The question is how you assure yourself that the case you purchase is truly drop proof. The answer lies within your safety organization.*

*With the increased use of cell phones in plants and the migration to the use of handheld tablets in the field, safety organizations typically have prepared procedures and guidelines for the use of this equipment. In the not so recent past the use of a tablet or a cell phone within the battery limits of a process unit required a Hot Work permit. If this is how your plant safety procedures are written, you are faced with the need to purchase expensive intrinsically safe cases and experience the lost time associated with getting hot work permits.*

*What is needed is a change in the procedure to enable the use of “drop proof” cases for cell phones and tablets and eliminate the need for Hot Work permits for field use of these devices. The safety organization, if they have not already done so, can research drop proof case requirements and develop a procedure enabling them to be used in the field to adequately protect tablets and cell phones. Once this procedure is complete, anyone wishing to use a tablet or cell phone enclosed in a drop proof case needs to have the case inspected by Safety to ensure that the case follows the established procedure. Following this process, I have seen various safety organizations affix a label to the case assuring that it meets their drop proof standard. The device contained within the approved case can then be used in the field without the need for a hot work permit and with confidence that the proper precautions have been taken.*

*There is significant value in the use of tablets and cell phones in the field. Their use saves both time and money for the organization and can vastly improve the effectiveness and efficiency of the work effort. However, safety being our primary goal requires that these devices are not utilized without the proper safety precautions being applied using nonincendary equipment where the battery cannot be removed and enclosing them in certified drop proof cases.*