

Misuse of Beam Clamps as Ground

BSEE Issued Alert

The Bureau of Safety and Environmental Enforcement (BSEE) has identified a potential safety issue in regard to the use of beam clamps on many Outer Continental Shelf (OCS) facilities. It is determined that the use of beam clamps as grounding conductors could potentially cause fires and present electrical hazards to personnel.

Many OCS facilities are utilizing beam clamps as current carrying external ground to meet the requirements in the API RP 14F. The beam clamps are approved by Underwriters Laboratories (UL) and Factory Mutual Research Corporation (FM) to mount and support conduit and cable from structural beams, not as temporary or permanent external equipment grounding conductors. Example below:

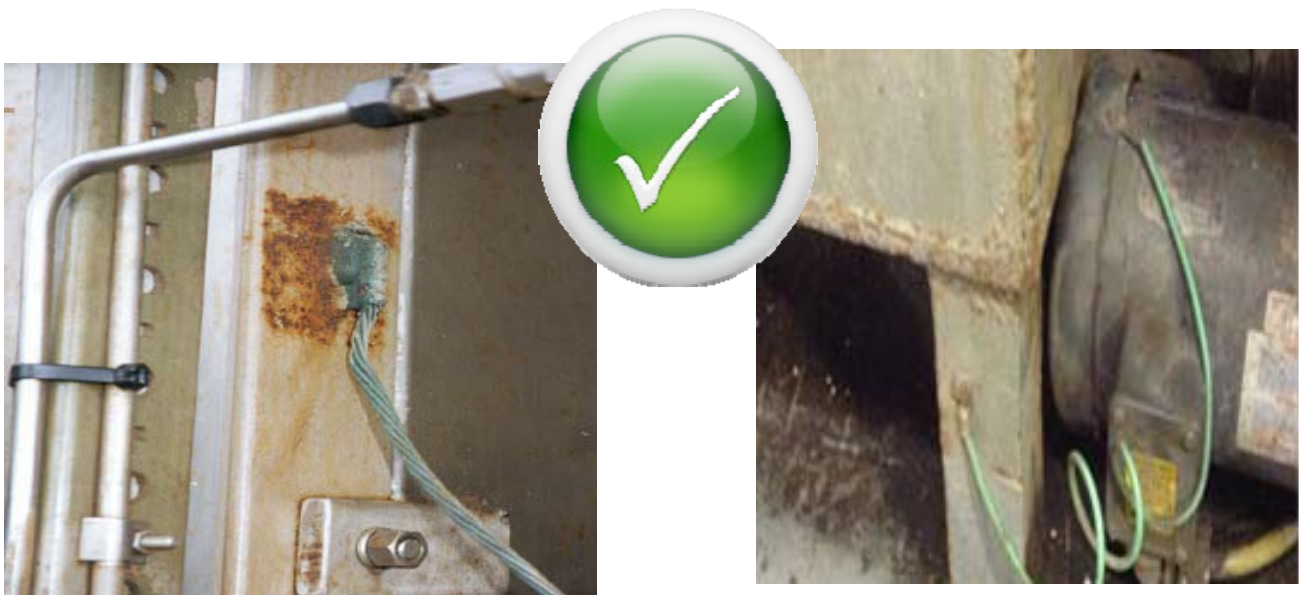


API RP 14F & 14FZ § 6.10.3.1 states: "Grounding of electrical equipment on fixed and floating offshore petroleum facilities in a positive manner is of particular importance because personnel standing on steel decks or in contact with steel framing present a low impedance path to ground, effectively grounded. In addition, the dampness and salt spray contribute to the breakdown of insulation and to the possibility of leakage on the surface of insulators and similar devices. On platforms with wooden or concrete decks, equipment-grounding conductors should be installed between electrical equipment and a grounding network. It is recommended that all metal equipment, such as buildings, skids, and vessels be grounded to the steel structure or grounding network. Exposed, noncurrent-carrying metal parts of fixed equipment that may become energized because of any condition shall be grounded. Equipment that is welded to the structure or deck is considered to be adequately grounded. The physical contact obtained when equipment is bolted to a steel structure is not necessarily an adequate effective ground because of paint and possible corrosion. Exposed, noncurrent-carrying metal parts of portable electrical equipment shall be grounded through a conductor in the supply cable to the grounding pole in the receptacle.



These grounding jumpers do not meet the requirements in API RP 14F/API RP 14FZ

API RP 14F & 14FZ both make a clear requirement that any equipment that has exposed, noncurrent-carrying metal parts that may become energized because of any condition shall be grounded. In this requirement, it is clear that during a fault condition this grounding means must be capable of reliably conducting the ground fault current back to the source of electrical power to activate or trip the electrical circuit protective device. To further clarify, if the equipment is not electrically powered and the metal parts associated with that equipment become energized due to no association with electrically operated equipment, controls, devices, or lighting, then the requirement for approved current carrying conductors, lugs, terminals, etc. should not apply.



Exothermic Weld

Bolted Connection

Operators, as well as contractors, are advised to review your facilities in comparison with these best practices and guidelines.