

Grounding and bonding



**ASSIGN
BUSTER**

BONDING AND GROUNDING Definition The chances of static build-up to spark explosions, costly fires, property damage and injury to workers are a constant danger. Any industrial process will generate static electricity. The purpose of bonding and grounding is to reduce stray voltage problems caused by electrical faults. A Bonding system connects various pieces of conductive equipment together to keep them at the same potential. In bonding we join all metallic non electrical parts together in order to establish a continuous electric path across them. Static sparking cannot take place between objects that are the same potential. It is done with the help of copper wire to establish connection between all parts. Bonding is concerned with the techniques and procedures necessary to achieve a mechanically resilient low impedance interconnection. Grounding is the process in which we connect the bonded equipment to the earth. It is a special form of bonding in which conductive equipment is connected to an earthing electrode or to the building grounding system in order to prevent sparking between conductive equipment and grounded structures. Bonding and grounding do not rectify the source or cause of stray voltage instead it reduces the harmful effect of stray voltage to a level where it may no longer pose any threat or problem. In the absence of bonding the potential difference can cause damage to equipment when any two parts of sensitive equipment are connected to system which can acquire different potentials.

Bonding and Grounding Principle Bonding and grounding are basically two separate concepts in which one is the physical medium and the other one act as the method for creating that medium. It is a very effective technique for minimizing the likelihood of an ignition from static electricity. The bonding and grounding phenomenon reduces the hazards of electrical

shocks resulting from opening electrical fuses or circuit breakers when equipment fault occurs, maintaining equal electrical potential and transferring electrical potential from metallic equipment to the earth. The prime objective of grounding is to allow convenient detection of probable faults in electrical systems by providing a path for the flow of currents from the point of fault through the ground back to the neutral point of the source. The probable fault in any electrical device is due to failure of insulation due to aging, external factors, electrical and thermal stresses resultantly producing a “ short-circuit”. In case of short circuit it is necessary to locate the point of fault. A short-circuit of neutral wire will produce a large current that opens the current protective device. The proper installation of bonding and grounding devices is important in the protection of personnel and equipment. At the time of installation a resistance test is needed to confirm electrical continuity to ground. In addition, an effective inspection and maintenance program is needed to ensure continuity adequacy of the system.

Grounding System Components

Every building has several electrical protection systems, which includes Lightning protection systems, Grounding electrode systems, Electrical bonding and grounding systems, Electrical power protection systems, Surge protection devices, Telecommunications bonding and grounding systems and Telecommunications circuit protectors. Grounding of both source and the consumer equipment is necessary for safety of men and materials. Different codes specify their own approach for grounding keeping in view the local environment, material availability. However the most important factor remains the safety of personal. A grounded system is consisting of a system of conductors in which at least one conductor or point is intentionally grounded either solidly or through

<https://assignbuster.com/grounding-bonding/>

impedance. The type of grounded systems is solid grounded, resistance grounded and impedance grounded. Every system mentioned above has inherent merits and demerits which are accounted for while adopting any one of them. Conclusion The importance of bonding and grounding in industrial, commercial and institutional building cannot be overstated because it ensures maximum equipment protection, elimination of shock hazard potential, increased process uptime and reduction of losses which may occur due to fire and heat. The adoption of poor grounding practices are source of continual and intermittent difficult to diagnose faults and problems in the facilities therefore need to be given due consideration. Work Cited G Vijayaraghavan, Mark Brown, Malcolm Barnes: Grounding, Bonding, Shielding and search Protection, 2004 Michel Mardiguian, Grounding and bonding 1988. Understanding Grounding and Bonding - SailNet Community. htm