



Starline Busway

UEC, the makers of Starline Busway, asked us to evaluate their product in the context of the electrical safe work practices outlined in NFPA 70E which protect workers from electrical hazards, both shock and arc.

As far as the requirements NFPA 70E are concerned we find this type of busway presents no significant increase in electrical hazards over wall mounted panel boards or other methods of distributing power. In most situations we believe that it can reduce these hazards due to the reduced potential of accidental contact that could result in shock or arc injury.

The greatest safety benefit of the Starline Busway is that arc and shock hazard is reduced due to less risk of accidental contact. NFPA 70E and OSHA 1910 Electrical Safe Work Practices limit work on or near live energized parts of a circuit under most conditions with exceptions under certain circumstances provided the qualified person is using proper procedures and personal protective equipment (PPE). A qualified person doing live work in a wall mounted panel board would have to remove the covers, and dead-fronts in some situations, in order to access circuit breakers and conductors. In the case of replacing or removing a circuit breaker under the above conditions they would be exposed to numerous points within the panel that if contacted could result in shock or arc injury. This condition would even be present during the process of lockout/tagout if the incorrect upstream switch had been opened. The design of the busway limits the exposure to the finger safe bus inside the channel and although it would be possible to make contact with live parts it seems it would take much effort and the chance of accidental contact is greatly reduced if the manufacturers procedures are followed when removing or replacing components. Primarily insuring that the individual circuit components are in the open position with the load disconnected when they are inserted and removed.

The open design of the busway gives concern if closure strips are not properly installed due to the approach boundaries contained in NFPA 70E. Unqualified persons are not allowed within certain distances of exposed energized conductors based on voltage; in the range that this busway operates this limited approach boundary is 42 inches. The installed height will determine the exposure to unqualified personnel if closure strips are not employed. The busway must be installed at a height that provides at least 42 inches when closure strips are not employed.

Concerning the exposure to arc flash should one occur at the busway or one of its components. The best protection against arc flash should one occur is distance. The height of installation gives protection from the flash although falling debris could be a problem. The safe distance is referred to as the arc flash approach boundary and must be calculated. NFPA 70E requires facilities to perform an arc flash hazard analysis on all equipment that might require servicing or maintenance. Only this type of study will show what if any arc flash hazard exists at the busway. This is no different than in a panel board. If an arc flash study is completed and a hazard does exist it is in most cases possible to re-engineer the circuit protection to reduce the hazard. We have no-way of evaluating the strength of the closure strips supplied by the manufacturer to withstand the forces of an arc flash. We see no significant increase in arc flash hazard with the use of this type of busway if they are properly installed at a height that provides sufficient distance recommended by the arc flash study. The exposure that does exist also

exists in panelboards and other methods generally employed to distribute power to loads throughout a facility. The majority of arc flash injuries occur as a result of accidental contact. The design of the busway reduces the risk of accidental contact therefore reducing the risk of such injuries.

I feel the difficulty in contacting live parts within the busway will greatly reduce the exposure to shock. The chances of an accidental arc flash caused by accidental contact and shorting of circuit components is also reduced for the same reason. In short all electrical equipment exposes employees to electrical hazards, this will never change. If the safety procedures spelled out in NFPA 70E and OSHA Electrical Safe Work Practice is used, personnel are trained, proper Personal Protective Equipment employed, and the manufacturer's instructions followed, the risk of injury from electrical hazards on all equipment can be reduced. I feel the Starline Busway offers many protections to employees in the way it is designed and that it does not expose employees to increased risk over panel boards, individual wall mounted disconnects, or other methods of distributing power to loads in a facility.

Written by:

Daryn Lewellyn, President

Lewellyn Technology

September 2007