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" Channelizing Energy "

ti Current Trends

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In Continuation with Part 1.....

The belief that Busbar Trunking systems are maintenance free is a misnomer. While these systems are indeed engineered to minimize maintenance requirements when compared to traditional cable systems, they are not completely exempt from maintenance. Factors such as environmental conditions, usage intensity, and the age of the system can impact maintenance needs significantly. Therefore, a certain level of upkeep is essential to ensure their continued optimal performance and safety. To this end, we advocate for implementing a structured maintenance program comprising planned preventive maintenance on a quarterly and Annual basis. This proactive approach will help address potential issues promptly and uphold the reliability of the system over time.

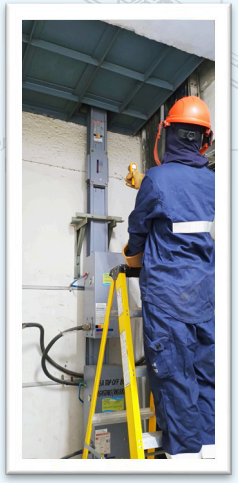
Inspection and Testing	
Cable System	**Bus Trunking System**
Regular visual inspections are conducted along the length of the cables, checking for signs of wear, damage, or deterioration. Periodic testing using instruments like a megger is necessary to measure insulation resistance and detect any potential faults that could lead to electrical breakdown.	Inspections involve examining the condition of the busbars, joints, and connections. Since the conductors are enclosed within protective housing, the focus is on ensuring that the connections are tight and secure, and there are no visible signs of overheating or corrosion. Periodic testing may involve checking the continuity of the conductors and the integrity of insulation
Cleaning	
Cables installed in conduits or trays are susceptible to dust, dirt, and debris accumulation, especially in textile manufacturing environments where fibres and particles are prevalent. Regular cleaning of cable trays and conduits is essential to prevent contamination that could compromise insulation integrity or cause overheating	While the enclosed design of busbar trunking systems provides protection against external contaminants, dust and dirt can still accumulate on the external surfaces, affecting heat dissipation and conductivity. Cleaning involves wiping down the busbars and housing to remove any buildup that could impede performance
Repair and Replacement	
Repairs or replacements of damaged cables often require extensive labour and downtime, especially if cables are buried underground or installed in Hard-to-reach locations. Faulty sections may need to be excavated, cut out, and replaced, which can disrupt production.	Repairs are generally simpler and quicker since components are more accessible. Faulty sections or damaged components can be easily identified and replaced without the need for extensive excavation. This reduces downtime and minimizes production disruptions

Upgrades and Modifications	
Making changes or upgrades to cable systems can be challenging and costly, requiring additional conduits, trays, or rerouting of cables. Expansion projects may involve significant downtime and logistical challenges.	Busbar trunking systems offer greater flexibility for modifications and expansions. Additional tap-off points can be easily incorporated into the existing system without the need for extensive rewiring or structural changes. This facilitates future expansions with minimal disruption to operations.
Safety Considerations	
Due to exposed conductors and insulation, cable systems pose a higher risk of electrical hazards if maintenance is neglected. Insulation degradation, cable damage, or loose connections can increase the likelihood of electrical faults, posing safety risks to personnel and equipment.	The enclosed design of busbar trunking systems provides inherent protection against electrical hazards. However, regular inspections and maintenance are essential to ensure that connections remain secure and insulation integrity is maintained. This helps mitigate the risk of electrical faults and ensures compliance with safety regulations.

Scope of Planned Preventive Maintenance (PPM) Schedule for Busbar Trunking System:

Quarterly Maintenance:
Implementing preventive maintenance for bus trunking systems is crucial for ensuring uninterrupted operations and minimizing downtime. Here's a comprehensive plan for conducting electrical preventive maintenance:

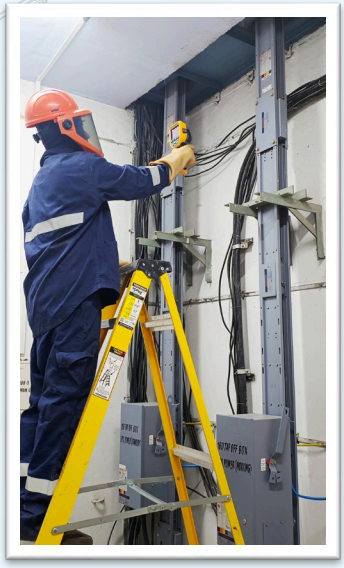
1. **Visual Inspection:** Regularly conduct visual inspections of the bus trunking system to identify signs of wear, damage, loose connections, or overheating. Look for discoloration, burning smells, or any abnormalities.
2. **Cleanliness:** Perform activities in the contamination area, addressing issues like dust, debris, moisture, fibers, yarns, or fabrics. Utilize vacuum dust/dirt collectors or soft brushes to clean the bus bars, joints, and connections effectively.
3. **Infrared Temperature Measurement:** Conduct infrared temperature measurements quarterly to detect any abnormal temperature rises in the bus trunking system components. Hotspots indicate potential issues such as loose connections or overloaded circuits.



Joint Block Temperature Measurement

Annual Maintenance:

1. **Visual Inspection**: Conduct routine visual inspections of the bus trunking system annually to identify signs of wear, damage, loose connections, or overheating. Look for discoloration, burning smells, or any abnormalities.
2. **Cleanliness:** Address contamination issues such as dust, debris, moisture, fibers, yarns, or fabrics on an annual basis. Utilize vacuum dust/dirt collectors or soft brushes to clean the bus bars, joints, and connections effectively.
3. **Thermal Imaging:** Perform thermal imaging annually, both before and after shutdown, to detect any abnormal temperature rises in the bus trunking system components. Hotspots indicate potential issues such as loose connections or overloaded circuits.
4. **Tightening Connections:** Check for presence and tightening electrical connections to prevent loose connections, which can lead to overheating and arcing. Utilize calibrated torque wrenches to ensure proper tightening without damaging components.



Joint Block Thermal Imaging

5. **Insulation Resistance Testing:** Conduct insulation resistance testing periodically to assess the integrity of insulation within the bus trunking system.

Tap Off Box Temperature Measurement

Maintenance Procedures for Tap Off Boxes:

1. Open the enclosure section of the Tap Off boxes to access internal components.

2. Utilize a nonconductive cleaning agent to thoroughly clean all joints, removing accumulated dust, dirt, and debris.

3. Apply lubrication as necessary to enhance performance and longevity.

4. Verify the operational functionality of Tap Off Boxes to ensure smooth operation.

5. Tighten all incoming and outgoing MCCB joints to prevent loosening and ensure electrical continuity.

Additional Procedure in Case of Overheating:

- If overheating is detected in any joint during the inspection, conduct thermography analysis to further evaluate the issue and determine appropriate corrective actions.

- Adhering to this structured PPM schedule and following the specified maintenance procedures will help ensure the reliability, safety, and optimal performance of the busbar trunking system.

Preparation and Safety Measures:

1. Before starting the cleaning process, ensure that the bus trunking system is deenergized to prevent electrical hazards.
2. Wear appropriate personal protective equipment (PPE), including gloves and safety glasses, to protect against potential hazards during the cleaning process.

As temperature monitoring systems advance, it becomes increasingly prudent to incorporate temperature monitoring at every joint element within critical installations. This proactive measure ensures continuous awareness of any temperature fluctuations along the bus trunking system, enabling prompt detection and response to potential issues. By minimizing downtime through timely intervention, this approach enhances operational reliability and system resilience.

In summary, while both cable systems and busbar trunking systems require maintenance to ensure reliability and safety in the industries, the specific activities and considerations differ based on the system design, installation environment, and operational requirements. Regular inspections, testing, cleaning, and proactive maintenance are essential for maximizing the lifespan and performance of electrical distribution systems in textile manufacturing facilities.

At Tech India, we possess the necessary expertise and boast nearly two decades of experience in the design, supply, installation, and commissioning of Bus Trunking Systems. This extensive experience has enabled us to share our profound knowledge and insights regarding bus trunking systems.

Our Team

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