Isolated Phase Bus Inspection & Maintenance Best Practices

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- The nation’s premier specialty electrical and welding contractor specializing in bus duct services and solutions for related components.
IEEE C37.23-2015 for Metal Enclosed Bus

Purpose:

- Establish minimum construction requirements
- Establish preferred ratings
- Establish testing and performance requirements
Metal Enclosed Bus Duct Designs

- Isolated Phase Bus
- Cable Bus
- Non-Segregated Phase Bus
- Segregated Phase Bus
Typical Plant Layout
True or False?

Q: The Isolated Phase Bus (IPB) duct system is an inert system with no moving parts. So you don’t need to waste time or money on it?
Answer:

**FALSE:** Your IPB is one of the only system critical components in your plant that has NO REDUNDANCY or ‘QUICK’ FIX if it fails.
When It’s Not PROPERLY Maintained, it Fails

IN OTHER WORDS...
It’s your power cord, when it’s down, you are offline.
When you’re offline it’s costing you MONEY!
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When you’re offline it’s costing you MONEY!

$52M+ Lost

Almost a Life Lost
When you’re offline it’s costing you MONEY!
When you’re offline it’s costing you MONEY!

$30M+ Lost
HOW DOES THIS HAPPEN?
3 Root Causes:

• Failures Due to Other Connected Equipment
• Inadequate Design
• Improper Inspection & Maintenance
Failures Due to Other Connected Equipment

- IPB, Generator, CT/PT Cabinets, Auxiliary or Main XFMR
- Difficult to Determine a Final Root Cause
Inadequate Design / Access
Enclosure Expansion Joints – Cable Jumpers
Welded Enclosure Expansion Joints

Issue

Result

Same Bus – Different Phase
Single Conductor Support Insulator Under Suspension
Recommended Maintenance Intervals

Most OEMs recommend maintenance yearly, at every scheduled shut-down, or at a minimum of every 18 months.
Improper Inspection & Maintenance

Are you performing proper inspection and maintenance?

Do you know what design style your IPB is built to?
Design Style – Non-Continuous IPB Design Style
Design Style – Non-Continuous IPB Design Style
Design Style – Continuous IPB Design Style

- Magnetic Shielded Area
- Phase Currents
- Shorting Plates
Design Style – Continuous IPB Design Style
What to Look For
Water Intrusion & Condensation
Water Intrusion & Condensation
Water Intrusion & Condensation

Do you have excessive ground currents and moisture?
Excessive ground currents + moisture = MASSIVE CORROSION

Same IPB System, Different Phase
Dirt & Debris Inside Bus
Dirt & Debris Inside Bus
Grounding Issues
Improper or Missing Hardware
Improper or Missing Hardware
Failed Termination
Damaged Flexes / Laminates / Jumpers
Inadequate or Cracked Welds
Warped Surfaces or Lack of Silver Plating
Excessive Heating
WHY QUALIFIED BUS DUCT TECHNICIANS ARE NEEDED
Why Special Training is Required
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The #1 way to extend the life of your system critical electrical assets is proper inspection and maintenance performed by a qualified bus duct technician.
EBI’s Full Spectrum Inspection & Maintenance Cycle

- **Online System Diagnostics or Continuous Monitoring Technology**
- **Offline Inspection**
- **Cleaning**
- **Repair, Refurbish, Replace**
- **Final Verification**
QUESTIONS!

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