CASE STUDY

Airport Power System Protected From Systemic Installation Defects

IMCORP Power Cable Reliability

IMCORP Enables Utility to Fix Components and Upgrade Installation Instructions

HIGHLIGHTS

OVERVIEW
Major utility uses IMCORP Factory Grade® technology to pinpoint installation errors in critical airport feeders

CHALLENGE
Joints were failing and typical commissioning tests could not explain why

RESULTS
IMCORP's Factory Grade® technology identified installation errors and utility changes installation instructions and training to minimize reoccurance

One of our utility clients asked us to assist in identifying the root cause for the multiple joint failures on a new airport feeder. Initial assessments with IMCORP's Factory Grade® technology revealed several substandard cold shrink joints. The utility asked IMCORP and the manufacturer to provide dissection and root cause analysis.

The dissections and root cause analysis identified insufficient void filling compound, and joint body damage. These issues caused void and stress enhancements inside the joint. Voids and stress enhancements in the presence of sufficient voltage stress gives rise to partial discharge, erosion, electrical treeing and eventually failure.

The utility and manufacturer's instructions explained to "lubricate the cable insulation up to the semi-con cutback". The word lubricate likely mislead the installers into thinking a thin coat of void filler would be sufficient when actually a thick bead is needed to fill the semicon cutback step and eliminate interfacial voids.

The utility learned the value of a Factory Grade® assessment and information. By partnering with IMCORP our client utility gained Precision Reliability™ information about their airport circuit, their joint performance, and insights into enhancing their installation instructions and training.

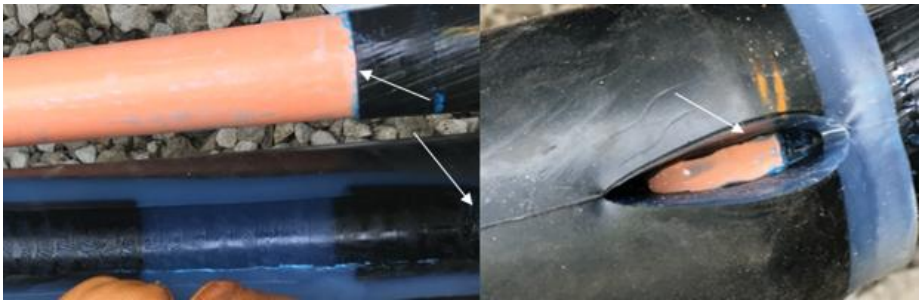

Fig 1&2 Insufficient blue void fller observed at the criticially important semicon cutback

The Manufacturers' Standards

Component Standard	Testing Frequency	Thresholds* Sensitivity	Voltage
Terminations IEEE 48	50/60 Hz	5pC	≤ 1.5 Uo
Joints IEEE 404	50/60 Hz	5pC	≤ 1.5 Uo
Separable Connectors IEEE 386	50/60 Hz	5pC	≤ 1.3 Uo
MV Extruded Cable ICEA S-97/94-682/649	50/60 Hz	5pC	≤ 4.0 Uo^
HV / EHV Extruded Cable ICEA S-108-720	50/60 Hz	5pC	≤ 2.0 Uo

** No partial discharge should be observable above the sensitivity threshold up to the voltage threshold*

^200 V/mil

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