

ENGINEERING PRACTICE STUDY

**TITLE: DETERMINING THE VIABILITY OF CONTINUING AND / OR AMENDING THE PARTIAL
DISCHARGE TEST IN MIL-DTL-16878/16.**

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Final Draft Report

**Study Conducted by DLA Weapons Support (Columbus)
Document Standardization Division (VA)
Interconnection Branch (VAI)**

Prepared by:

**Sounder Yuan
DLA Weapons Support (Columbus) -
VAI
Email: Shaokang.Yuan@dla.mil
Phone: 614-693-0469**

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EP study of Determining the viability of continuing and / or amending the Partial Discharge test in MIL-DTL-16878/16.

- I. **OBJECTIVE:** The purpose of this Engineering Practice (EP) Study was to obtain input/feedback from manufacturers and OEMs concerning the viability of continuing and / or amending the Partial Discharge test in MIL-DTL-16878/16.
- II. **BACKGROUND:** During a meeting, Marmon Aerospace and Defense noted an issue with the Partial Discharge (Corona) test verbiage in MIL-DTL-16878. Marmon is currently an active manufacturer for MIL-DTL-16878.

The Partial Discharge test verbiage refers to ANSI/ICEA T-24-380 for the test procedure. This ANSI/ICEA document is explicitly for shielded cables. MIL-DTL-16878 is an unshielded wire. The Partial Discharge test is only applicable for the MIL-DTL-16878/16 slash sheet.

After the meeting, VA raised this Partial Discharge issue again with Marmon. Marmon reached out to the rest of the National Electrical Manufacturers Association (NEMA) aerospace committee for further assistance with this matter and to see if they had any historical insight.

- III. **RESULTS:** The rest of the NEMA aerospace committee lacked any further historical insight into this Partial Discharge test issue.

During the E-mail correspondence, Marmon revealed that this test verbiage issue led to Marmon not having conducted the test in recent memory. Marmon tried the test again after adding a shield, but the results were far outside requirements. Marmon considers the test invalid and thinks that it should be removed from MIL-DTL-16878. Marmon reported that their employees that worked at competing manufacturers for MIL-DTL-16878 also never performed the Partial Discharge test at their respective companies.

MIL-DTL-16878 is currently inactive for new design and is slowly being replaced by NEMA equivalents. It is also a First Article Inspection specification. As such, testing is often waived. Due to all of these factors, it did not seem reasonable to VA to try to require new testing for industry on an old specification that is being superseded. VA plans on removing this test from MIL-DTL-16878. VA discussed this with the other companies at the next NEMA aerospace committee meeting. We agreed with VA's planned course of action.

- IV. **CONCLUSIONS:** Due to the lack of current industry practice, First Article testing often getting waived, and the document being inactive for new design and slowly superseded by NEMA documents, VA plans on removing the Partial Discharge testing requirement from MIL-DTL-16878 in a future amendment.