



AEROSPACE™

TECHNICAL SPOTLIGHT

Subject: Igniter Competitive Evaluation (GE P/N 5044T67P13, NSN 2925-01-150-7160)

Purpose: To benchmark the functional and durability performance of the Champion CH34419 CT7/T700 Igniter versus the Unison Industries 9044295-1 in a comparative test and analysis approach.

Scope: The sparking life and erosion performance was tested in addition to evaluation of the critical semiconductive body material that creates low voltage operation. Note: Champion develops, controls and produces its own semiconductors for its igniter applications unlike its competition.

Conclusions: The CH34419 Igniter demonstrates superior performance, durability and improved life over the competitive igniter. This advantage is due to its tailored semiconductor design that provides better quench pressure performance and onset voltage stability.

Results: After 550,000 sparks at 0.70J minimum delivered energy discharge the Champion igniter design, CH34419, outperformed the competitive design due to the Champion competitive advantage in the semiconductor material selection and design. The tip condition results in **Figure 1** and **2** at 550k sparks were similar; however, the electrical performance, quench pressure and durability of the Champion design was found to be superior.



Figure 1: Champion – 550K Sparks



Figure 2: Unison Design – 550K Sparks

The Champion design completed 2.9 times the number of sparks under pressure (448k vs 155k) which demonstrates superior semiconductor performance. See **Figure 3**. The Champion igniter onset voltage was significantly more stable throughout the life test which leads to lower delivered energy for each spark thus providing increased service life capability and assured ignition during normal starts, under fuel wetted or other fouled conditions and continuous ignition demands. See **Figure 4**.

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Microscopic examinations of the competitive semiconductor component provide firm evidence for the lower onset voltage and quench pressure performance. The competitive design has insufficient Silicon Carbide content to provide a high performing semiconductor component. It includes other doping agents to increase durability, but at a cost to electrical performance.

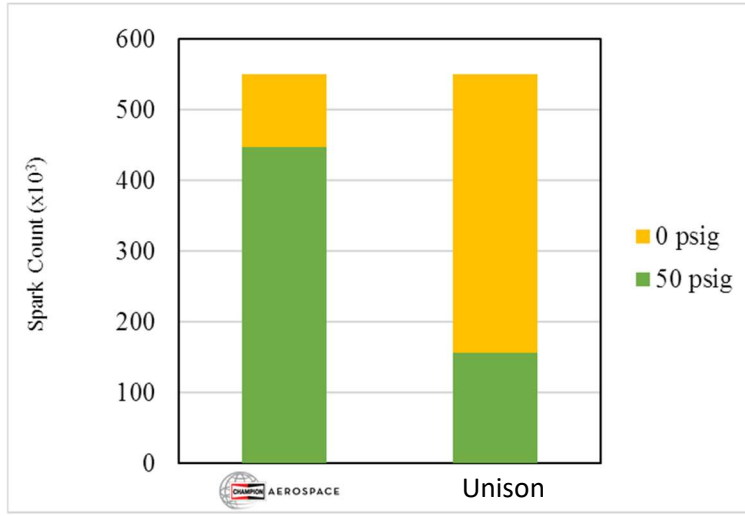


Figure 3: Sparking Life at Pressure and 500°

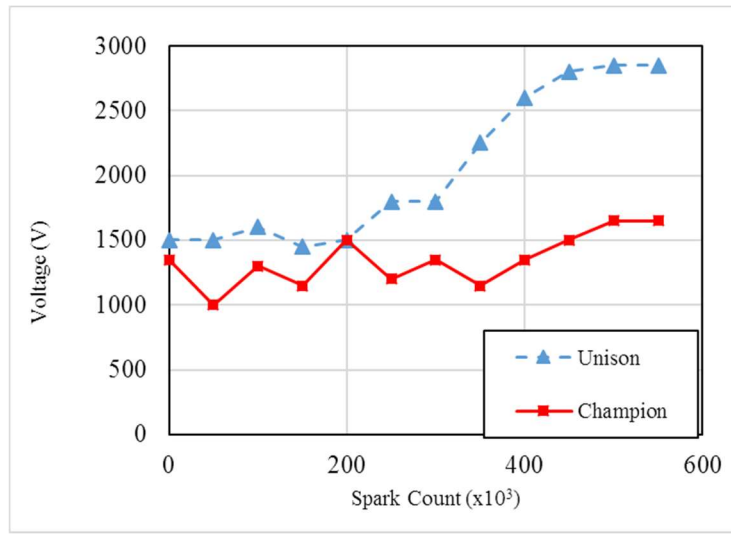


Figure 4: Onset Voltage Performance

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