Generation of long-lasting light with inductively-coupled plasma drivers

Bryan T. Daugherty  
*Indiana University Purdue University Fort Wayne, daugbt01@students.ipfw.edu*

Mattison Siri  
*Indiana University - Purdue University Fort Wayne*

Charles McIntosh  
*Indiana University - Purdue University Fort Wayne*

Christopher Nei  
*Indiana University - Purdue University Fort Wayne*

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Bryan Daugherty, Mattison Siri, Charles McIntosh, and Christopher Nei

Advisor: Dr. Abdullah Eroglu

Indiana University – Purdue University Fort Wayne, Department of Engineering

Abstract: In order to develop a longer-lasting source of light, we first decided to use an inductively-coupled plasma driver to generate the light. We investigated an existing industrial application of this concept. Then we determined the best driver configuration for the plasma light source and the best way to inductively couple the driver to the plasma. After determining the component values appropriate for our design, we simulated it in PSpice 9.1 in order to verify our design. We built an inductively-coupled plasma driver in hardware to match our design and retrofitted an existing fluorescent light bulb to it. The inductively-coupled plasma driver successfully energized the plasma inside the fluorescent light bulb, producing a substantial amount of light. Because this lighting method does not involve electrodes, which degrade over time, inductively-coupled plasma drivers are a means of generating long-lasting light.