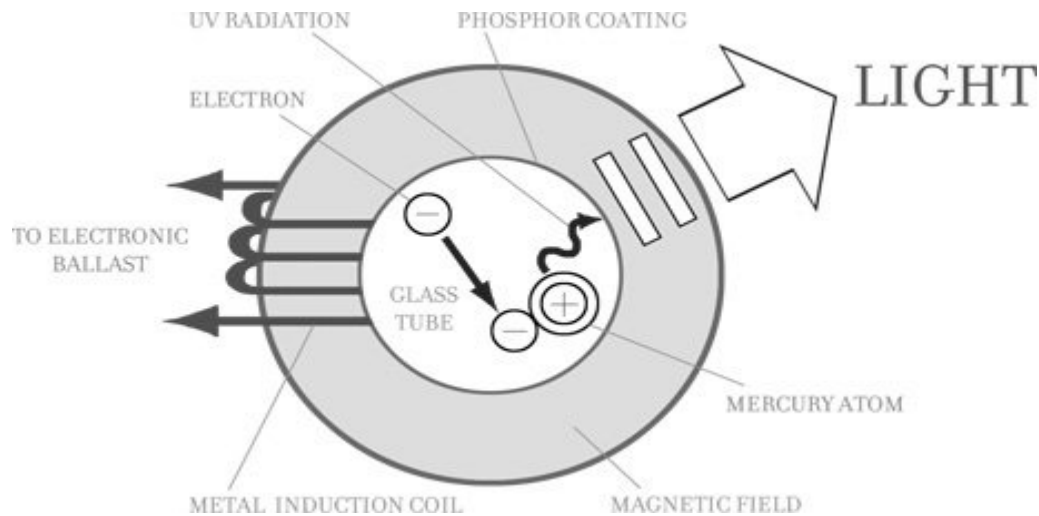


How Induction Lighting Works

The basic technology for induction lamps is not particularly new. Essentially, an induction lamp is an electrodeless fluorescent. Without electrodes, the lamp relies on the fundamental principles of electromagnetic induction and gas discharge to create light. The elimination of filaments and electrodes results in a lamp of unmatched life. Lasting 100,000 hours or 25 years, this system can outlast 100 incandescent, five HID, or five typical fluorescent lamp changes.



Based on these well-known principles, light can be generated via a gas discharge through simple magnetism. Electromagnetic transformers, which consist of rings with metal coils, create an electromagnetic field around a glass tube which contains the gas, using a high frequency that is generated by an electronic ballast. The discharge path, induced by the coils, forms a closed loop causing acceleration of free electrons, which collide with mercury atoms and excite the electrons. As the excited electrons from these atoms fall back from this higher energy state to a lower stable level, they emit ultraviolet radiation. The UV radiation created is converted to visible light as it passes through a phosphor coating on the surface of the tube. The unusual shape of an induction lamp maximizes the efficiency of the fields that are generated.

Although it is not breakthrough science, until recently, it has not been so commercially viable. New developments have broken down the barriers of costs and technological setbacks, such as EMC interference, lumen depreciation, ability to dim and a useful range of available wattages. Today, its obvious benefits make it the clear-cut choice for many lighting applications over traditional light sources.

.....

• The electrodeless lamp, or induction light, was first patented in 1891 by Nikola Tesla, the father of AC electricity. In 1929, Tesla wrote, "Surely, my system is more important than the incandescent lamp, which is but one of the known electric illuminating devices and admittedly not the best. Although greatly improved through chemical and metallurgical advances and skill of artisans it is still inefficient, and the glaring filament emits hurtful rays responsible for millions of bald heads and spoiled eyes. In my opinion, it will soon be superseded by the electrodeless vacuum tube which I brought out thirty-eight years ago, a lamp much more economical and yielding a light of indescribable beauty and softness." Subsequent improvements by General Electric were patented in 1967 and 1968, and recent developments in materials science and electronics have since yielded the modern induction lamp as the new industry standard for many lighting applications.

.....