

The Effect of Power of Isolation Transformer on the Lamps in Airfield Ground Lighting Systems

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Abstract : To study the impact of the amount and volume of power of isolation transformer on the lamps in airfield Ground Lighting Systems. A test was conducted in Persian Gulf International Airport, This airport is situated in the south of Iran and it is one of the most cutting-edge airports, the same one that owns modern devices. Iran uses materials and auxiliary equipment which are made by ADB Company from Belgium. Airfield ground lighting (AGL) systems are responsible for providing visual issue to aircrafts and helicopters in the runways. In an AGL system a great deal of lamps are connected in serial circuits to each other and each ring has its individual constant current regulators (CCR), which through that provide energy to the lamps. Control of lamps is crucial for maintenance and operation in the AGL systems. Thanks to the Programmable Logic Controller (PLC) that is a cutting-edge technology can help the system to connect the elements from substations and ATC (TOWER). For this purpose, a test in real conditions of the airport done for all element that used in the airport such as isolation transformer in different power capacity and different consuming power and brightness of the lamps. The data were analyzed with Lux meter and Multimeter. The results had shown that the increase in the power of transformer caused a significant increase in brightness. According to the Ohm's law and voltage division, without changing the characteristics of the light bulb, it is not possible to change the voltage, just need to change the amount of transformer with which it connects to the lamps. When the voltage is increased, the current through the bulb has to increase as well, because of Ohm's law: $I=V/R$ and $I=V/R$ which means that if V increases, so do I increase. The output voltage on the constant current regulator emerges between the lamps and the transformers.

Keywords : AGL, CCR, lamps, transformer, Ohm's law

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