A. There are three major types of power supplies used in the Life Safety industry – Offline Switching, "Switch Mode", and Linear.

Linear power supplies are an older technology and are inherently inefficient. A large step-down transformer is required and the regulator operates by "burning off" extra voltage as heat. Efficiency levels for linear power supplies are typically in the 65% range and are generally limited to a single preconfigured output voltage dependant on the input transformer. Linear power supplies are generally being phased out, driven by state and federal regulations.

"Switch Mode" power supplies also utilize a large step down transformer similar to a linear power supply, but make slight improvements in efficiency through a different regulation technique. Rather than converting the extra voltage to pure heat, a Switch Mode power supply switches on and off internally to keep an electrical "tank" at the desired voltage. However, due to the requirement for a step down transformer and high power dissipation within the power supply circuitry, Switch Mode power supplies still operate at higher temperatures and lower efficiency than an OLS power supply.

An OLS power supply operates on the same principles as a switch mode power supply, but eliminates the need for a step down transformer, improving efficiency, while reducing weight and heat output. The AC line voltage is connected directly to the input of an OLS power supply, which then switches internally to keep an electrical "tank" at the desired voltage - just as a Switch Mode power supply does - but with the lower internal power dissipation and the elimination of the large step down transformer, an OLS power supply is able to achieve nearly 90% efficiency and far lower operating temperatures than either a Linear or Switch Mode power supply.