

AGMMA

ENERGY EFFICIENCY OF GAMING MACHINES

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1 PURPOSE

The purpose of this report is to review the energy efficiency initiatives implemented by gaming machine manufacturers during the last decade. This report also includes the possible enhancements the manufacturers may implement in the coming years.

2 ENERGY EFFICIENCY IMPLEMENTATIONS

The energy efficiency initiatives implemented by the Electronic Gaming Machine (EGM) manufacturers in the last decade can be summarised into the following categories:

2.1 Display Devices

The earlier EGMs used CRT monitors for the display of the game results and game animation. Almost all the new generation of EGMs use LCD monitors for this purpose. This has resulted in considerable power savings. The CRT monitors used in the older generation EGMs typically used around 80 watts of power while a typical LCD monitor uses around 25 watts of power. This change has probably produced the maximum reduction in the energy consumption in the modern EGMs.

2.2 EGM Lighting

The lighting such as the Belly Panel lighting in earlier EGMs used normal cold cathode fluorescent lamps. A number of modern EGMs use LED devices for this purpose. The cold cathode fluorescent lamps typically consume around 15 watts of power while a similar LED device will consume only around 8 watts of power. This gives a small reduction in the power consumption of modern EGMs.

2.3 Push Button Lighting

Invariably all EGMs have a number of push buttons for player inputs. These push buttons light up when they are active. The older generation of EGMs used incandescent lamps for this purpose. The modern EGMs use LEDs for this purpose. The incandescent lamp consumes typically around 2 watts of power while the LED lamp typically consumes around 0.2 watts of power. Considering that an EGM has a number of these push buttons, typically around 12 to 14, this change reduces the power consumptions of the EGM.

2.4 Power Supply

Some of the older generation of EGMs used conventional regulators to provide the required regulated power source for the various devices within the EGM. All the modern EGMs use switch mode power supplies for this purpose. Also due to the enhancements made in the design of the switch mode power supplies, the modern power supplies used in EGMs operate at an efficiency of around 90% and also have power factor correction circuitry to reduce the apparent power.

3 POSSIBLE ENHANCEMENTS

Some of the possible energy efficiency improvements that the EGM manufacturers may consider in the future are given below.

3.1 Processor Selection

Almost all new EGMs are designed using processors used in normal computers. Modern EGMs require very high power graphics processors as well as good computational capability in their main processor. In the new EGMs the maximum power consuming components are these graphics and main processor. Reduction of the power consumption of EGMs is possible by replacing these devices with that being used in notebook computers. However, currently due to the higher costs associated with these types of devices, EGM manufacturers use the devices with higher power consumption that are typically used in desktop computers.

3.2 Display Devices

The power consumed by display devices depend upon the resolution of the object being displayed. Hence it will be possible to reduce the power consumption of the EGM by using low resolution display while the EGM is in idle state.

4 CONCLUSION

The EGMs manufactured today typically consume around 250 watts of power while the EGMs manufactured around a decade ago consumed typically around 400 watts of power. This clearly demonstrates that the EGM manufacturers have improved the energy efficiency of the gaming machines.

In a modern gaming venue, we believe that a considerable amount of power will be consumed by various other ancillary devices such as jackpot displays, various venue promotion signs, other peripheral equipment etc. These devices typically are very energy consuming devices.

There is a scope for further reduction of power in the gaming venues by using the energy efficient lighting wherever possible.