Different Generations Of Night Vision Optics Technology

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In brief

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We all want to ensure the safety and security of our loved ones at all times, and night vision optics is one such device that lets you protect your family from dangers at night. Devices such as clip-on night vision scopes allow your scope to switch directly from a traditional day scope to a night vision scope, allowing you to see objects in the dark.

However, when choosing night vision optics or Thermal Scopes, there are many options before us in terms of shape, size, and Generation. The various generations a night vision scope comes in are as follows.

Generation Zero

This Generation of night vision optics is one of the oldest picture intensifier technologies. The idea of generation 0 came from the image convertor tube, which was developed for television.

However, this Generation of night vision optics does not clarify the images and is less efficient. But when powerful illuminators are attached to it, they work fine. On the other hand, Generation 0 optics are not produced anymore and are regarded as outdated.

First Generation

1st generation night vision optics has progressed the brightening of the image and decreased the dependence of powerful infrared illuminators. Because of three interconnected intensifier tubes, Generation 1 optics are much heavier and bigger than the zero generation night vision optics. But the designs remain the same.

The resolution of these optics is slightly better than generation 0. This is why it provides more clarity to the images produced than its predecessor.

Second Generation

This Generation of night vision optics came with new microchannel plates technology. When these optics were attached to the intensifier tubes, there was an increase in the gain and sensitivity of the device. It is because the image resolution increased and gave more clarity to the image. Also, the number of intensifier tubes in the 2nd Generation was reduced, which decreased the size and weight of the device.

Third Generation

In the 1970s, the intensifier tubes in night vision optics evolved due to the development of gallium arsenide photocathodes. As a result, the third-generation optics had more sensitive tubes and increased resolution. Also, the wide range of third-generation optics makes it easy to detect the targets.

Moreover, Micro Channel Plates were covered with a thin sheet of oxide metal to provide longevity and durability to third-generation night vision optics. As a result, the overall performance of this Generation was far better than the former one.

Common Feature Between Second And Third Generation Intensifier Tubes

Intensifier tubes mainly generate green images as we humans can distinguish more than one shade of green, which helps us detect our target easily. However, if you want a black and white image, you should buy the intensifier tubes with phosphor technology from AGM Global Vision.

Bright Source Protection

The intensifier tube of these two generations cannot withstand the bright light, and they get damaged. To prevent such damages, night vision optics are given Bright Source Protection. This feature enables these tubes to automatically turn off the photocathode voltage as soon as they are exposed to excess light.

Autogating

The power supply in these two generations of optics automatically controls the photocathode voltage using the autogating feature to prevent the tube from any damages like overloading. This feature also provides clarity and increases the image resolution.

Fourth generation

Night vision optics have now evolved to their fourth Generation and provide better performance. They reduce the electronic noise much better than the third Generation. This Generation of night vision optics is very often referred to as third-generation filmless intensifiers.

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