

Retroreflectivity as equivalent lighting to electrically lit runway

To make sense of this article a bit on my background is appropriate. I have over 35 years flying experience with over 15,000 hours of flight time. This is in over 130 different types of aircraft from the lightest to the largest. I have flown in every part of the world with extensive experience in third world countries including Russia and the former Republics. Of the 15,000 hours over 5,000 as a crop duster, 8,000 as a airline pilot and training Captain, with the remaining 2,000 in miscellaneous types of flying. My degree is in aerospace engendering from St. Louis University at Parks Collage.

I have been involved with Reginald Bennett International and retroreflective lighting for seven years and am familiar with the operation and installation of this lighting system.

In 1967 I had to land in the parking lot at St. Thomas Ontario at night between the light poles because the runway lights were not on when I arrived at 2 AM. I was lucky.

Since then I have been at airports where aircraft have not been as lucky. In Tamanghasset Algeria a BAC-111-500 still sits with the fuselage halfway through a building bearing witness to the 103 people that died when the runway lights failed. In Sokoto Nigeria another BAC-1-11 sits in the bush where 98 people died because the airport operator turned off the runway lights and went to town drinking.

The list can go on. The bottom line is that none of these situations would have occurred had there been a retroreflective lighting system on the airfield.

There is no question that a nice electrically lit airfield and taxiway is better. It is easier to find and retroreflective lighting can never compare itself as being equivalent in that sense. On the other hand I can always land on a Retroreflectivity lit runway as safely as I can a electrically lit one. Once on final the lighting is more then adequate to allow for a safe landing. I can land a Cessna 150 as easily as a DC8 on a retroreflective field.

On the other hand a electrically lit runway can never be the equivalent of a retroreflective runway in that I can always find the retroreflective runway whereas the electrically lit runway is always problematic.

Here in the western world we have grown accustomed to reliable electrical power. The rest of the world does not share that luxury. Yet even in the West we have all experienced power failures. In the West we have many airports to divert to should one airport lose electric runway lighting. In other parts of the world this luxury does not exist.

There are parts of the world where I would not fly at night even though the destination had an operating electrically lit runway knowing that when I arrive there I may not have a place to land and my alternate might be in the same situation. However if the airport had retroreflective lighting or retroreflective back up lighting I would not hesitate weather permitting.

Taxiway lighting is more problematic then runway lighting. Even here in the USA at major airports it is an everyday occurrence that taxiways or portions of taxiways are not lit. Some airports like Lamdbert International here in St. Louis supplement the taxiway lighting with home made reflective markers. These markers can not compare to the retroreflective taxiway markers that are produced by RBI, however they do the job when a taxiway light fails.

Retroreflective runway lighting is not a replacement for electrical lighting. I would be the first person against it. Electrical lighting will always be better and preferable. To that extent there is no equivalency. On the other hand electrical lighting will never have the reliability or ease of installation and low maintenance cost of a retroreflective runway or taxiway.

Considering the low initial purchase cost, the fact that it is virtually maintenance free, uses no power and easy to install it makes a perfect back up system to the electrical lights and emergency generators that are prone to failure.

In places where electrical is highly problematic or just not available it makes sense as a primary lighting system where otherwise no safe night flying would be possible.

To communities that want their airports available for the occasional night arrival the system makes sense as it costs the community nothing in energy usage or maintenance.

To airports that have a nice reliable electrically main runway and a unlit crossing runway the retroreflective option is ideal for the crossing runway that is seldom used except in high cross wind conditions. The pilot no longer has to make a high cross wind landing because of the lack of choice. In this situation retroreflective lighting is the cost effective alternative.

For heliports the retroreflective choice is obvious. It allows for many more heliports for the same dollar. These heliports may not be visited very often and to install, maintain and operate an electrical lighting system is both costly and operationally prohibitive.

RBI has developed the portable heliport system. A heliport in a box, the H.E.L.P. system. A fully functional retroreflective heliport landing area can be set up in under half an hour.

RBI has also developed the fully portable combat lighting system where a 8,000 foot runway can be set up including strobe lead in lights in under two hours.

In Military applications the retroreflective back up lighting has obvious advantages. The shock of bombs and bomblets dropped on a runway will shatter all electrical runway lighting including tearing up the electrical cabling. Other than having a few markers blown away the retroreflective lighting will work just fine even with holes in it from shrapnel. The only other option is flare pots. Not a nice choice considering that the returning aircraft may be damaged leaking fuel.

The largest objection to retroreflective lighting is arrogance. Airports pride themselves on their electrical lighting and the reliability of their back up generating capacity. The concept of a retroreflective back up lighting to them is a step backward in time. Ministries see it as a hindrance to development believing it will interfere with their electrification push. In other situations pilots ride their laurels claiming that they are professionals and should not be subjected to landing at an inferior retro-reflectively lit airport. To my knowledge, no pilot, in reasonable weather conditions has not been able to land at a retro-reflectively lit runway.

Retroreflective runway and taxiway lighting capability is a safety tool, one of many available to airport managers. In remote areas where electricity is either non existent or unreliable it is a great workable tool to allow aircraft to land safely at night.

The facts are:

- Inexpensive
- Low maintenance
- Easy to install
- No need for a electrical power grid
- Always on
- Pilots can land safely and do so every night somewhere worldwide
- It saves lives

The RBI products are now FAA certified and should provide alternative energy minded airport managers something to think about and look at.

Captain Roland Hoeffener (Braniff International ret.)