Background to the invention of the Lumenite™ Light Sleeve

Since the introduction of the fluorescent lamp in 1939, most every single building around the world, except residential has used this light source for general indoor lighting. Being relatively low cost and more efficient than any incandescent lamp the numbers installed today are in the thousands of millions. The most common type of fluorescent in use has been a 40-watt, T-12, in a cool white or daylight color. Daylight tends to appear bluish while cool white is more color balanced with warmer tones added. The tube overall length has been 48 inches with the diameter being 11/2 inches.

A few years ago, the US Federal Government adopted an Energy Department, environmental initiative to phase out this lamp over a period of time, extended out into the late 2000's in favor of a thinner lamp, a T-8 (1") diameter using approximately 34 watts and producing a more efficient lamp with a higher lumen output. Another reason is that fluorescent lamps rely on a droplet of mercury contained inside the tube to permit an arc to strike while in a gaseous state to produce light. The T-12 lamp required more mercury than the thinner T-8. The T-8 lamp soon will become the general lighting workhorse for many years to come. Typically new construction, with energy efficient lighting fixture, employ these lamps routinely while retrofits come in second. (In Australia the T8 is our standard system.)

When the fluorescent lamp became well established, the need for reliable emergency lighting became evident as the early lamps had a "trigger Start" circuit where they would flicker and heat up for a short time before they produced light. This made instant emergency lighting not very dependable. As circuit technology advanced to today, emergency lighting is handled by circuited ballast, normally with a battery back up to meet the code compliant lighted time of 90 minutes after a power outage. All of this is great on paper and theory. The practical sum and substance of emergency lighting today is simply that in an emergency, 80% of the systems in place will not function as planned.

There are many reasons why reliance on hard-wired emergency lighting system is foolish, however the single issue is really that of maintenance. All systems have to be maintained on a monthly basis. Costs prohibit this from ever being done effectively and professionally. A secondary reason that causes systems to not function is that they are too complicated and rely on too many parts. Transfer switches, batteries, dedicated circuits, capacitors, circuit boards, self diagnostics, light bulbs, sockets, wires, circuit breakers, and the installation by humans adds up to the dependence on mechanical; and human elements to perform 100% of the time when needed. Impossible. The number of variables dictate that it will not happen.

ENTER LUNA GLOW WITH THE LOW TECH SOLUTION TO A VERY HIGH TECH PROBLEM
THE NEW LUMENITE POWER LIGHT SLEEVE

The power problems in California and Western North America are for real and are not going to be solved quickly, cheaply and easily. The most obvious form of energy consumption is lighting. Most commercial facilities, wanting to be politically correct to their public, simply have taken lamps out of their fixtures, terminated circuits, cut out rows and rows of overhead strips, reduced night time security lighting, employed stage reduction timers, and shut off total lighting systems for work station task lighting type portable lamps. In addition, most stairwells and hallways have been hit very hard by the reduction. Obviously emergency circuits were also impacted.

What all this means is that employees along with their insurance companies are willing to risk a great deal of money as the potential for accidents has leaped to the nth. degree.

Luna Glow recognized that this problem exists and invented a viable solution. The new LUMENITE POWER LIGHT sleeve provides a 100% reliable emergency lighting mode without any human or mechanical involvement, costs nothing to maintain, works every time, has an indefinite life span, and takes minutes to install.
Lunaglow designed a slip on the existing fluorescent lamp, **Lumenite™** high performance photoluminescent lighting sleeve that becomes part of the lamped fixture itself. Lunaglow wanted to be able to provide visible and useful light since our research clearly indicated that users wanted to be able to secure an area where cash, stamps, bearer bonds, securities and other valuable were part of a workstation. In addition, large users wanted enough light generated, in a total blackout condition, to provide for an orderly emergency or non-emergency evacuation.

The new **Lumenite™** Power Light Sleeve takes into account the physics of the fluorescent lamp itself. Bulb wall temperature is important to the efficiency and light output of fluorescent lamps. This is one of the reasons you rarely see a typical 430ma fluorescent lamp outdoors. The cold temperature drastically reduces their light output. So, anything Lunaglow designed to slip over the lamp had to keep the bulb wall temperature constant. We provided a complete circular blanket of air, approximately .015's around the entire lamp. To keep this tubular circle constant, end caps were designed to allow for the external thermal expansion of the HPPL tube itself. The end caps encapsulate the HPPL tube on the outside perimeter thus keeping the circle
Perfect when impacted by forced outward thermal cycling. The close tolerances were also designed to allow HPPL to be located as close to the lamp as possible to take full advantage of the UV output generated by the discharge lamp, UV is highly effective in stimulating the **Lumenite™** materials.

Further research was conducted to determine the amount of reduction in general lighting, under any number of conditions, with a HPPL sleeve installed over the lamp. Depending upon the color of the fluorescent lamp used for general lighting, the **Lumenite™** power light sleeve will reduce the lamp efficiency by 35%. In other words, the power sleeve blocks out produced light from the hard-wired fixture. Depending upon how many fixtures use the power light sleeve, the lighted impact on the work surface or task is negligible. The delivered color shifts to a whitish yellow but being more white than yellow. This application of the **Lumenite™** power light sleeve solves the problem of protecting and securing the workstation. Installing the sleeve in every hallway and stairwell fixture completely covers 100% of the emergency situations expected. **If a Lumenite™ power light sleeve were used in every single overhead troffer, enough light would be produced to conduct routine business functions for hours following a total blackout.**

Features and Benefits

Completely recycles the light you have already paid for…over and over
100% guaranteed reliable
Very cost effective
NO maintenance
Illuminates every time
No replacement of parts
Requires no wiring
Non-radioactive materials
No disposal fees
Very high initial brightness persistence is over 24 hours
No internal parts
Requires no connection to a power source
Produces effective whitish yellow light
Slide and snap installation, no tools needed
Qualifies as glass containment device for USDA, FDA, FDA and OSHA
No ongoing costs
No alteration to existing fittings
No switching needed
Automatic activation
Increases safety and security

ADDITIONAL BENEFITS USING Lumenite™ LIGHT SLEEVES

A guaranteed way out evacuation system does not rely on power or batteries.

Works every time and requires no maintenance.

Essential areas requiring **Lumenite™** Light Sleeves

Install in all egress routes. Cover all fluorescent tubes. Illuminate stairwells, Fire escapes, Hallways, Exits, Elevators and Car parks..

In General Lighting Areas use 10 to 20% in working areas, so in a power failure nobody is left in the dark, or subjected to the dangers inherent in unlit emergency evacuation.