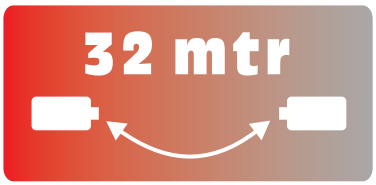
Advantages & unique features . . .

- **Flexibility**

Fiber optic cable are flexible and can be shaped to conform to almost any curve design.

- **Continuity**

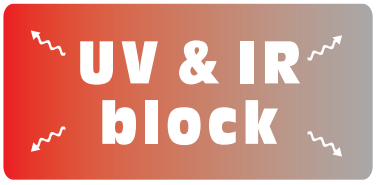


Side light fibers that emits light along its length, generally has the look of neon lamps and can illuminate continuously for 32m without any interval - ideal for pool perimeter and sculpture lighting.

- **Durability**

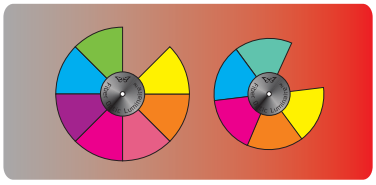
Optical fibers (PMMA or soft glass), are strong, durable and impact resistant compared with fragile light bulbs.

- **UV & IR Control**



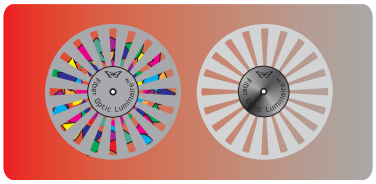
Fiber optic cable transmits only cool light filtering out harmful levels of ultra violet and infra red radiation. This allows safe illumination of perishable items, antiques, fine arts, sensitive textiles and finishes.

- **Color Changing**



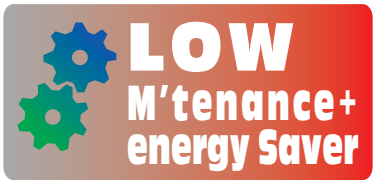
Most powerful advantage is its color changing ability, creating aesthetically pleasant ambient depending on individual preference can be preset to gradual changing sequence.

- **Sparkling Animation**



Unlike LEDs, fiber optic lights can create a more realistic sparkling & twinkling effect, from subtle to dramatic animation plus feasibility to create shooting star pattern.

- **Low Maintenance+ energy Saver**



A single luminaire can beam up to 1200 strands of 0.75mm fiber, thus minimal lamp replacement is required instead of multiple bulbs. The luminaire can be in an easily accessible location.

- **Weatherproof**

Outdoor and underwater lighting such as swimming pools, fountains or even illumination in hazardous atmospheres can be done safely with optic lighting, since the fiber is non-conductive and the power for the luminaire can be placed in a remote location.

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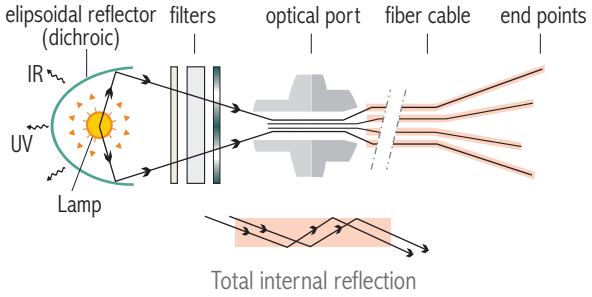
What is Fiber Optic Luminaries ?

Fiber optic lighting uses optical fiber as a “light pipe,” transmitting light from a source through the fiber to a remote location.

Its ideal for accent and mood lighting in commercial & residential settings, where extremely miniaturized non-electric illumination is the best solution. It is a safer alternative, suitable to light niche locations such as jewelry cases, pools, parks, exhibit cases, decorative down lights, landscape lighting etc.

Basic principle of fiber optic technology

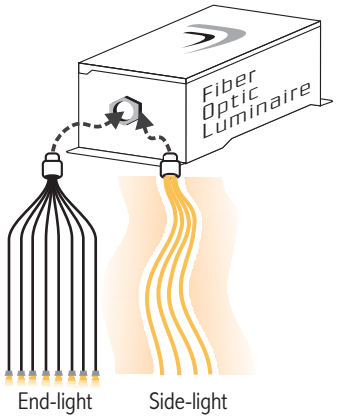


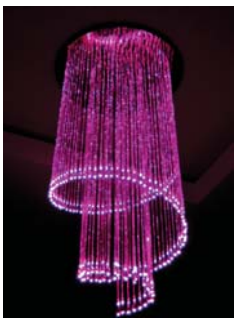
Generally there are three (3) types of fiber optic lighting ;

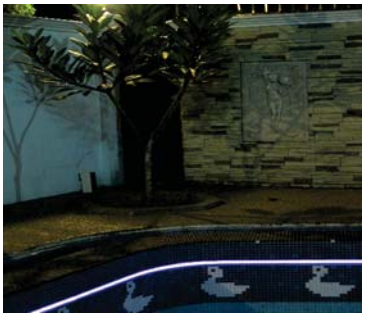
<u>End Light</u>
Light is directed from the luminaire through optic fiber where it is emitted to the end.

<u>Side Light</u>
Fiber optic also emit light from the side as well as the end.
This type of lighting is best suited for pools and architectural illumination.

<u>Environment Light</u>
Fluorescent fiber absorb light from the environment and emit to its ends.
This is a speciality fiber particularly used in sights for rifles, bows, decorative displays and sensors.







Why use Fiber Optics for lighting ?

The most noteworthy advantage of using fiber optic lighting systems is that the light is separated from the electricity that generates light. This makes it possible to illuminate areas, such as pools, spas, fountains, or in environmentally sensitive industrial situations. The reason: fiber optic light produces no electrical shocks and will not become a fire hazard.

A side-light fiber can be used in places where the potential of breakage or of contact with a high voltage transformer that makes a neon light hazardous. In addition, fiber optic lighting systems use both heat (infrared or IR) and ultraviolet (UV) filters in the light source. As a result, the light emitted contains no UV and no heat. This is particularly desirable for lighting retail displays containing products that are sensitive to heat, as well as museum displays of temperature sensitive artifacts and art.
Basically, dyes and oil paints won't fade, chocolate won't melt, and fresh flowers won't wilt.

The use of fiber optic lighting systems can also lead to improved energy efficiency in some cases, particularly through the use of metal halide (HiD) light sources. Because a single lamp can drive many fibers and produce multiple points or lines of light, maintenance costs can be reduced and maintenance tasks simplified, particularly for the hard-to-reach lamp. In addition there is economy of scale, as one lamp can light an entire chandelier or a ceiling or wall of sprinkle lights.
Overall, fiber optic lighting systems can be used in almost any lighting situation.

With several vibrant colors available, it is feasible to change colors gradually or have dramatic color switch effects plus sparkling animations that mimic starlight patterns on ceilings. This versatility lends itself to a creative and innovative lighting applications.

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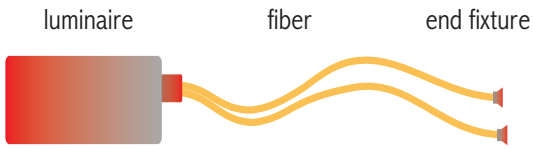
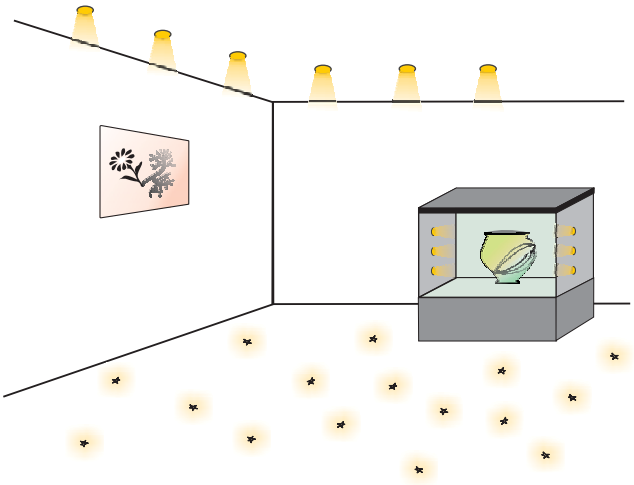
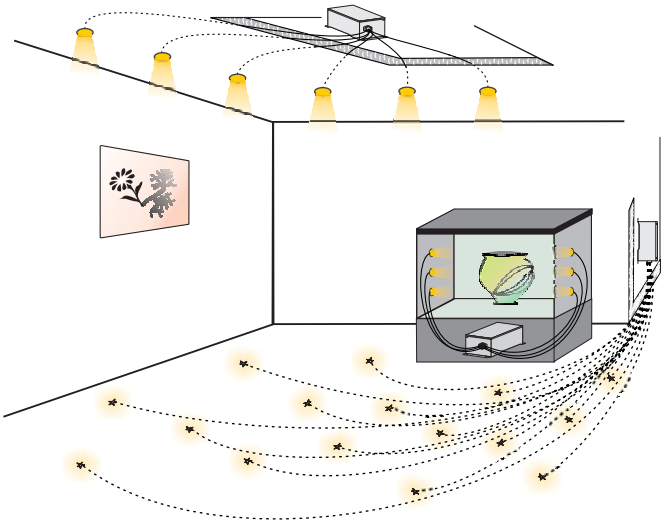
Planning a fiber optic lighting system

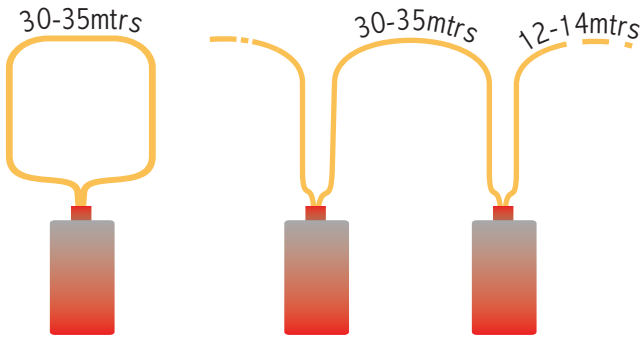
Fiber light system requires a different approach than a traditional lights. There are three principle components - the luminaire, the optical fiber and the output fixture. Optical fibers are either soft glass or PMMA (poly methyl methacrylate) and come with two layers - an inner core surrounded by a teflon cladding. There is an additional third layer of jacket for protection depending on its application i.e. for side light it would be clear jacket while black for end lighting. Bundling individual fibers together is a common practice, with this assembly referred to as bundled fiber. Single core fibers commonly called Solid Core fibers are large diameter fibers. The following points must be carefully considered when designing a fiber light system :

- Desired light ambience required (functional or decorative)
- Color rendering (warm light, cool beam or color changing)
- Luminaire location (accessibility, ventilation and future re-lamping)
- Fiber optic cable paths from light source to end points.
- Size of display item to be illuminated (this determines number of fiber points)
- The finishing of end fitting (if necessary).









Note that for sidelight applications, 30 to 35 meters runs are ideal when looped back to a single luminaire. On long runs, multiple luminaires in series are the norm. Wherever possible, sidelight cable should always be looped in and out of the luminaire. They may or may not be synchronized depending on the color effect desired. When using multiple luminaire, cable run should be the same length as possible. This will ensure the cables uniform brightness.

Dichroic Colors (1.1MM borosilicate glass)

Snow White 4200K	Brilliant Blue	Deep Pink	Forest Green
Bikini Yellow	Midnight Blue	Red Rose	WarmWhite 3100K
Brilliant Orange	Aquamarine	Purple	Super White 5200K

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Summary of Fiber Optic Luminaires

TiME Luminaries Sdn Bhd produces luminaires suitable for solid core, PMMA monofibers and glass optic fibers.
Common denominator of these system is high performance, long life, easy installation, minimal maintenance and wide versatility.

- Enclosure constructed in steel & aluminum with epoxy powder coating
- High performance silenced cooling fans
- Safety fuse and automatic restart thermal protection
- Improved and precision light for optimal and high focal concentration
- UV & IR dichroic filters and added diffuser for cool and even light output
- 4200K Snow White and 5200K Super White dichroic color correctors for halogen and metal halide systems..

Luminaire	Typical Application	Lamp	Colors	Optical Fiber Load (max.)
50w Halogen	**End lighting** Starry light Ceiling, Floor & water features, Step lights, task lighting, Decorative signs, displays, Fountains, spot lighting and glass block illumination.	50watt MR 16 Halogen FO (specially suited for fiber optics) Average life 4,000 hours Color temperature 3100K Optional : 4200K Snow White	1 color or 4+1 color disc (non-stop) sparkling option	*0.75mm PMMA - 500 strands* *1.0mm PMMA - 260 strands* *1.5mm PMMA - 125 strands* *2.0mm PMMA - 64 strands* *3.0mm PMMA - 26 strands* *Solid Core 7mm - 4strands* *Solid Core 9 to 16mm - 2 strand*
75w Halogen	**End lighting** Starry light Ceiling, Step lights, Museum Showcase, task lighting, Floor & water features, Decorative signs, displays, Fountains, spot lighting and glass block illumination.	75watt MR 16 Halogen FO (specially suited for fiber optics) Average life 4,000 hours Color temperature 3100K Optional : 4200K Snow White	1 or 2 or 5+1 color disc (stop option) sparkling option	*0.75mm PMMA - 1150 strands* *1.0mm PMMA - 615 strands* *1.5mm PMMA - 300 strands* *2.0mm PMMA - 160 strands* *3.0mm PMMA - 66 strands* *Solid Core 7mm - 8 strands* *Solid Core 9mm - 5 strand*
100w Halogen	**End & Side lighting** Starry light Ceiling, Step lights, Curtain & Chandeliers, Pool perimeter lighting, Floor & water features, Decorative signs, displays, Fountains and spot lighting	100watt MR 16 Halogen FO (specially suited for fiber optics) Average life 3,500 hours Color temperature 3100K Optional : 4200K Snow White	1 or 2 or 5+1 color disc (stop option) sparkling option	*0.75mm PMMA - 500 strands* *1.0mm PMMA - 260 strands* *1.5mm PMMA - 125 strands* *2.0mm PMMA - 64 strands* *3.0mm PMMA - 26 strands* *Solid Core 7mm - 4 strands* *Solid Core 9 to 16mm - 2 strand*
70w HiD ***metal halide***	**End & Side lighting** Starry light Ceiling, Step lights, Museum Showcase, task lighting, Floor & water features, Decorative signs, displays, Fountains, spot lighting and glass block illumination.	70watt HQi-T metal halide (with built-in ellipsoidal reflector) Average life 9,000 hours Color temperature 4200K Optional : 3100K Warm White or 5200K Super White	1 or 4 or 7+1 color disc (stop option) sparkling option	*0.75mm PMMA - 1150 strands* *1.0mm PMMA - 615 strands* *1.5mm PMMA - 300 strands* *2.0mm PMMA - 160 strands* *3.0mm PMMA - 66 strands* *Solid Core 7mm - 8 strands* *Solid Core 9mm - 5 strand*
150w HiD ***metal halide***	**End & Side lighting** Starry light Ceiling, Step lights, Museum Showcase, task lighting, Floor & water features, Decorative signs, displays, Fountains, spot lighting and glass block illumination.	150watt HQi-T metal halide (with built-in ellipsoidal reflector) Average life 9,000 hours Color temperature 4200K Optional : 3100K Warm White 5200K Super White	1 or 4 or 7+1 color disc (stop option) sparkling option	*0.75mm PMMA - 1150 strands* *1.0mm PMMA - 615 strands* *1.5mm PMMA - 300 strands* *2.0mm PMMA - 160 strands* *3.0mm PMMA - 66 strands* *Solid Core 7mm - 8 strands* *Solid Core 9mm - 5 strand*

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