

EDITORIAL

We have the pleasure to present you the letter of the Syzygies of the summer solstice.

In the column products, you will find an article on the powerful illuminator for plastic fiber optics based on the Concept of the Fluid Optics. This illuminator was built by the Megalux company in association with Mister Lionel Granger.

In the column Measures, an attempt was realized on the transmission of the light through one long plastic guide using the Fluid Optics illuminator.

Finally, you will find a presentation of the LASERLABS company which develops products interesting for the Optoelectronics.

The Fluid Optics inventors

PRODUCTS

POWERFUL ILLUMINATOR FOR PLASTIC FIBER OPTICS

There is more than about ten years that the illuminators for fiber optics appeared on the market. Since then fiber optics became less expensive, a lot of lighting applications has used it. Considering the price, the fiber optics used in the lighting is generally plastic.

Two types of plastic fiber optics are used in the lighting:

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Editorial

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Powerful illuminator for plastic fiber optics

Measures

Attempt of the transmission of the visible light with the qualification prototype N°2 equips with a source of 1800 Watts.

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Presentation of LASERLABS

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News

MEASURES

ATTEMPT OF THE TRANSMISSION OF THE VISIBLE LIGHT WITH THE QUALIFICATION PROTOTYPE N ° 2 EQUIPS WITH A SOURCE OF 1800 WATTS

With the perfecting of these last two illuminators for plastic fiber optics, Fluid Optics allows to study and to create illuminators of every power. The Fluid Optics illuminators are able to produce from fractions of Lumens for the small generators with LEDS, to a dozen thousand Lumens for these last two prototypes n°1 and n°2.

Thanks to the powerful illuminator for plastic fiber optics presented in the “products” article, we attempt to transmit the visible light through a plastic linear massive guide of length of about sixty metres.

We remind that the used illuminator, based on the Concept of the Fluid

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Optics, was built with the effective collaboration of mister Lionel GRANGER. It allows to eliminate, in a drastic manner, unwanted energy emitted by all the used sources of light.

Light emitted by the illuminator can be injected in a plastic optical guide because in the catching zone of this light, at the head of optical fiber, the temperature is less than 80 °C. This light can be then guided until the place of use, or diffused along a guide of light and to enlighten so a big zone.



First picture of the optical guide in PMMA, 75 mm of diameter, of big length, supplied by the illuminator for plastic fiber optics, in a small power with a source of 1800 watts. The source is renowned to deliver between 140 000 and 155 000 lumens. The generator delivers at its output between 80 000 and 90 000 lumens, directly useful.

To realize this test, an optical guide was created by placing continuously enough plastic rods (75 mm in diameter) to obtain a very big length. The goal of the test is to verify that the light could migrate from an extremity to the other one in spite of the big length of the optical guide. This set of rods, put end to end, forms then a long conduit of linear light. The light injected at the extremity of the first rod is trapped as into an optical fiber and propagate into the guide by total reflection until the other extremity.

In the reality, in spite of very unfavourable conditions met during first night attempts, we succeed in the transmission of the light on a very big length not still equalled this day (in our knowledge).

The imperfections of the lateral surfaces of the plastic rod, the transmission of the material, the optical passage of a rod to the following rod, the deposits of natural condensation on the lateral surfaces of rods creating a lateral diffusion on all the length, the adaptations and the interfaces between the various rods, finally all these natural optical incidents consisted an enigma that we had never managed to quantify by precise measures on such a distance, until this day.

Today, we can assert that the transmission of the light on such distances, while recognizing that possible perceptible progress is still necessary to improve these performances, is possible. Soon, these illuminators will allow to transform the use of optical guides like fiber optics, used today only in signalisation systems, into industrial lighting systems.

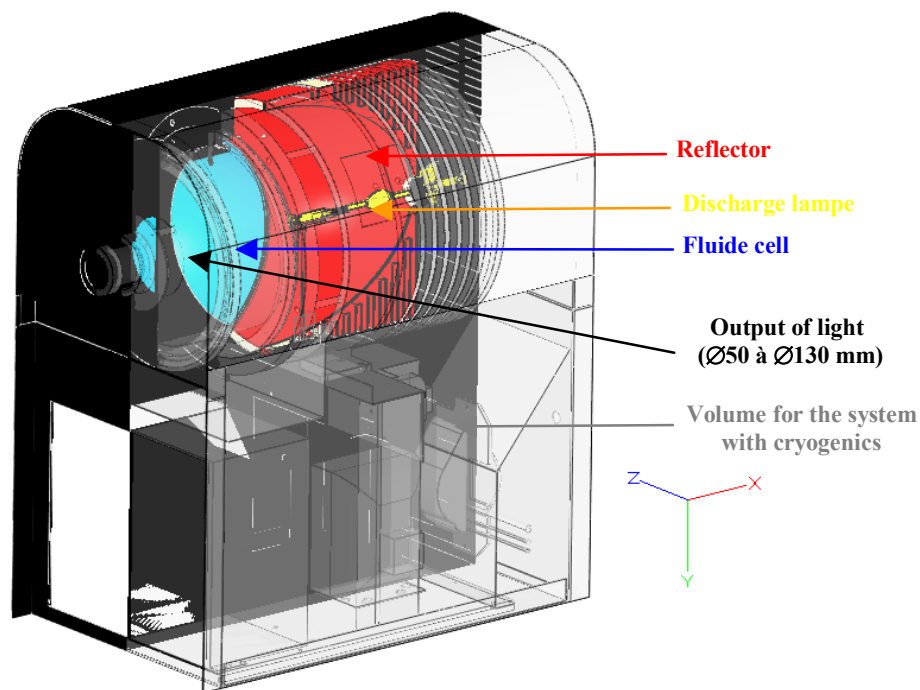
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- The transmission fiber optics : light enters by an extremity and is guided until the other extremity to go out of it in a directional way.
- The sideglow fiber optics: light enters by an extremity and is diffused laterally along the fiber.

In these two cases, the fundamental industrial problem for the applications of lighting remains the same: to concentrate and to inject a maximum of light in a small optical conduit and sensitive to the heat.

In the state of the art, all the generators of light which filter light to allow to pass only visible light use solid filters. These filters are intended to absorb infrared energy responsible in big majority of the heating of the enlightened subject and to allow to pass visible light. Attempts, with these solid filters and with light sources of strong electric powers, showed that all these filters, even ventilated, broke.

Further to this observation, the idea was to use a liquid to filter the light. In association with Mister Lionel GRANGER, the MEGALUX company built, by using the concept of the Fluid Optics (<http://www.optique-fluide.org>), a powerful illuminator working with a discharge lamp of 1800 W and being able to be plugged into the mains on any site.



CAD of the illuminator

This generator contains a reflector which concentrates the light produced by a discharge lamp. The resulting concentrated beam of light passes through a fluid cell where the unwanted energy is absorbed. The beam will be then collected with a specific «concentreur-colinéariseur» developed for every industrial application.

By absorbing infrared energy, fluid warms up and it is so necessary to cool it with an autonomous cooling system.

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A deported powerful illuminator with a reduced cost of exploitation (with a discharge lamp of big life time 9000 hours) finds a lot of applications.

Possibilities of applications :

1 - When the maintenance of lamps is delicate.

Sometimes the change of light bulbs of lamps is critical and results in prohibitive costs. In our case, light bulb replacement is made in the generator and not above the enlightened places avoiding any immobilization of the zone.

Examples : Tunnel, Warehouse, Highway, Subway, Train, Beaconing of the street, Etc. ...

2 - In all the sensitive places to the electricity where it is impossible to place a lamp without it is waterproof. The fiber optics or the guides of light of our illuminator are inert.

Examples : explosive environment, Swimming pool, Sensitive zone of oil platform, Etc. ...

3 - In all places where the emission of heat has a fatal repercussion for the environment. The emission of heat being managed, it is possible to reduce the production of heat in a considerable way by placing the generator in another room and by using the fiber optics. Heat is reduced to the heating of enlightened surfaces by the visible light.

Examples : Cold room, Display of fresh products, World of the spectacle (theater, plateau TV, ...), Surgical unit, Shop windows of shop, Etc. ...

4 - When lighting is intended for the beacons or for the decoration, the use of the sideglow fiber optics allows a bigger freedom and a reduction of the cost of maintenance. Examples : Facades of buildings, Casino, Fountains, Put in light of fountains, Ponds, Beacons, Etc. ...

5 - When the space prevents the installation of lamps.

The fiber optics can be slid in very small places.

Examples : Reduced, coffered ceiling, Medical sector, Etc. ...

6 - Everywhere unwanted light disrupts lighting.

The use of an illuminator not producing aggressive light for the enlightened objects is in great demand.

Example : Museum objects

7 - When it is necessary to have some flexible lighting.

The fiber optics is flexible.

Example : In all the places, the objects are not motionless.

It is finally possible to create a powerful illuminator able to enlight plastic pieces (PMMA) without degrading them. Plastic fiber optics of transmission will be perfect to drive light from the generator to lit places whereas the sideglow plastic fiber optics will allow creating linear lightings.

From an economic point of view, the powerful illuminator for plastic optical fibers seems to be promised to a big future.

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Deprived of competitors, it will allow to develop markets, today devoid of easy economic solutions of lighting maintenance. Our illuminator for plastic fiber optics can deliver 90 000 lumens at the head of fiber optics, for a source with an electric power of 1800 watts and a life time of 9000 hours. On the same concept, a range of devices is in the course of development for electric powers of sources being able to reach 12 000 watts.

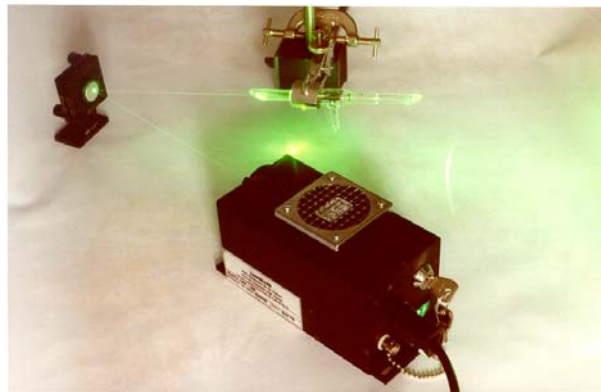
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COMPANIES

PRESENTATION OF LASERLABS

The creation of Laserlabs in July, 1997 is the logical result of the following observation: there are not in France a Manufacturer of lasers of low power and working in continuous.



Laser at 532 nm, green, continuous

Our offer will concern so mainly this opening but it is not very restrictive. The choice in wavelength does not stop extending with the arrival of new amplifier mediums: semiconductors, crystals, doped fibres. This variety allows already to adapt the laser to the use and not the opposite as it was often case, a crowd of new applications is now possible due to this progress. As manufacturer, Laserlabs wishes a real cooperation with his customers by adapting a standard laser to particular necessities or by developing a specific laser system in an application. This cooperation has to continue throughout the life of the laser by bringing you a successful service.

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In November 99, a contract for collaboration was signed with the laboratory of lasers physics of Villetaneuse to manufacture and to commercialize a complete system intended for the stabilization in frequency of lasers diodes. Some modules of this system can be used for other applications: ultra-weak noise current source, controller of temperature, digital synchronous detection, high tension amplifier...



Control system for laser diode: current and temperature control - high tension amplifier unit - synchronous digital detection unit. Application in the control and frequency control of one laser diode.

Other partnerships with laboratories and companies are in progress to manufacture and distribute new equipment.

If you have ideas, not the laser source, then to make an attempt, Laserlabs can propose, under certain conditions, to confirm a concept, various lasers (argon, He-Cad, He-ne, Nd:Yag @ 532 nm, diodes...). Do not so hesitate to inform us of your necessities, your ideas; we shall make our possible to bring you the best answer.

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NEWS

A new web site dedicated to the letter of Syzygies has been created at the address :

<http://www.syzygies.optique-fluide.org>.

In this new site, you can consult all the previous letters of Syzygies. If there is a subject you wish to see treated in this letter, you can directly contact us by email at the address:

redaction@syzygies.optique-fluide.org

The internet site of MEGALUX (<http://www.megalux.com>) was also updated and you can, now, consult, directly in line, all the documentations of the company as well as articles.

NEXT LETTER

The next Letter of Syzygies will appear during the autumn equinox, or from the end of September.