



BGB
INNOVATION

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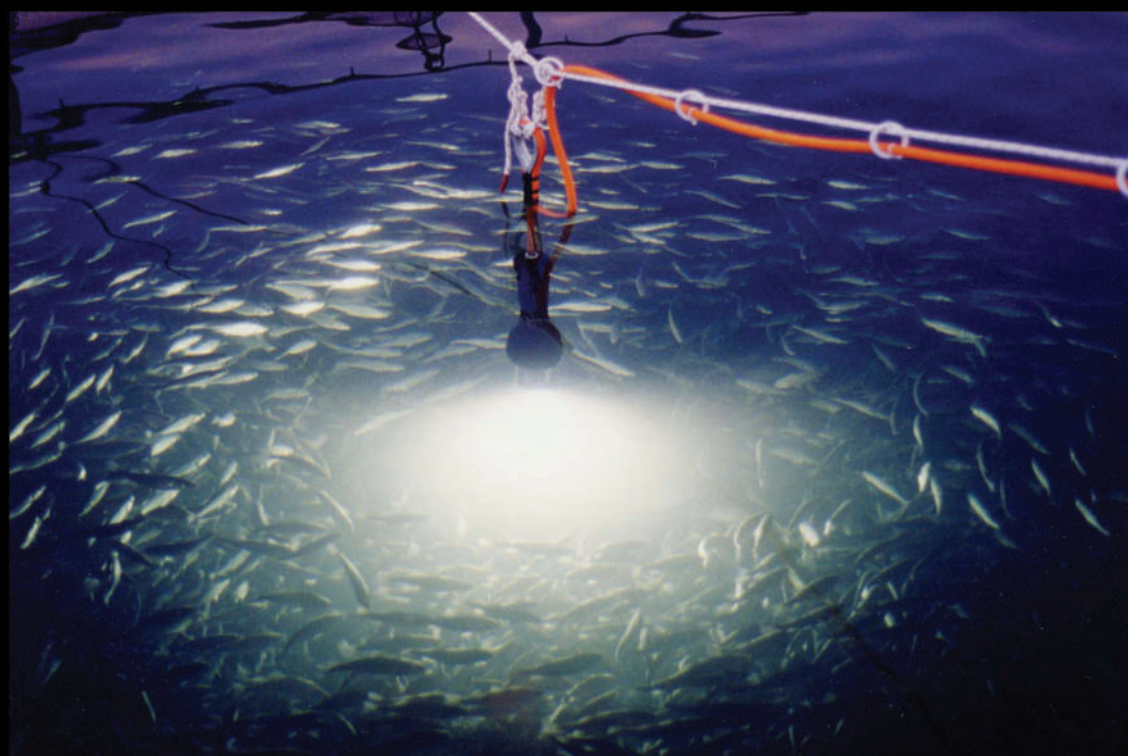
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BGB Marine
Underwater Light & Vision



BGB Innovation and BGB Marine are trading styles of BGB Engineering Ltd.
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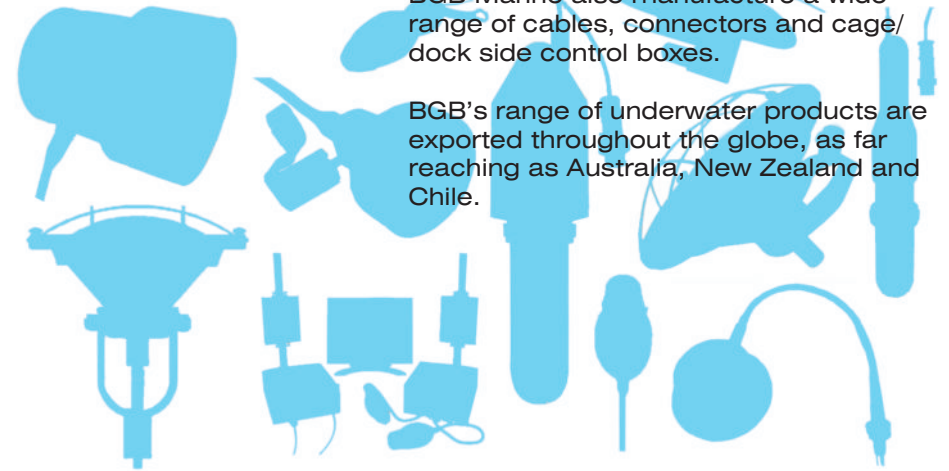
BGB MARINE

In 2004 BGB purchased the commercial interests of another Grantham company - Aquabeam Ltd, manufacturers of Aquaculture products. This acquisition expanded BGB's product portfolio into the field of underwater lighting and camera systems and created a new area of the company called BGB Marine.

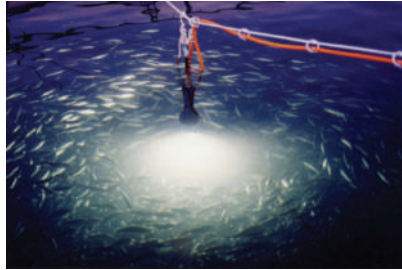
Primary applications include cage illuminators for photoperiod manipulation within fish farming, underwater lighting for the energy and water treatment industries, submerged transom lighting for yachts and a wireless Ethernet bridge system which enables high speed data or video links to be transmitted across distances of up to 20km with line of sight.

Alongside lighting and camera products, BGB Marine also manufacture a wide range of cables, connectors and cage/dock side control boxes.

BGB's range of underwater products are exported throughout the globe, as far reaching as Australia, New Zealand and Chile.



AQUACULTURE RANGE: Cage Lighting For Photoperiod Manipulation



PISCES RANGE

The fundamental role of the Pisces lights are to slow down the maturation process of the fish, whilst maintaining growth. In the afternoon or evening, the Pisces lights maintain daylight levels and expose the fish to a process called photoperiod manipulation.

Photoperiod manipulation allows for the fish to be put to sea at several times throughout the year instead of during the normal springtime.

The Pisces range of lights are designed for vertical suspension, with a lifting eye alongside the cable entry point.

PISCES 365 & 400

The Pisces 365 & 400 are submersible, pendant, fish cage illuminators with an outstanding record of reliability season after season.

The luminaire embodies either a 365 or 400 watt, metal halide lamp, offering an output closely resembling natural daylight. It is self contained, streamlined and corrosion proof.



* Full Technical specification available on BGB website: www.bgbmarine.com

AQUACULTURE RANGE: Cage Lighting For Photoperiod Manipulation

PISCES 1000

Like the Pisces 400, the Pisces 1000 is a submersible, pendant, fish cage illuminator.

The luminaire embodies a 1000 watt, metal halide lamp, perfect for large cages. The 1000 watt lamp gives up to 90,000 lumens of light output. No Pisces lights should ever be used out of water as over heating will occur if not submerged.

The power feed cable presents a polyurethane jacket that guards against corrosion and abrasion by fish stock.



NEW LIGHTWEIGHT PISCES 1000

The new lightweight Pisces 1000 has been designed to be light and easy to handle without losing any brightness.

All control gear is located in an accompanying cage side box allowing the luminaire to be easily maintained and movable without compromising the original Pisces 1000 robust design.



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AQUACULTURE RANGE: Floating Photoperiod Light for Tanks & Hatcheries



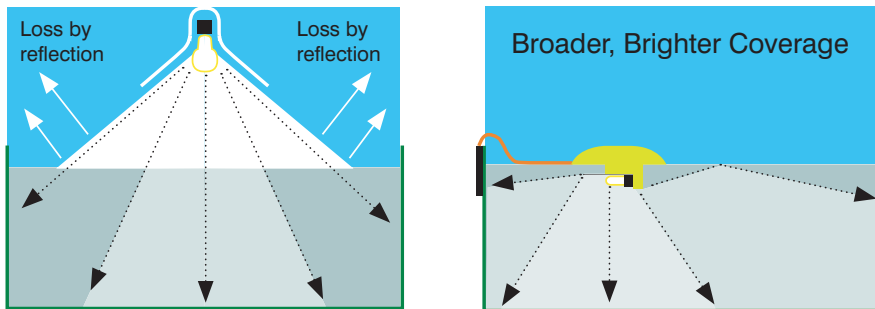
TURTLE

Developed in response to the requirement for an efficient photoperiod light for tanks, ponds and raceways, Turtle is an entirely self-contained floating unit, housing a highly efficient metal halide discharge lamp together with associated control gear.

The starter is safely enclosed within the unit, avoiding the hazard presented by systems that transmit high voltage ignition pulses, via inadequate cable and connectors, from a cage side mounted control pack to the underwater lamp.

Turtle's design makes use of the critical angle optical principle to minimise light escape, by using the water surface as a mirror (see illustration below).

The position of the discharge lamp, relative to the water surface, ensures that light cannot pass directly through the surface, providing the added benefit of easy stock observation.



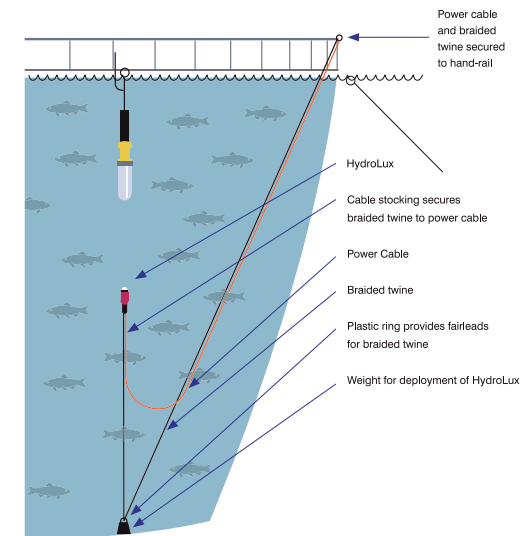
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AQUACULTURE RANGE: Submersible Photometer

HYDROLUX

An instrument developed specifically for the checking and monitoring of sub-surface light levels within fish cages and tanks. The buoyant sensor module is positioned with the aid of a shot weight, fitted with an eye, through which is passed a cord, attaching to the sensor.

The weight is lowered to the base of the cage or tank and the free end of the cord is used to raise and lower the sensor by drawing it towards the weight, or allowing it to approach the surface.



A purpose designed cable connects the sensor with an above surface, hand held meter. Meter read-out is in 'lux', allowing the comparison of readings with prescribed levels of illumination.

The sensor module and weight may be retrieved by hauling in from the free end of the cord.

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AQUACULTURE RANGE: Feed Response CCTV



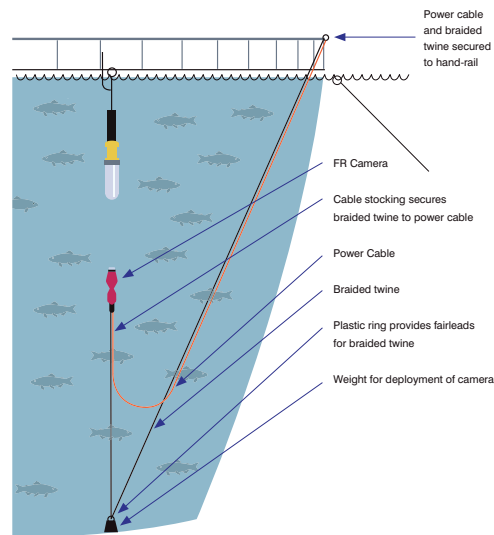
FR CAMERA

A compact and robust, underwater camera assembly for feed response and behavioural monitoring of fish stocks. The camera is designed for operation in low light conditions and housed for permanent immersion in sea water.

Feed response monitoring is achieved with the camera rendered positively buoyant by the attachment of a floatation collar, allowing its deployment to look vertically upward from a predetermined point beneath the feeding stock. The accumulation of debris on the camera viewport is minimised as a result of the housing.

The combined, camera power and signal cable is taken to the cage side, as shown and terminated in a connector for interface with the monitoring system. The cable is designed to resist abrasion and remains flexible in cold conditions. Like the camera it is designed for permanent immersion in sea water.

Camera monitoring systems are available and may be configured to suit individual requirements. Components include camera power supply units; picture monitors; signal amplifiers; automatic and manual, camera selector units and cable assemblies.



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AQUACULTURE RANGE: Wireless Ethernet Bridge

DIGILINC

Digilinc wireless ethernet bridge enables high speed data or video links to be transmitted across distances of up to 20km with line of sight.

The system eliminates the costs, disruptions and delays that the laying of hard wire provides. Incorporating 11 Mbps bandwidth and direct sequence spread spectrum technology, a frequency of 5.15 to 5.85Ghz provides powerful, reliable and secure transmissions in assorted weather circumstances.

Built around ethernet technology, Digilinc is very effective in providing a wireless local area network link between commercial and residential communities.



Digilinc supplies brilliant ease of use, including on-site survey tools for easy installation and trouble free maintenance. Partnered with a wealth of features including a built-in lightning protector and housed in a robust metal case for complete outdoor application, the system is unrivalled.

Digilinc can be configured to work in line with V.O.I.P., SKYPE and P.S.N.C. technologies.

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UNDERWATER LIGHTING - GENERAL: Nuclear & Water Treatment Industries

AQUALUX STAINLESS STEEL

Aqualux is a system of underwater lighting equipment based on a series of parabolic, aluminised, reflector (PAR) lamps designed for direct immersion.

A watertight power connector cap is bonded to the hard glass envelope, obviating potentially troublesome seals and facilitating easy lamp replacement. The mating connector is of a type employed in deep diving equipment and moulded directly to the power feed cable and the union is secured by a stainless steel locking sleeve. This technique is applied, as standard, to PAR 56 & 64 envelopes embodying 500 and 1,000 watt, long-life, tungsten-halogen capsules and may be used on special, discharge sources.

Protection of lamps and universal orientation is afforded by “free flooding”, stainless steel luminaires. These are relatively light in weight and provided with a bright, polished finish to facilitate decontamination.

Lamps must be fully immersed during operation. Water level switches are available for inclusion within power supply and control circuits to ensure that a minimum of 50mm (2 inches) of water is maintained above the lamps.

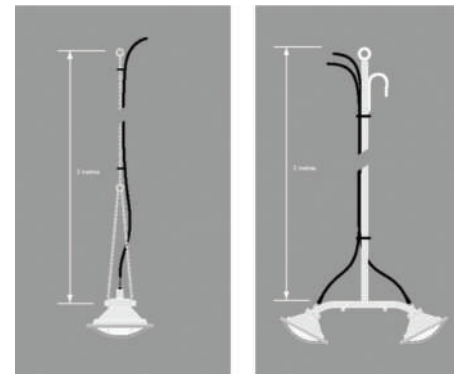


UNDERWATER LIGHTING - GENERAL: Aquatic Displays

AQUALUX BLACK SATIN

As with the Stainless Steel version of Aqualux, Aqualux Black Satin has “free flooding”, stainless steel luminaires. These are relatively light in weight and provided with a satin black finish, rendering the fixtures unobtrusive in daylight and when not operating.

Lamps are retained in fixtures by a bezel, secured with four captive, winged screws. No tools are required for lamp replacement. All standard lamps are designed for universal orientation and since beam patterns range from spot to wide flood, Aqualux may be applied to a broad spectrum of tasks. The longevity of lamps within the TH-120 range, renders the system of particular value in applications demanding low maintenance.



Suspension chain assemblies may be used for luminaires required to project vertically downward and the addition of a yoke assembly affords universal orientation. The latter may be mounted on a deployment pole, secured above the surface of the water for easy retrieval.

** Diagram shows ways to deploy Aqualux via chain or pole.*

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L.E.D LIGHTING: For Operation In Or Out Of Water

AMPHIBIAN

Amphibian is a robust underwater/out of water lighting system designed to withstand the full force of an active river.

The LEDs are purposely designed to provide changeable lifestyle mood lighting for aquatic displays and architectural features such as waterways, marinas, canals, rapids, jetties, ponds, fountains and swimming pools.



The Amphibian is available in a full colour range (RGB) or just white, and can be dimmed and controlled via an IR or IF remote control which is included with the unit.



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L.E.D LIGHTING: Hyperbaric Pressure Chamber Light Fixture With Helium Relief Valve

HYPERBARIC LIGHT

The Hyperbaric fixture has been designed for use within S.D and D.D hyperbaric chambers. The light gives the user a high output to heat ratio due to its use of an LED light source.

The toughened lens can be frosted for general use or an unfrosted lens and an extended bezel can be used for specific spot lighting or use as a bunk light.

The lamp housing is fitted with a pressure relief valve to combat post decompression explosion hazard which may arise from Helium ingress.

The luminaire is connected with an RMG-3-MP with a stainless steel locking sleeve. An inline switch for the control of the luminaire is also available as an optional extra.



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L.E.D LIGHTING: Diver's Head Light With Stay Put Friction Bracket



DIVER'S HEAD LIGHT

Using the latest LED technology, the diver's head light is a compact, robust but extremely bright luminaire.

The luminaire embodies three various Luxeon LED's; the world's brightest LED ranging from 1 watt to 4 watt, combined with various optics providing three different beam angles when immersed. The slim outer body is manufactured from aluminium and is hard anodised to provide a robust, corrosion proof finish.

Electrical connection is provided by a stainless steel penetrator, terminating in our RMG series deep dive connector range. Electrical connectors are protected by a stainless steel locking sleeve which creates an extremely robust connection.

The diver's head light can be supplied with an optional stay-put friction bracket. This allows the diver to position and re-position his helmet light with minimal effort. The universal helmet bracket is designed for fixing to the current Kirby Morgan range of helmets. However with minimal modification the light may be attached to most helmets and full face masks.

YACHT LIGHTING: Underwater Flood Lighting For Motor Yachts

AFTERBURNER

Afterburner is designed to be quickly retrofitted to a boat's transom with minimal technical facilities.

Afterburner is an affordable enhancement to any yacht. The light allows owners to have their yacht stand out from the rest by illuminating the stern (rear) of the craft and to give a light trail when in motion.

Developed to make full use of Xenon lighting technology, bezel design is optimised to provide an uninhibited impressive fantail of high quality light, whilst providing maximum protection for the lens.

The luminaire is quickly and easily removed and replaced from the mounting shoe for cleaning purposes. The mounting shoe is designed to position the luminaire at the optimum angle for the most impressive underwater lighting effect.

The unit is supplied as standard with a penetrator short lead and connector with locking sleeve.



CONNECTORS & CABLES:

RMG CONNECTORS



BGB's rubber moulded connectors have been manufactured and supplied to civilian and military markets for over 25 years. The RMG connector range is used to terminate both neoprene rubber and polyurethane jacketed cable, providing economic and reliable underwater connections for electrical services ranging between delicate electronic signals and mains voltage power feeds.

The RMG series of in-line, straight connectors is designed in keeping with the original specifications for these time-honoured and very popular, submersible cable terminations. Accordingly they are interchangeable, or will mate with those of other manufacturers which are built to the same standards.

BGB have retained "secondary sealing" at the interfaces of all contact pins and receptacles and very precise dimensions within the contact configurations.

The range includes dummy connectors and is completed by locking sleeves in stainless steel. Cables commonly used in aquaculture applications are normally kept in stock.

POWER CONTROL BOX: Standard Cage Side Control Box For Power Applications

CONTROL BOX

The cage side box is a simple, robust, cost effective and extremely safe way to provide power and signal to electrical appliances (this could consist of underwater lights, cameras, mains appliances etc).

Cage side boxes can be manufactured to a particular specification, although the BGB standard range is of 1, 2, 3 or 4 way combination units for providing power to our Pisces luminaires. The boxes are sealed to I.P66 allowing them to operate in brutal weather conditions for a prolonged period of time. Quick connection & disconnection plugs also make the boxes user friendly to install or isolate for maintenance. The unit also comes with a lockable front panel for added security.



The hardware of the boxes consists of an I.P66 receptacle (for power sockets each will need to be protected by a 30mA RCBO. This provides circuit protection and prevention against electrical shock). BGB can supply the boxes completely wired to the latest regulations or as a development kit for the user to wire the boxes independently.

Every receptacle on the cage side control box will be protected by the relevant 30mA RCBO unless the customer requires the box as a development kit (development kit is the control box without the internal wiring & RCBO's).

