



CASE STUDY METALSUB

INNOVATIVE DIVING LIGHTS THROUGH YEARS OF EXPERIENCE



Metalsub develops quick-release systems for scuba tanks, high performance dive lights and underwater lighting for recreational and professional users. From high-quality hand and cable lights to custom LED lights for mini submarines; Metalsub offers LED solutions that continue to perform under very high pressure.

MANY YEARS OF COLLABORATION

The partnership between Thal and Metalsub goes back to the early 2000's when Halogen and HID lighting was replaced by LED, and new challenges and issues arose. Metalsub was looking for a partner who could help them drive the LEDs and develop custom aluminum PCB's to help mitigate heat build-up issues. Over the successive years, the collaboration intensified and ideas and solutions were exchanged. This is how by working with Thal, Metalsub has succeeded

in continuously innovating and getting the most out of the diving lights. New techniques succeeded each other and light beams became more and more powerful.

“In the early days it was not possible to place a number of LEDs in a lamp and apply voltage to them. There were no drivers so we had to rely on resistors to distribute the voltage evenly. Thal helped us to develop our lamps and it instantly worked well between us. We were constantly looking for more powerful LEDs, so I always contacted Thal to find the most ideal solution together,” says Rob de Rijk, owner of Metalsub.



THERMAL CHALLENGES

Metalsub is the only Dutch company that produces diving lights with a background as a metalworking company. The company was founded when Rob and his colleague could not find good diving lights themselves. Developing a sturdy waterproof housing was therefore not a problem. However, there were some challenges in



terms of heat generation. The high power of the powerful LEDs and the compact housing caused a lot of heat build-up, especially when using the dive lights above water as well. That's thermal knowledge came in handy here. Thal develops custom made metal circuit boards specifically for Metalsub which - thanks to a very good contact with the lamp housing - can conduct the heat very efficiently. The lamps are now also equipped with a special thermal protection that switches the lamp off, or puts it in a low dim setting.



"As a small company it is often difficult to get the best and the right LEDs. So there is intensive cooperation."

Rob de Rijk
Owner



THE CABLE LIGHT.
LED OF THAL TECHNOLOGIES.

MATCHING LED POWER TO CAPACITY

Metalsub believes someone should be able to dive for at least an hour with the smallest lamp. In most cases the aim is for around 2 hours. In this way it is possible to do two full dives. Depending on the battery capacity that the diver can have with him, the LED power is adjusted to the supplied battery. 'With the average battery we sell you two hours of runtime,' says Rob.

CHANGING MARKET

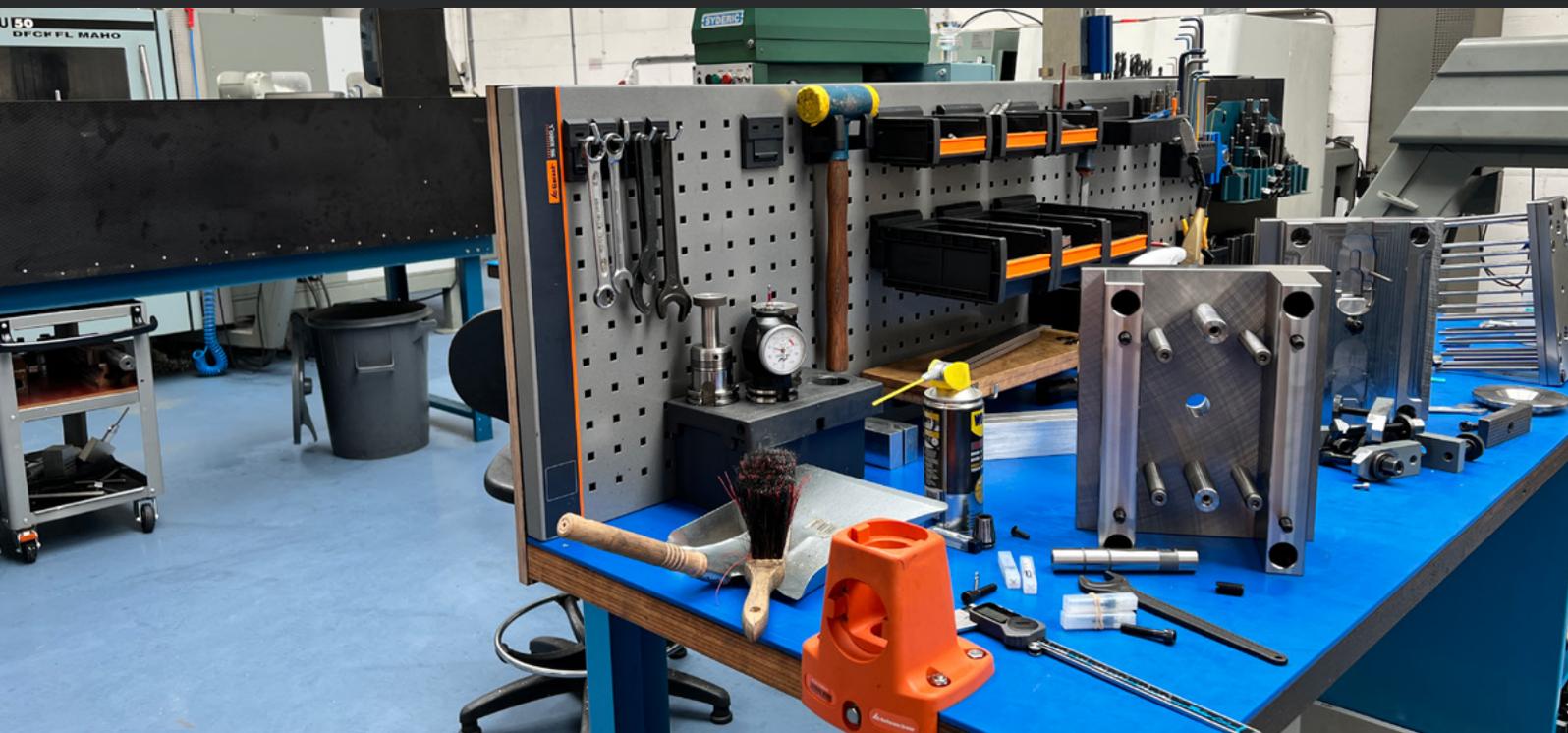
Meanwhile, the market for dive lights has changed significantly. Cheap Chinese lamps are available almost everywhere and the interest in diving is declining slightly. 'Metalsub has therefore chosen to produce

only exceptional lamps. 'Our new lamp is 120 watts and - in addition to being a diving lamp - is very suitable for underwater photography and film shooting.'

CUSTOMIZATION AND NEW PRODUCTS

In addition to an extensive portfolio of standard dive lights, Metalsub also develops professional custom solutions. From head lamps for the fire department and navy divers, to special lamps used at very great depths on mini submarines. These must therefore continue to operate under extreme high pressure.

When Metalsub develops a new product they meet with Thal to discuss it. Thal then takes care of the design of the PCB and the purchase of the right LEDs. The latter is also very important for Metalsub: 'As a small company it is often difficult to get the best and the right LEDs. So there is intensive cooperation. We also worked very closely with Thal on a special project for the Belgian Railways. The tender contained a specific requirement regarding the wavelength of two LED lamps. The development of this lamp ultimately took four years. Thal helped us a great deal with this'.



THIS IS THAL TECHNOLOGIES

Thal Technologies in Almere has been advising, designing, assembling and manufacturing for 20 years in the field of thermal management and LED lighting.

We supply heat-conducting materials for use in electronics. This makes Thal Technologies a specialist in solving heat problems. Cooling the hardware extends its life, prevents overheating and increases performance.



Thal Technologies also develops and produces customized industrial LED solutions. These high-quality LED modules can be found in horticulture, aviation, offshore and onshore wind turbines. Thal Technologies stands for quality. We guarantee this with our ISO certifications and with certifications that suit the various industries in which Thal Technologies is active. But also with extensive traceability of components and raw materials.



CHALLENGE US WITH YOUR PROJECT!



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