

# LIGHTperMETER's concept & technologies

## ADVANCED THERMAL MANAGEMENT



CooLED technology is a high performance LED cooling solution, designed for linear LED light modules. CooLED technology features a low profile fabricated from high grade extruded aluminium, which minimizes thermal resistance from the base to the fins. Once the heat enters the PCB, it is conducted to the backside for dissipation into the ambient for natural convection. The spread fin array maximizes the surface area for more effective convection (air) cooling and reduces LED temperatures by more than 50 %.

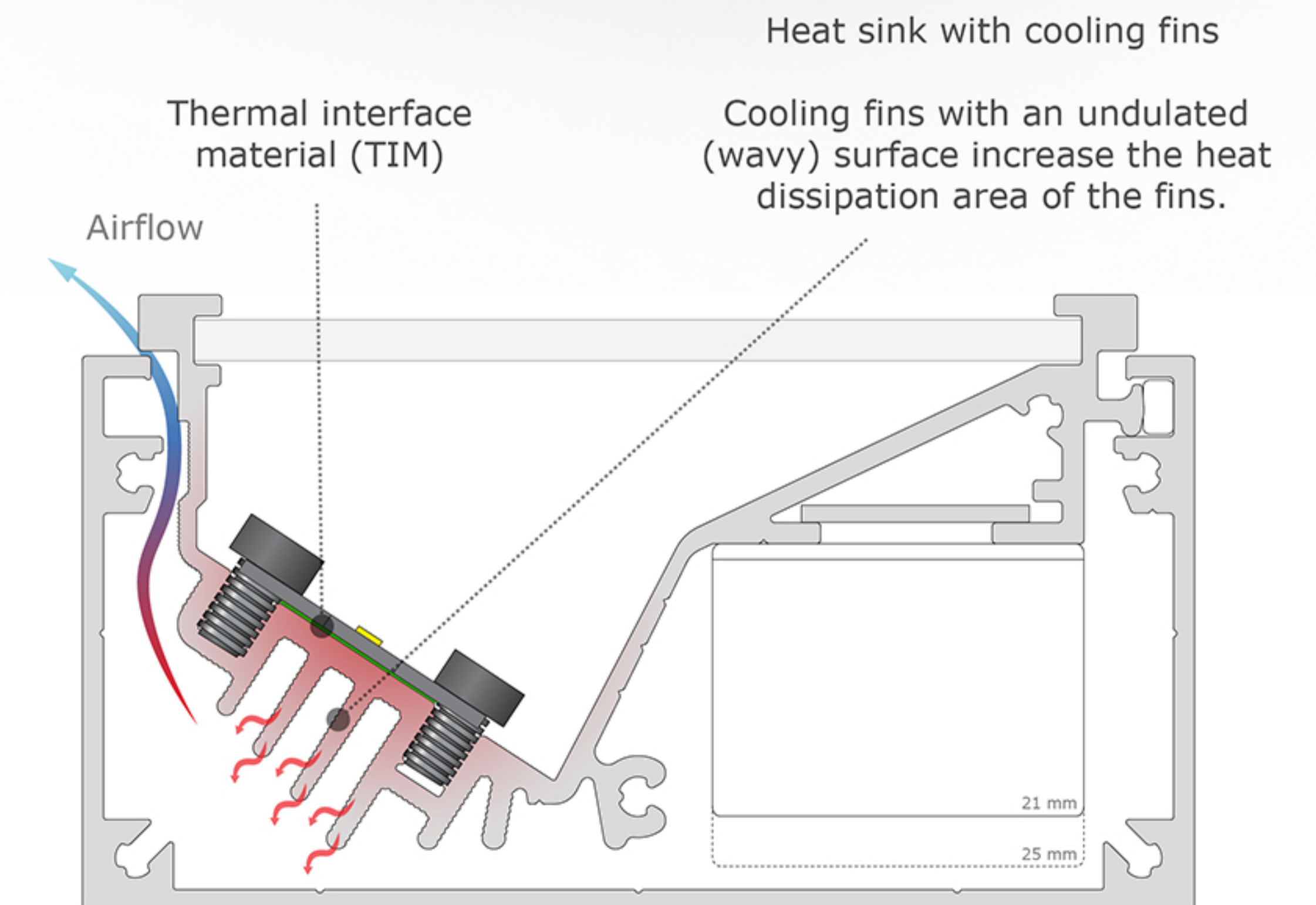
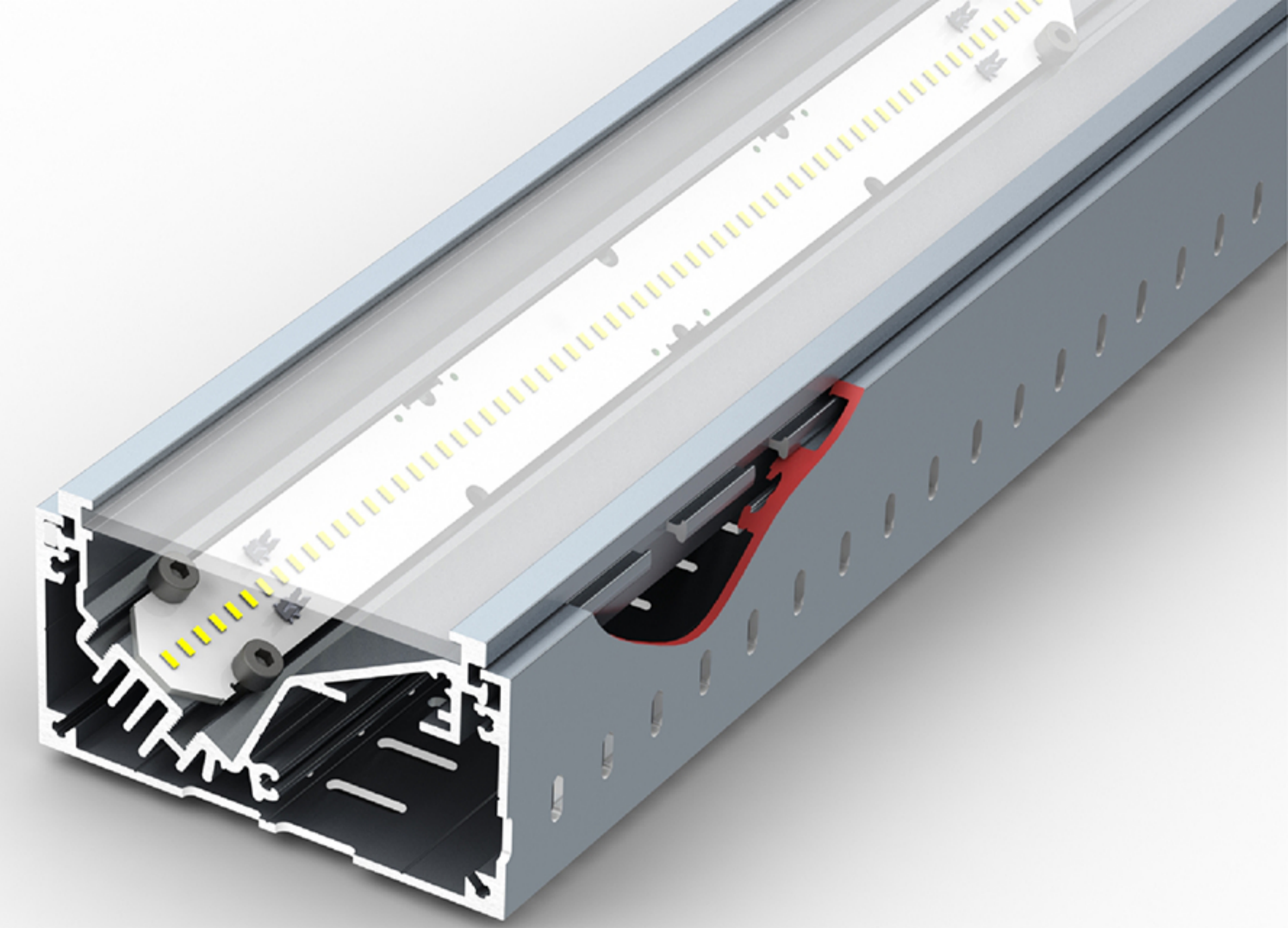
### Why does LED thermal management matter?

LEDs won't burn your hand like some light sources, but they produce heat. LEDs don't produce heat in the form of infra-red radiation, which makes incandescent bulbs hot to touch. The absence of IR radiation allows LED fixtures to be positioned in locations where heating from conventional sources could cause particular problems e.g. when illuminating food, textiles, ...

Because LEDs are semiconductor devices their light output is directly affected by temperature. However LEDs do produce heat at the semi-conductor junction within the device. Without very efficient thermal management and heat sinking this causes the junction temperature of the LED to rise, which changes the LED characteristics. Driving LEDs above their rated current causes the junction temperature to rise to levels where permanent damage may occur. Excess heat directly affects both short term and long term LED performance. The short-term effects are color shift and reduced light output. The long-term effect is accelerated lumen depreciation and thus diminished lifespan. Continuous operation at elevated temperatures dramatically accelerates lumen depreciation resulting in shortened useful life.

Therefore, as with most electronics, the fundamental limits of LED performance are determined by thermal management. In fact, thermal management is arguably the most important aspect of successful LED system design.

LIGHTperMETER understands the critical role fixtures play in the thermal management of the whole LED system and is offering several options depending on the lumen package of the LED light modules. When high levels of illumination are needed, the power dissipation will also be higher ( extra vents ). Therefore, the CooLED technology options must be carefully matched for optimum LED performance requirements.



(full size 1/1)