Why Hydra is suitable for metallurgical plants.

LED lighting for metallurgical plants has its specificity predetermined by the conditions of their operation. Let's take a closer look at these conditions and compare them with Hydra's parameters.

1. High temperature.

A distinctive feature of metal casting is the high temperature in the production premises. Unfortunately, this is the most aggravating factor for LED operation. The only weakness of the LEDs is that when they operate at high temperatures, they start to degrade much faster, then burn out completely. In addition, the luminaires are located just beneath the roof space where the temperature especially during the summer months exceeds 50 degrees. In order to avoid overheating of the LEDs and the power supply in Hydra luminaires, the following innovations have been made.

1.1. The housing is made of cast aluminum with heat-improving additives. The casting itself is a 500/500 mm square. and a mass of 10 kg. For the removal of heat from the casing are used needle ribs, which in the opinion of the experts have the best indicators in this area. By comparison, the largest Hi Bay standard LED luminaires are round 360mm in diameter. and a mass of 5 kg.

1.2. It is powered by the renowned German Osram manufacturer, which is specially designed to operate under severe operating conditions. It has a high IP 65 penetration free of dust and moisture, is completely flooded with heat-resistant resins allowing it to work at high temperatures and has a built-in protection that reduces the supply voltage to the luminaire when it reaches extremely high temperatures (up to 110 degrees). In addition, the power supply up to 200 watts has built-in protection from peaks up to 6 kV and can operate at voltage oscillations from 198 to 264 V.

1.3. LEDs are also produced by Osram and are of the Duris S5 series, which feature a larger housing allowing for better LED heat output and extremely high efficiency up to 175 lm / W.

1.4. The illuminated LED board is made of aluminum and has a thickness of 2 mm, which is twice as large as standard boards. The goal is to take up the initial temperature shock by running a high-power luminaire. In addition, the PCBs have a double copper content of 35 microns (as is the case with the standard boards used at 70 to 105 microns for the boards used in the Hydra luminaires).

1.5. Tempered glass. Hydra tempered glass used in luminaires is 4-5 mm thick. and is “Clear Vision”, which allows minimal light losses due to impurities.

1.6. Interlocking frames for tempered glass. With the high power of LED lights and a high degree of protection of the housing from dust and water, there is an increase in pressure inside the luminaire. This pressure may cause the tempered glass to burst and the luminaire to be

compromised. To avoid this, we have developed a system of frames that work as springs and at high pressure allow the glass to be lifted to release this pressure.
1.7. Seals. The seals we use are with Michelin additives, which allows to maintain their elasticity at very high temperatures.
1.8. Fasteners. All Hydra light fittings are made of stainless steel, allowing service of the luminaires and years of operation.
1.9. Optics. With the integrated optics developed by us, Hydra luminaires can also be used at heights of over 30 meters and at over 400 watts and for heights over 50 meters.
All these innovations are designed to maximize the lifetime of the luminaire when working in a severe environment. Our in-depth studies and experiments in a real environment have shown that Hydra luminaires with this housing can absorb up to 450 Watts of light output under normal operating conditions (ambient temperature up to 30 degrees). But to allow trouble-free operation of the luminaires in a temperature environment that often exceeds 60 degrees, we release the luminaire at no more than 220 watts of light output. In this way, we manage to keep the temperature below the maximum demanded by the LED and power manufacturer and to ensure the maximum lifetime of the luminaire. This is of course also facilitated by the large number of LEDs used, which, depending on the Hydra type and the specifics of operation, range from 252 to 936 units. This large number of LEDs allows 220 watts of power to pass through a much smaller current that not only does not heat them too much, but also reduces the glare from the luminaire (another serious problem with powerful lighting sources).
From 2016 we test our products in over 40 metallurgical plants across Europe. So far, we do not have illuminated defects despite the harsh conditions in which they work. Of the many positive reviews we have received so far, I will only quote one.
The HBIS Group Serbia Iron & Steel Metallurgical Plant in Mederovo decided to embellish our luminaires to put them in the worst places to work. One of the lights was placed on the crane under which the bucket in which the molten metal was poured from a furnace. After a year's work, we received a thank-you letter stating that the Hydra lamp was placed in the worst-case location because there was constant vibration when the crane was moving, and the ambient temperature when pouring the metal into the bucket reached 160 degrees. Nevertheless, our luminaire has been operating for more than 2 years, and no other LED has ever survived for more than 1 month before burning.
Due to the good knowledge of the Hydra luminaires we, as manufacturers, let us give 5 years a full guarantee of the luminaires we offer, as well as post-warranty service after the expiration of this period.