

## EYE ON COSTS FROM THE START

1

Rapidly increasing competitive pressure leads to machines having to be developed and built ever more cost-effectively. This guide helps you to keep an eye on all the important points for cost-optimised engineering of a luminaire system right from the start.



## FROM THE START - TOGETHER - !

2

Take time for a kick-off meeting to jointly agree on the following points. Each department has its own requirements for such a project. Defining the framework conditions right from the start brings certainty for all involved and thus leads to a successful project conclusion.



## SPECIFY IP PROTECTION CLASS

3

The IP protection classes can be a major price driver for a luminaire system. Therefore, it is important to determine at the beginning which requirements one has in this area. The protection classes should also not be set too high. It is not uncommon for high protection classes to be set out of "sheer habit", even though the environmental conditions would not require this.

IP44

IP67

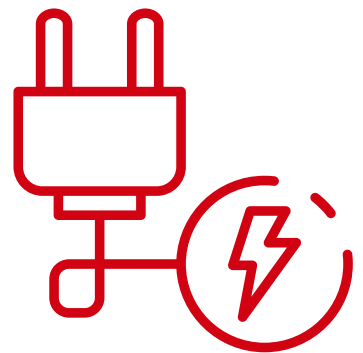
IP69K



## WHICH OPERATING VOLTAGE?

4

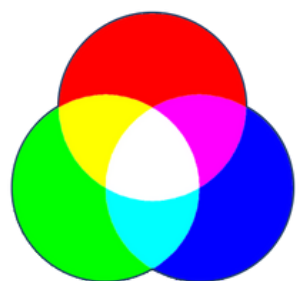
24V or 230 V, the question should be resolved from the start. Most systems in the field of LED machine lighting are designed for an operating voltage of 24V. However, a voltage of 230V can also be relevant; this depends entirely on the framework conditions that you define in your electrical installation. Specify this at an early stage. A subsequent change is often not possible.



## LIGHT COLOUR AND COLOUR FIDELITY

5

Light colour as well as colour fidelity are important decision criteria for optimum illumination in your machine. Light colours between 5700 and 6500 kelvin have become the standard. This puts you in a range that is always close to daylight white. The colour fidelity value should be Ra / CRI ≥ 80 to guarantee natural colour rendering.



## PERFORMANCE VS. ILLUMINANCE

# 6

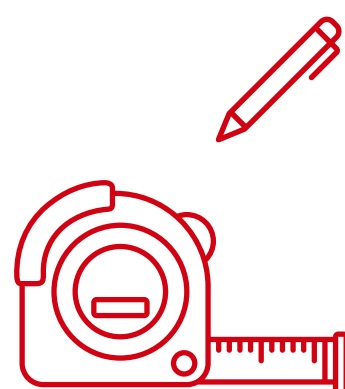
Wattage values only provide a rough guide. The decisive factor, however, is the actual illuminance of a machine luminaire. Many manufacturers designate "E-medium" and "E-max" as guideline values. These values result from a simulated laboratory measurement. Here, an area of 100cm x 100cm is illuminated. The luminaire hangs at a height of 100cm.



## HOW MUCH SPACE IS NEEDED?

# 7

A crucial question which should be considered from the beginning. Depending on the desired illuminance, the housing sizes vary in the range of several 100 millimetres. Thus, sufficient space should be planned for the luminaire in the machine design. Our experience has shown that subsequent changes may lead to considerable additional costs in machine development.



## MOUNTING OPTIONS

# 8

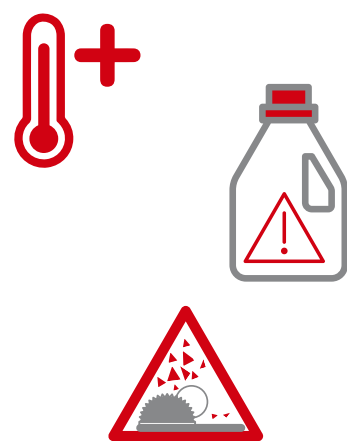
This is also a crucial question and has even led to some development phases being prolonged involuntarily. From the very beginning, make sure that the mounting options of the luminaire match your machine design. Subsequent changes or even the forced selection of a different type can quickly lead to considerable additional costs.



## ENVIRONMENTAL CONDITIONS

# 9

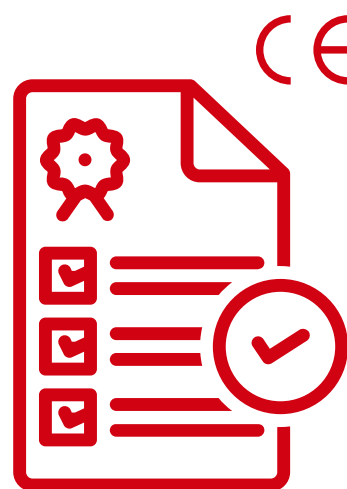
High or low temperatures, hot flying shavings or aggressive cleaning agents are just some of the points you should consider when selecting the materials used for a luminaire. The harsher the environments, the more resilient the housing material and the luminaire cover should be. In case of doubt, seek support from the manufacturers at an early stage.



## STANDARDS AND APPROVALS

# 10

The international mechanical engineering market has a wide variety of requirements for the regulations to be observed in each country. UL, CSA or special approvals in the food & beverage sector should play a central role in the selection of the machine luminaire.



## DO YOU HAVE ANY QUESTIONS?

I hope the guide will help you to complete your next project even more successfully.

If you have any further questions, feel free to contact me by phone, email or LinkedIn.

I look forward to hearing from you!



+49 521 911 75 - 67



[a.sangel@sangel.com](mailto:a.sangel@sangel.com)



