LIGHTING SOLUTIONS

LED Optics

Creating Lighting Perfection

LED Optics

Bundling, Shaping and Directing Light

Optics design is one of the core competencies within the field of LED light development. Precise optics enable efficient implementation of application-specific light distributions.

We develop and produce a variety of LED optics for shops, offices, industrial plants and street lighting. As a result, you can choose among different optics shapes (circular, square, linear), all of which are made using high-quality materials (e.g. PMMA, silicone) and are available with any number of different radiation angles (narrow/broad beam, asymmetrical or combinations).

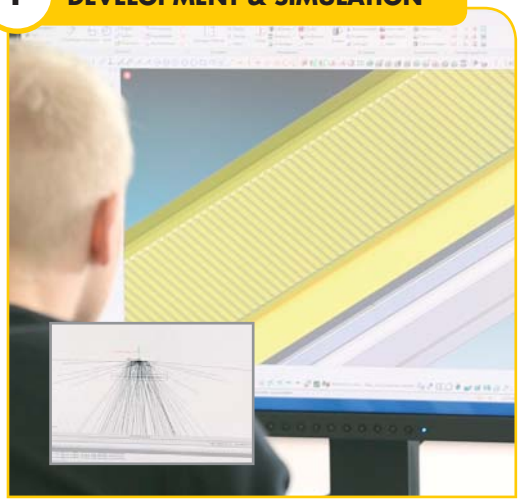
Thanks to a brand-new injection moulding process, we are now capable of manufacturing three-dimensional optics of up to 2 metres in length.

Our bespoke optics design service lets you bring your own personal light characteristics to life.

Optics create lighting perfection.

- **PRECISE LIGHT DISTRIBUTION**
- **INDIVIDUAL FREEDOM OF DESIGN**
- **FLEXIBLE THREE-DIMENSIONAL OPTICAL STRUCTURES**

1 DEVELOPMENT & SIMULATION



In our R&D departments, we design individual LED optics for lighting technology. Optical simulations as well as copious experience in devising technical components for injection moulding systems are among our core competencies when it comes to R&D for LED optics. Thanks to the creation of our own STL models and tool prototypes, the results of our development work can be assessed using near-mass producible models and put to an application test at the customer's premises. In consequence, any problems can already be eliminated during the drafting stage. This ultimately ensures products are manufactured with which optimum lighting results can be achieved.

We not only develop standard products, but above all individualised, bespoke solutions for our customers. In this context, your requirements form the starting point for our developmental work. This not only allows design work to proceed on the basis of precisely defined requirements, but also makes it possible to draw up concrete functional specifications, including all individual steps, based on one of your product ideas.

2 TOOL DESIGN & PRODUCTION

Tool development for optics demands a high degree of experience and precision. VS has honed this competence on the basis of designing and manufacturing its own tooling over many years and offers this competence as a valuable resource to leading companies on the lighting technology market.

Thanks to state-of-the-art machinery, our tool production assembly line is not only highly efficient, but nearly fully automated. The components needed for injection moulds are produced around the clock – and all with the highest possible precision. Final assembly of the individual pre-tested components to form high-quality and reliable tooling solutions then concludes the process.

Production-compliant optics design, dimensioning and manufacturing requisite tooling, simulating the injection moulding process, producing the final products and ensuring their ultimate installation: all of these factors mean you benefit from extremely durable, high-quality tools with which individual components or entire systems can be produced.

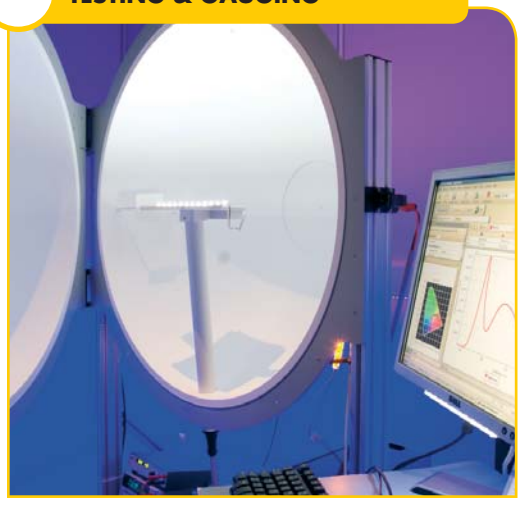
3 PRODUCTION

Our automated, state-of-the-art injection moulding production line forms the basis for manufacturing optical componentry. Most photometric optics are produced using either poly(methyl) methacrylate (PMMA) or polycarbonate (PC). These top-quality materials also demand flawless processing.

Using the so-called exjection method – a new combination of extrusion and injection processes – we can now manufacture optics of up to 2 m in length and with several photometric degrees of freedom.

We attach great importance to delivering only products of the highest quality. The quality assurance measures that flank our production processes, such as dimensional testing and optical controls with documentation via our CAQ system, go to ensure this high quality standard can be upheld at all times.

4 TESTING & GAUGING



All requisite photometric gauging is carried out in our own Light Testing Laboratory. All photo-, colori- and radiometric parameters can further be determined using our cutting-edge equipment. Whereas the precise directional characteristics of individual LEDs or of LED light modules with a diameter of up to 350 mm can be quantified with the help of two goniometers, an integrating sphere (CIE 127) is used for optical characterisation purposes. This integrating sphere permits quick and precise measurement of the optical power and luminous flux emitted by different light sources.

Heat-related measurements are not only carried out using classic thermal probes, but also using the transient testing method (MiReD®) for resolving the individual thermal transfers. This method permits individual layers to be tested and optimised in a targeted manner. An IR camera is used for hotspot measurements. This thermal imaging camera serves to visualise heat paths on the basis of measurements resolved over time.

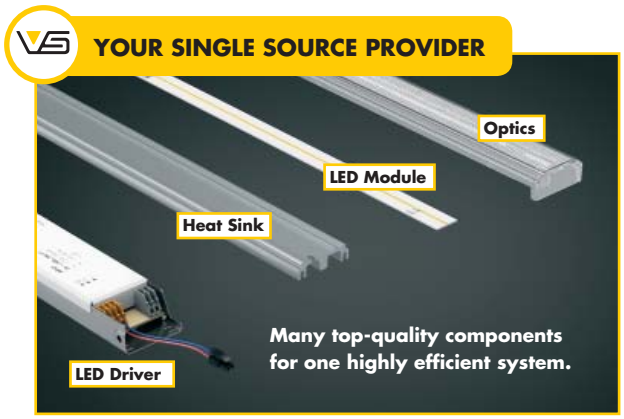
THE SOLUTION CONCEPT

Our solution concept – consisting of an LED driver + LED module + heat sink + optics, all from a single source – means you benefit from perfectly matched individual components and, as a result, from the highest possible efficiency. Regardless of the system component, we are your sole contact partner and can at all times provide you with any information you may need as well as comprehensive warranty cover and the best solution for indoor and outdoor use.

But our known-how is also at your disposal in specialist areas. In this context, individual core competencies include optics design or tooling development and our bespoke optics production service. All of our services and competencies can also be made available on an individual basis.

HIGH QUALITY STANDARD – COMPREHENSIVE WARRANTY COVER

A seamless quality management system – from the procurement of raw materials right up to the final product – forms the basis for our VS warranty. We firmly believe in our products – to your long-term benefit.



Whenever an electric light goes on around the world, Vossloh-Schwabe is likely to have made a key contribution to ensuring that everything works at the flick of a switch.

Headquartered in Germany, Vossloh-Schwabe has been a member of the global Panasonic group since 2002 and counts as a technology leader within the lighting sector. Top-quality, highperformance products form the basis of the company's success.

Vossloh-Schwabe's extensive product portfolio covers all lighting components: LED systems with matching control gear units and state-of-the-art control systems (LiCS) as well as electronic and magnetic ballasts and lampholders.

A member of the Panasonic group Panasonic

Vossloh-Schwabe Deutschland GmbH

Hohe Steinert 8 · 58509 Lüdenscheid · Germany
Phone +49 23 51/10 10 · Fax +49 23 51/10 12 17
www.vossloh-schwabe.com

LIGHTING SOLUTIONS

LED Optics EN 05/2015