

With EVIYOS® 2.0, ams OSRAM offers the benchmark for intelligent HD headlight solutions with 19,200 to 25,600 individually controllable pixels.

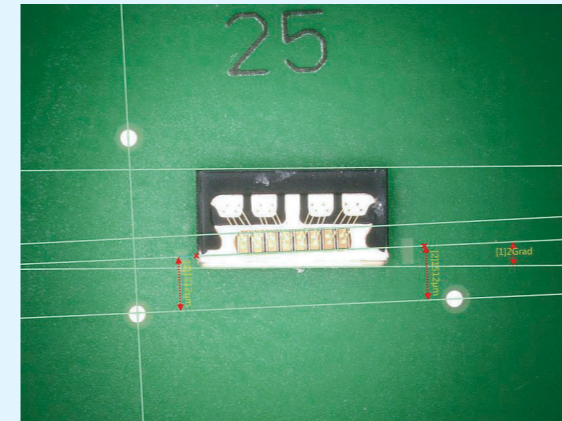
## Optical centering of LEDs

To ensure the best possible light output, high-power LEDs for vehicle headlights must be placed with great precision based on electrical as well as optical criteria. Placement machines from ASMPT can execute this exact alignment of LEDs, thus meeting the strict requirements of the automobile industry.

Normally, it is sufficient for SMT components to hit the intended contact surfaces during the placement process in accordance with applicable specifications by using the etched or lasered fiducials on the circuit board as reference points. For optically active components like LEDs, however, this method does not work because the decisive reference point for placing such complex systems is not the center of the entire LED component, but only that of the LED chip (i.e., the optical center point). Accordingly, high-power LEDs must be positioned based on the center or one edge of the light-emitting surface. This must be done in concert with other features, such as holes on the PCB into which the optics will later be inserted in order to properly focus the light generated by the LED. This special type of precision placement is referred to as LED centering, where each component must be measured individually as even



The SIPLACE SX placement platform delivers maximum precision even with the most demanding components such as LEDs.



Light Detection and Ranging (Lidar)

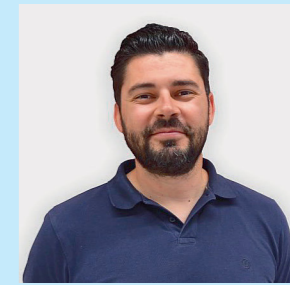
the smallest manufacturing variances can lead to an unusable product.

### Precise offset determination

The LED alignment is carried out via a multi-stage measuring process. After one or more LEDs have been picked up from the tape by the placement head in collect-and-place mode, they are measured by the head camera based on features on the underside of each component. Next, they are placed individually onto the glass plate of the LED centering camera, which measures the underside of the component. The top is then measured by the circuit board camera. The system uses both of these values to determine the respective offset between top and bottom. Next, the component is picked up again by the placement head and measured once more with the head camera. This step is necessary because it is a new pickup process, which means that the position on the gripper or nozzle must be recalculated. The result of this final measurement is then added to the previously determined offset.

After this series of measurements, the LED can be positioned with absolute precision in accordance with the optical specifications. As long as there is sufficient space on the underside of the component, it is advisable to hold it in place with an adhesive dot using an external dispenser or Glue Feeder in order to preserve the high-precision alignment during the soldering process.

Used in conjunction with the SIPLACE Glue Feeder and the extremely fast and precise CP20 placement head, the flexible SIPLACE SX from ASMPT, the innovation and market leader in the SMT equipment field, forms the basis for high-precision LED centering in high-volume electronics production.



### CONTACT

Michael Schimpf holds a degree in Process and Environmental Engineering from the HTWG University in Konstanz, Germany. He joined ASMPT in 2017, first as application engineer, then solutions marketing manager, and now technology scout and product manager. Expertise and passion for innovation characterize his versatile professional development.

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### COMPANY PROFILE **ASMPT** enabling the digital world

The mission of the SMT Solutions segment within ASMPT is to implement and support the Integrated Smart Factory at electronics manufacturers worldwide. ASMPT solutions support the networking, automation and optimization of central workflows with hardware, software and services that enable electronics manufacturers to transition to the Integrated Smart Factory in stages and enjoy dramatic improvements in productivity, flexibility and quality. With its integrated "Open Automation" concept, ASMPT opens the door for its customers to economically feasible automation, entirely in accordance with their individual requirements – modular, flexible, and vendor-independent.

The product range includes hardware and software such as SIPLACE placement solutions, DEK printing solutions, inspection and storage solutions, and the Smart Shop Floor Management Suite WORKS.

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