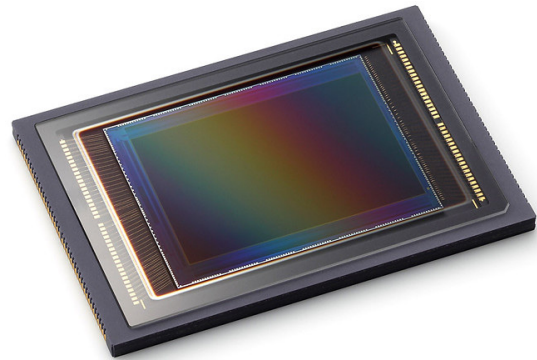


# CMOS Sensor UV Curing

## CMOS Image Sensor Application

As the global technology trends of Artificial Intelligence and the Internet of Things are developing, the application of CMOS (Complementary metal-oxide-semiconductor) Image Sensors has been extended from traditional camera market, such as digital cameras and smart phone lenses, to innovative fields such as image recognition, biometrics system and 3D stereoscopic imaging etc. CMOS Image Sensors are also widely applied to high value-added industries such as automotive, security, and medical.

Among these industries, automotive industry is the most potential market to CMOS Image Sensor because consumers demands higher driving safety. Products that can improve driving safety such as collision sensors, identity recognition systems, parking sensors, driver drowsiness detection, night vision assist system and blind angle monitoring system are all expected applications of CMOS Image Sensors. The development of autonomous vehicles is expected to increase the proportion of CMOS Image Sensors used in the automotive industry in the future.



*CMOS Image Sensor*

In order to adapt to the harsh environment while driving, for example, dust, moisture and extreme temperatures, the core sensor of the CMOS Image Sensor needs to be packaged and protected by glass. UV glue which features excellent weather resistance, high adhesion strength and anti-yellowing is the most suitable adhesive in the packaging process. However, in the high energy required UV curing process, UV glue tends to inflate and deteriorate due to the 70°C or higher temperature emitted by the electrode type UV light bulbs, which results in defective products of the CMOS Image Sensor.

## Curing Problem

In the UV curing process, conventional electrode UV curing equipment needs to reduce the production speed because of its lower energy, and leads to a reduction in productivity. In addition, the waste heat generated by the electrode light bulbs, even after water cooling and air-cooling processes, still has high temperature between 65°C to 70°C, which easily causes the UV glue to inflate and deteriorate. For instance, in a case of Norda's customer, before the conventional electrode equipment were eliminated, the defect rate of CMOS Image Sensor production is about 5%.

# SuperCool UV Curing System

## Norda Solution

Norda SuperCool UV curing system integrates with Nordson CoolWave II microwave UV curing equipment, and has air-cooling system and aero dynamic structural design. SuperCool is able to maintain the temperature below 55°C while reaching UVA energy output of 13.5 J/cm<sup>2</sup>; eliminates the product deficiency problem caused by high temperature, and reduces the defect rate from 5% to 1% when producing CMOS Image Sensor.



## Comparison with Electrode UV Curing System

	Norda Supercool Microwave UV	Standard Electrode UV
UV Working Theory	Energize UV bulb with microwave	Energize UV bulb with electricity
Power	Maximum 13.5J/cm <sup>2</sup>	Lower UV energy using the same electricity
Production Temperature	Below 55°C	65-70°C
IR Heat	Through microwave and reflector design, IR heat is less by 30~50% comparing to electrode UV	More heat from IR, higher operating temperature
Bulb Lifetime	6000~8,000 hours	1,000~1,200 hours
Bulb Energy Output	Consistent energy output through the lamp	Uneven energy; two ends are lower than middle.

**NORDA** 諾達股份有限公司 Norda Co., Ltd.

### Taoyuan Headquarter

No. 492-14, 6F, Section 1, Wanshou Rd,  
Guishan District, Taoyuan City, 33350  
TEL : +886-2-82097066  
FAX : +886-2-82097022

### Taichung Office

No. 1388, Zhongke Rd, Xitun District,  
Taichung City, 40763  
TEL : +886-4-24510093  
FAX : +886-4-24525302

### Tainan Office

No. 86-13B, Section 6, Antong Rd,  
Annan District, Tainan City, 70970  
TEL : +886-6-2477916  
FAX : +886-6-2477906

### Dongguan (China) Office

4F, C9-10, Huihuang Building,  
Dongcheng M. RD, Dongguan,  
Guangdong, China, 523000  
TEL : +86-769-22508769  
FAX : +86-769-22389407

[www.norda.com.tw](http://www.norda.com.tw)  
EMAIL : [Info@norda.com.tw](mailto:Info@norda.com.tw)

