



# LED from 3<sup>rd</sup> party suppliers

## October 2011

Dear HAAG-STREIT Distributor,

We have seen a rapid increase in acceptance of our LED range of slit lamps with many distributors reporting that their customers are extremely pleased with this new and dedicated illumination system. We have also received several questions from end users and distributors regarding the range of LED 'bulbs' that are offered by some manufacturers. This letter provides further information and evidence to show that the use of these bulbs do not provide the quality of illumination required for good slit lamp examination and in some cases could prove dangerous to both patient and doctor.

In May 2010 we informed you about the Vivid Light LED from IntraVista Medical Systems Inc. The information clearly stated that use of this bulb will invalidate the HAAG-STREIT warranty and therefore we cannot give any guarantees on slit lamps that use or have used this bulb.

More recently the Turkish supplier Optogroup claims to provide an LED upgrade for the HAAG-STREIT slit lamps. We have thoroughly tested this bulb and now inform you that it does not meet the HAAG-STREIT standard. We also doubt that the LED from Optogroup meets the ISO 15004-2:2007 or ISO 10939:2007 standards.



The only illumination sources authorised by HAAG-STREIT are tungsten or halogen bulbs which bear the HAAG-STREIT logo as well as our proprietary LED illumination.

Our tests highlighted the following issues:

- **CRITICAL:** The brightness regulation of Optogroup's LED source is not limited and due to this, injuries to both patient's and doctor's eyes may be possible.
- **CRITICAL:** This LED emits high levels of blue light at 453 nm and prolonged exposure could cause phototoxic damage to the retina of both patient and operator.
- The high levels of blue will make the slit lamp seem very bright to patients and examination may be very difficult.
- The colour temperature is significantly different to authorised HAAG-STREIT illumination. Using such bulbs increases the risk of missing important pathology.
- The LED is not centred: eccentricity results in shadowing and diffusing and will lower the performance of the slit lamp.



Figure 1: HS Tungsten illumination



Figure 2: HS LED illumination



Figure 3: LED by Optogroup



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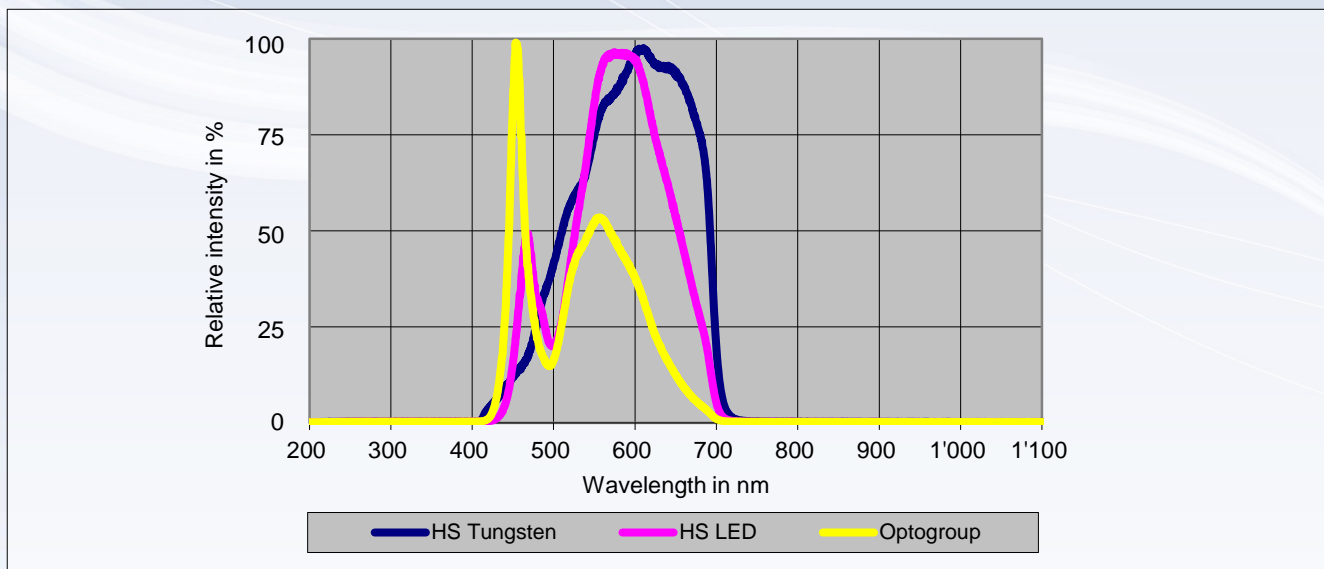


Figure 4: Emission curves from different light sources demonstrate the high levels of blue with 3<sup>rd</sup> party components.

HAAG-STREIT AG is a leading manufacturer and distributor of ophthalmic instruments. HAAG-STREIT will assure that only the best components are used in manufacture and that all instruments are thoroughly tested according to ISO 15004-2:2007 and ISO 10939:2007 standard.

With respect to the light toxicity HAAG-STREIT provides the following information for their illumination:

- After 2 minutes and 24 seconds at full illumination the maximum permissible illumination is reached with HAAG-STREIT LED light source
- After 2 minutes and 30 seconds at full illumination the maximum permissible illumination is reached with HAAG-STREIT tungsten light source.
- All original HAAG-STREIT slit lamps are protected with a double independent secure system against damaging light from infra-red or ultra-violet wavelengths. HAAG-STREIT illumination sources emit very little UV and IR and 100% absorbing UV and IR filters are installed in the light path.
- The illumination level received by the examiner is measured at 1/700 of that received by the patient. This is classified as very low risk.
- The precisely centred LED from HAAG-STREIT AG guarantees safe and homogenous illumination and therefore provides the optimum illumination for accurate clinical diagnosis and documentation.

We would be very grateful, if you could inform your staff and customers on these facts.

Kind Regards  
Your Marketing-Team