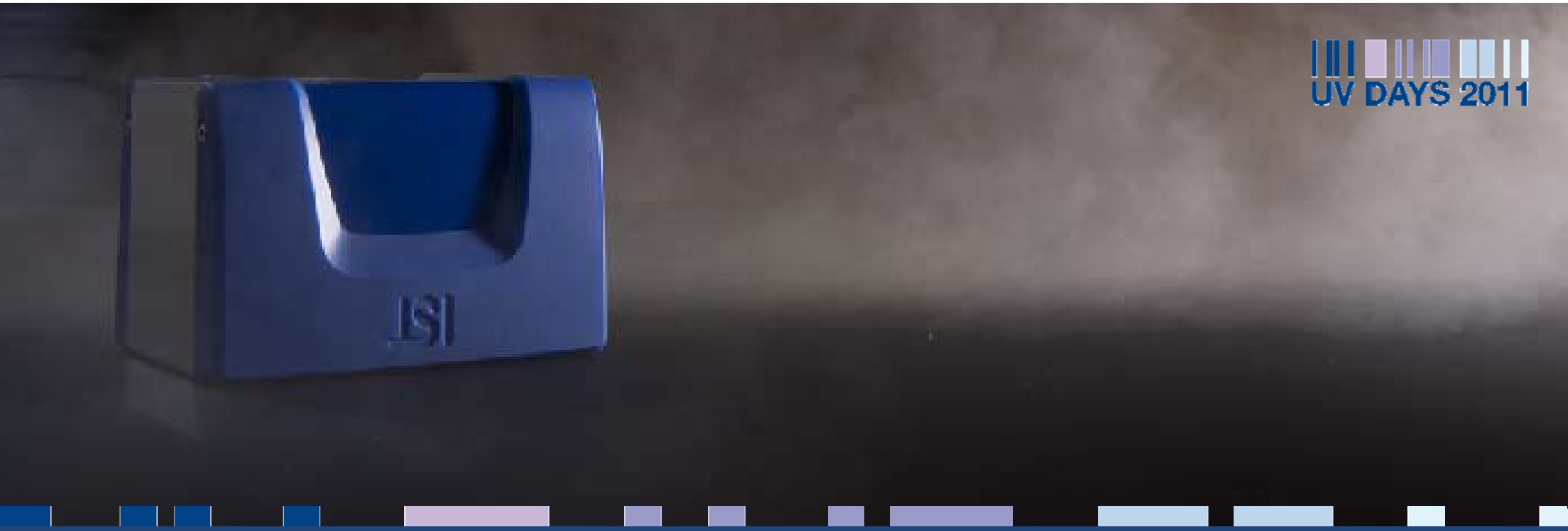
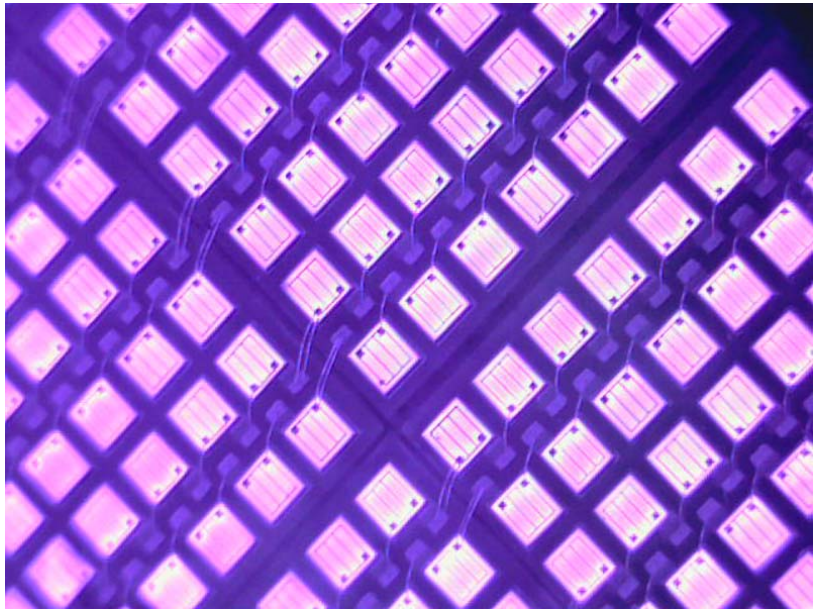


LUV® – The high power UV-LED-system of IST METZ

Oliver Starzmann
UV DAYS 16.-19.05.2011

IST® METZ HOLDING
more than UV

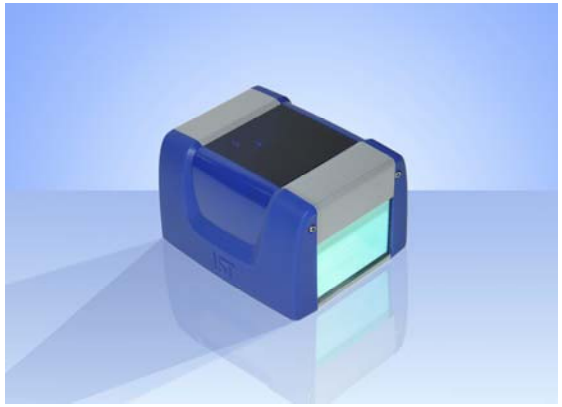
UV-LED



- Advantage UV / UV-LED
- Product presentation LUV®
- Outlook

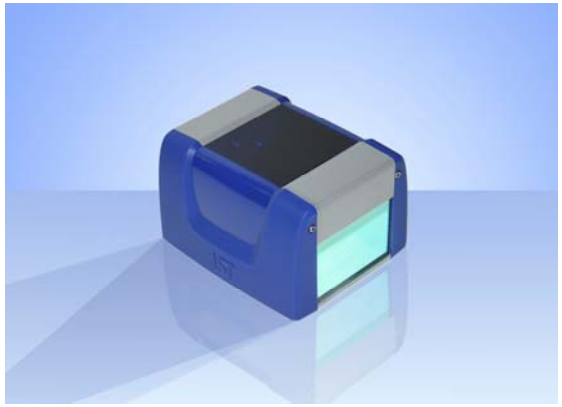
What makes UV-LED attractiv

- Pure and cold UV-light. Therefore reduction of temperature load at substrate and machine surrounding.
- Suited for cycle process. UV-LED‘s can be switched on and off immediately.
- Format-variable: Several elements of the UV-LED-system can be switched on and off in a format-variable manner.
- Energy efficient technology with energy saving potential by immediate ready for operation, immediate switching on-off in production breaks, format-variable adaption of the LED to the product size, as great dimming range of UV-LED‘s lamp power.

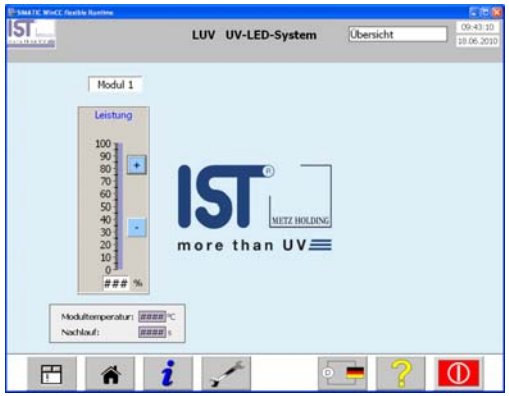


What makes UV-LED attractiv

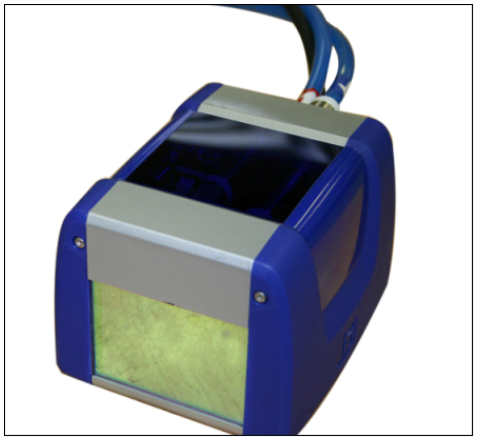
- **Environmentally friendly: UV-LED‘s contain no mercury, creates no ozone and emit only UVA-light.**
- **Long lifetime of UV-LED’s.**
- **Compact size through water-cooling and therefore no need for exhaust air lines.**



Product presentation LUV® (Example)



Screen at computer



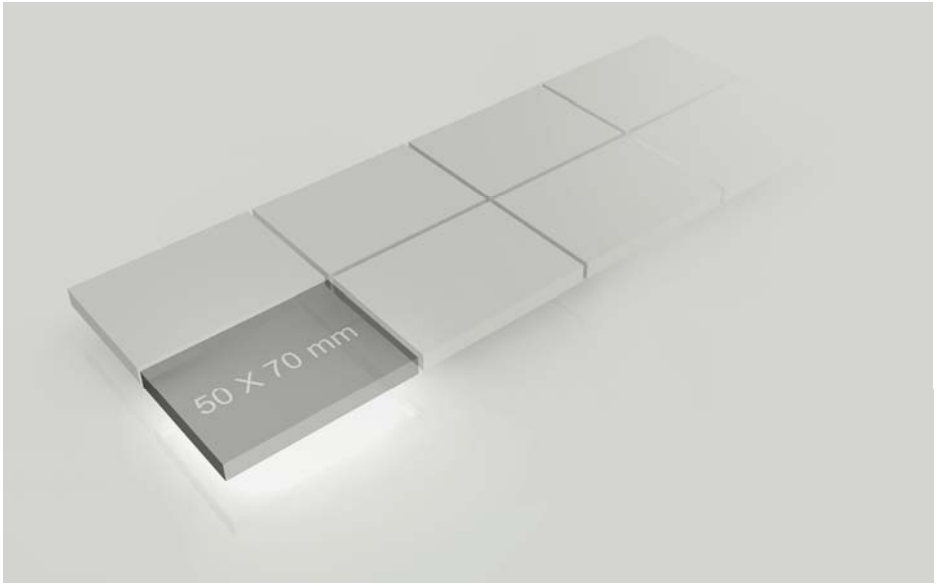
LUV®-Modul

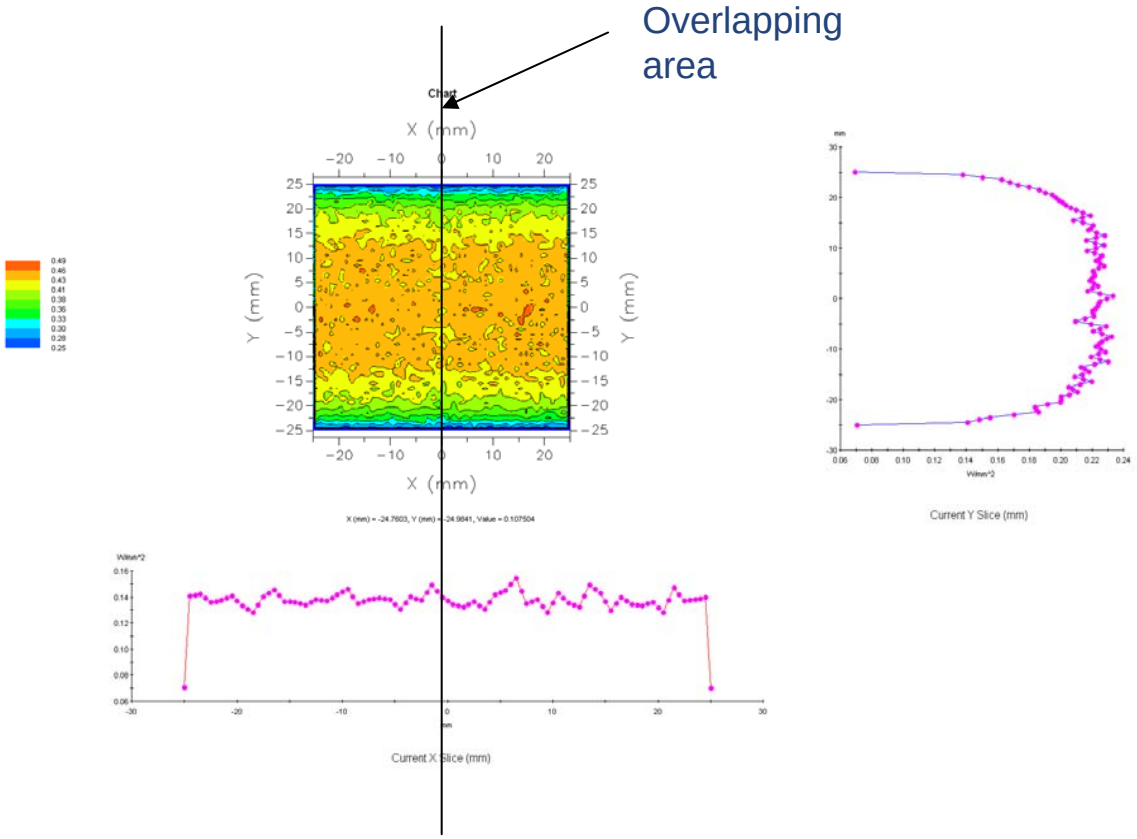
Switch and control cabinet
400 x 200 x 600 mm

Water chiller 710 x 525 x 425 mm

Concept LUV®-Modul - Modularity

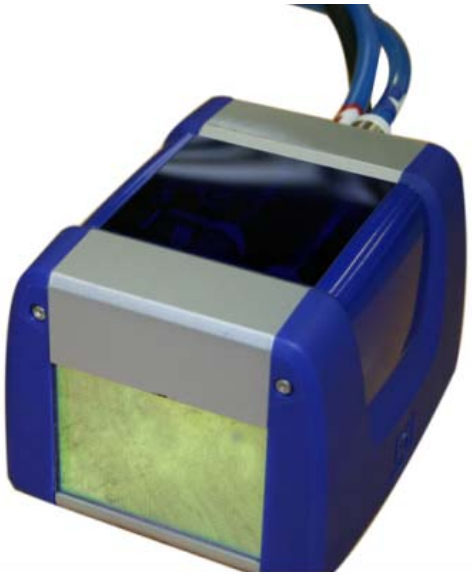
- **Modular cascadable system to customize lamp lengths to production width (as multiple of 7 cm).**



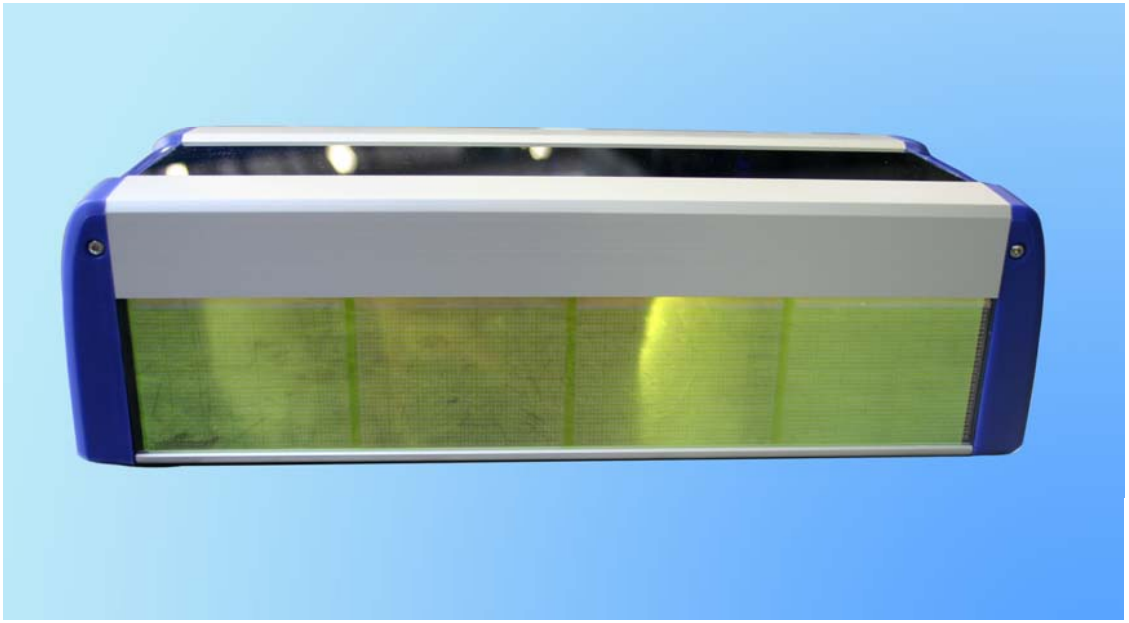


Concept LUV®-Modul - Modularity

- LUV® with light field 70 x 50 mm

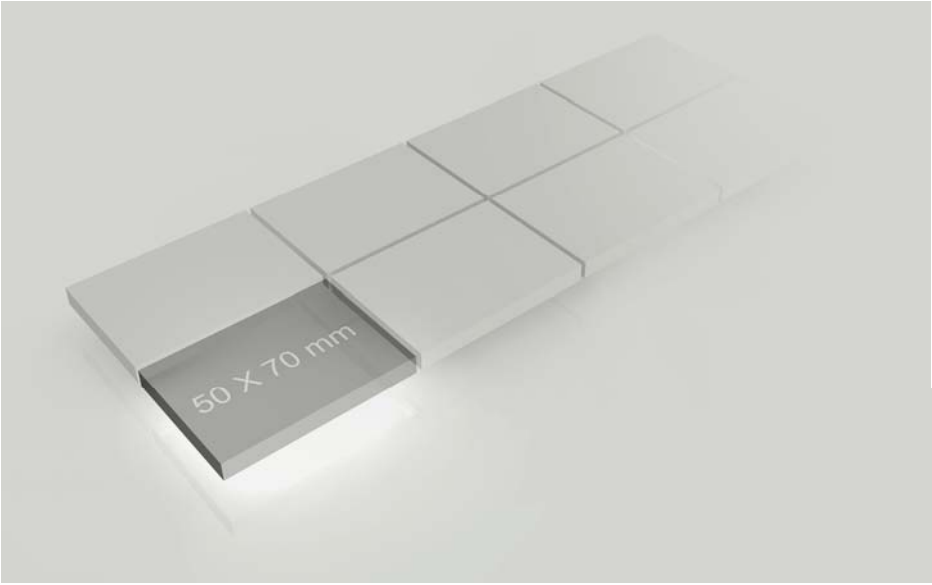


- LUV® with light field 280 x 50 mm

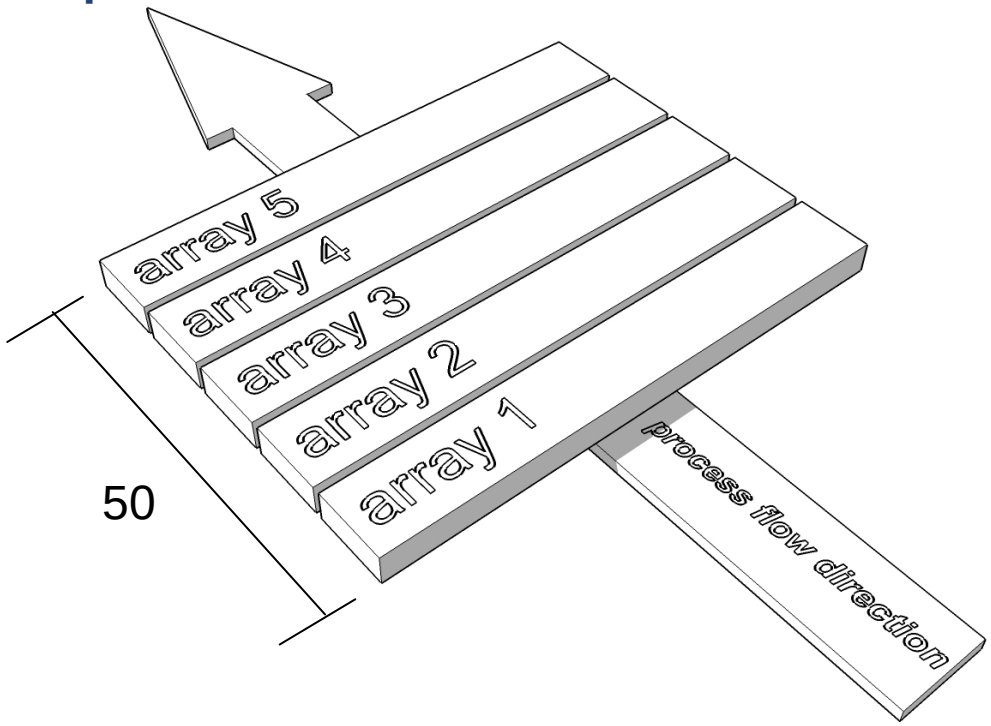


Concept LUV®-Modul – Wave lenght

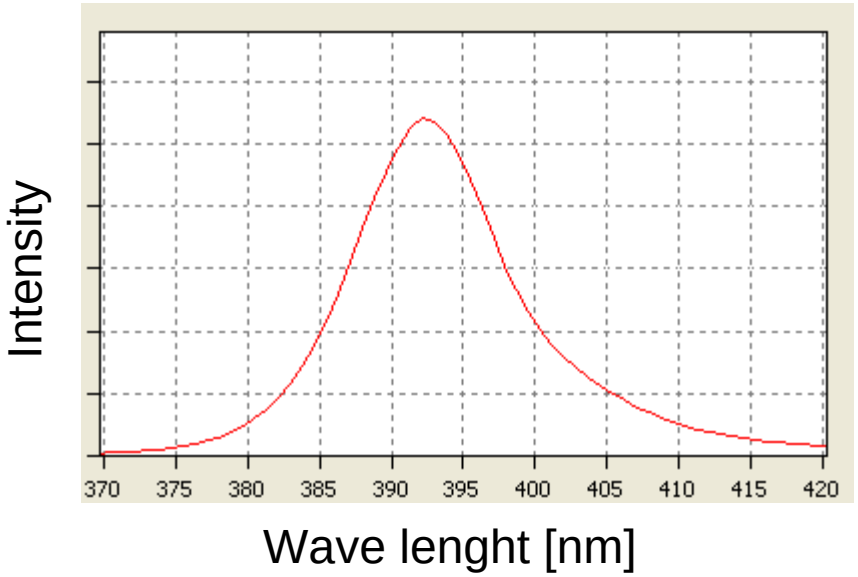
- **Modular base body can be equipped with freely selectable wave lengths (365 / 375 / 385 / 395 / 405 nm) to adapt to chemistry.**



- **Per array, only one wavelenght choice, but wavelenght mix within module is possible.**



UV LED Spektrum



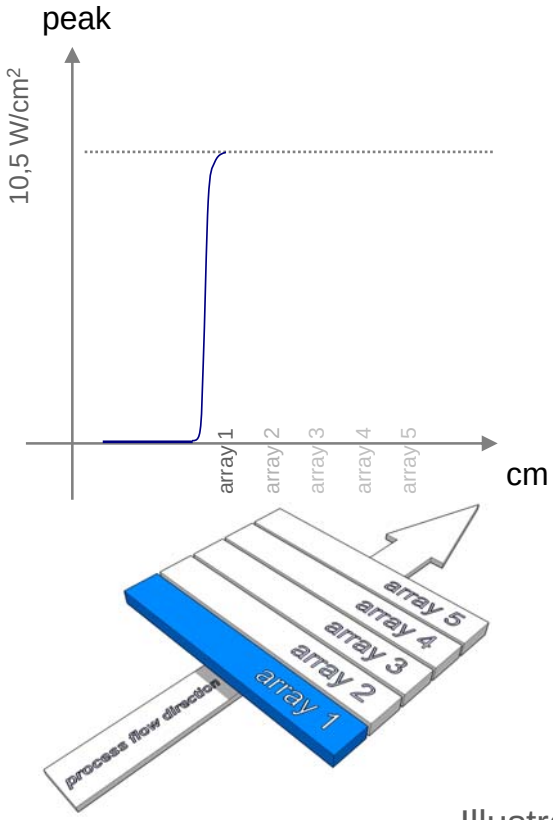
Example @ 395nm Chip:

- **Center Wave lenght** **392nm**
- **Full width at half maximum** **Δ 10nm**

- **UV-LED is narrow banded and „monochromatic“**

Concept LUV®-Modul – Adaption UV-dose

- **By use of more arrays, max. UV-dose can be increased. UV-Peak stays constant.**



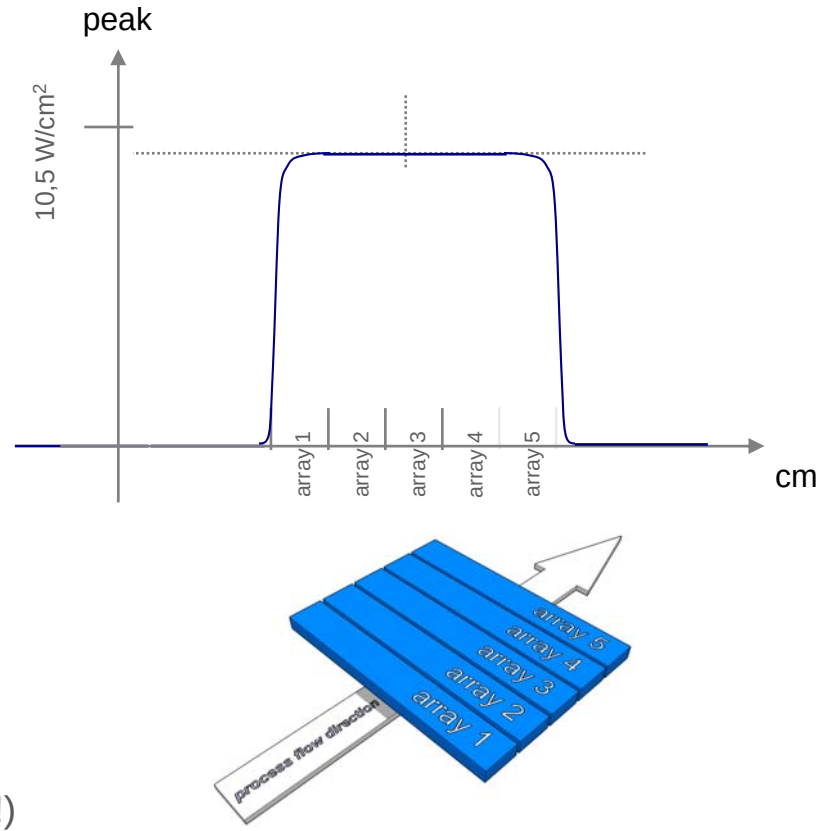
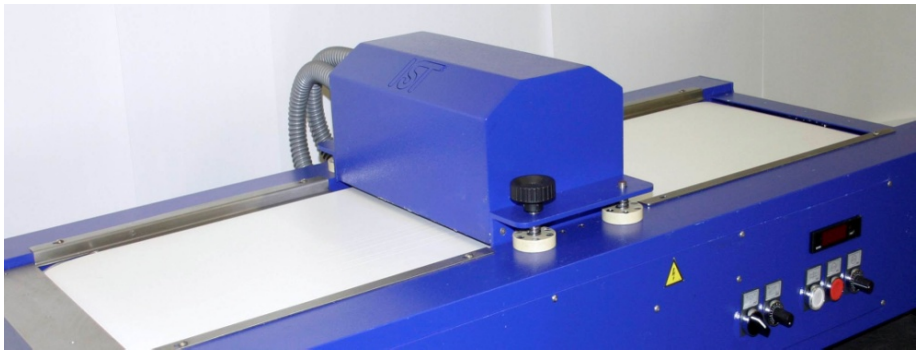


Illustration (no firm data!)

Concept LUV®-Modul – Wave lenght

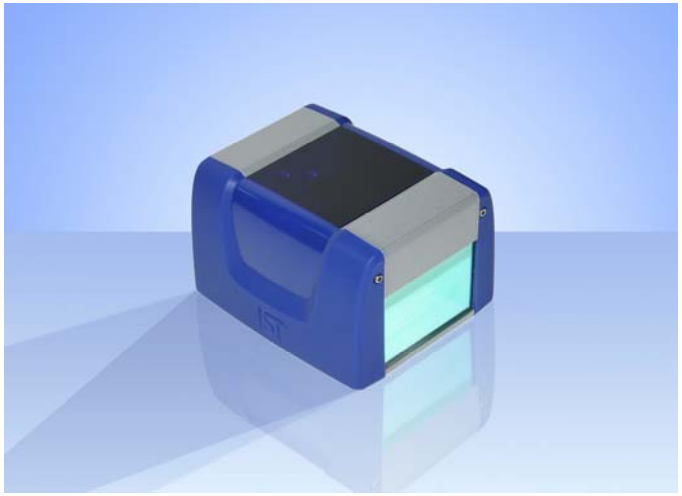
- Thumb rule: The shorter the wavelenght, the lower the power and the efficiency.
- Example: LED with light field 70 x 50 mm and electrical input power of 2 KW



Wave lenght	Power	Efficiency
395 nm	10,5 W/cm²	Appr. 20%
385 nm	5,0 W/cm²	Appr. 10%
375 nm	3,4 W/cm²	Appr. 5%

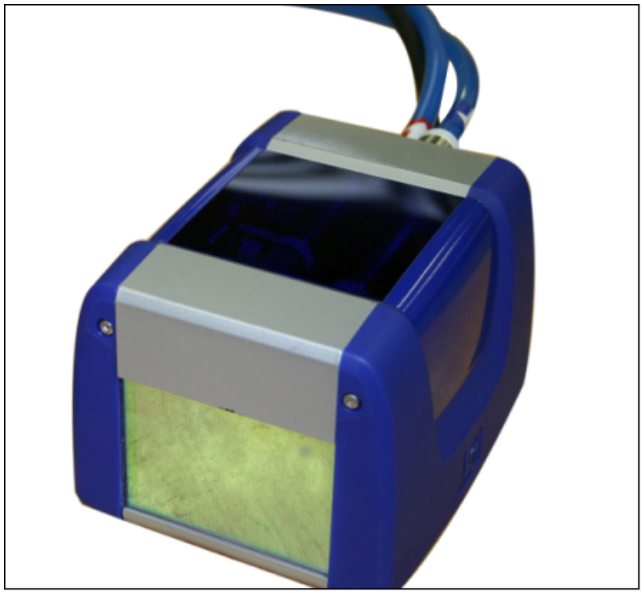
Summary Advantage LUV®

- Big power density and compact size by water cooling.
- Modular cascadable system to customize lamp lengths as multiples of 7 cm).
- Modular base body can be equipped with freely selectable wave lengths. Within one module, 5 different wavelenght zones are possible.
- Current-controlled operation. The light efficiency of LED‘s always keeps continuous when single failures occur.
- Power adjustment, independent of mains fluctuation, between 0 to 100% in five percent steps.



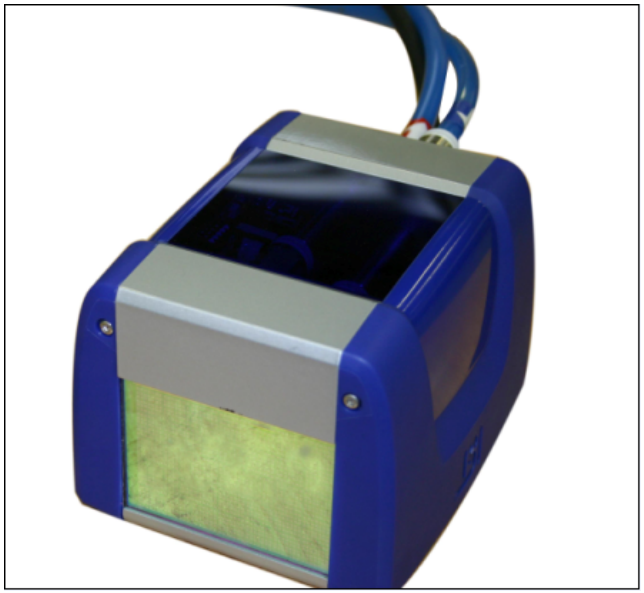
Customer benefits IST METZ

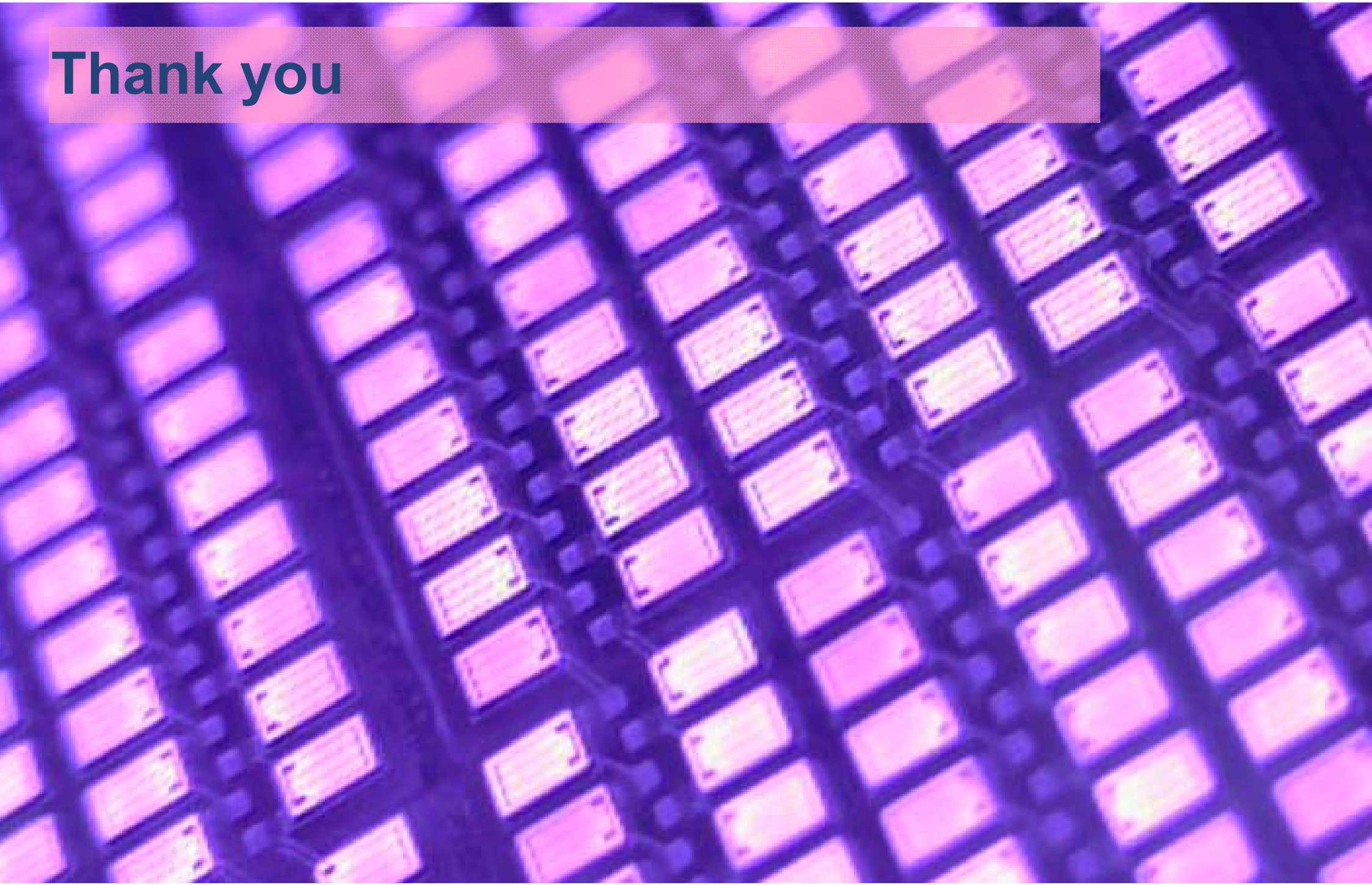
- UVTC – lab possibilities and mobile LUV®-rental units available.
- R&D - permanent and consequent development of LED technology.
- Market leader – access on the worldwide sales and service network.



Outlook

- First LED-applications are established (InkJet / adhesives).
- Further LED-developments can be expected (higher power levels at air-cooled-systems, price reductions at higher volumes, etc.)
- Further applications will follow in that fields, in which LED has specific advantages (cold, cyclic operation, monochromatic light)




Thank you