

# **Системные решения для светотехники LED: источники света и питания, оптика, управление. Smart Lighting by**

Vossloh-Schwabe Deutschland GmbH

A member of the Panasonic group **Panasonic**

## **Конференция LED PROGRESS**

15 сентября 2016

Київ - Украина

- ▶ **Vossloh-Schwabe** is one of the world's leading manufacturers of:
  - LED systems and LED solutions
  - Light control systems (LiCS)
  - Lighting technology components
- ▶ **EUR 206.8 million** turnover in FY 2015/16
- ▶ **1070** employees



- ▶ **Production locations** in Germany: Urbach, Kamp-Lintfort, Lüdenscheid, Oschatz  
Further production locations: Serbia, Italy  
All production sites are certified in accordance with **ISO 9001**, **ISO 14001**  
and **ISO 50001 Energy Management**
- ▶ **Logistics centres** are located in Ettlingen (Germany) and Singapore
- ▶ **Company founded** in 1919
- ▶ A member of the **Panasonic Group** since 2002
  - Holding: Panasonic Lighting Europe GmbH



# VSLS – Integration into Panasonic Group



Facts & Figures

Production Departments

Competence

Products & Solutions



## ▶ Vossloh-Schwabe Lighting Solutions (VSLS)

Competence center for LED technology within the Vossloh-Schwabe group

100%

## ▶ Panasonic Lighting Europe (PLE)

Holding of Vossloh-Schwabe group; Vossloh Schwabe is an independent brand within the Panasonic Group, responsible for the global development of the business area "Components for lighting technology".

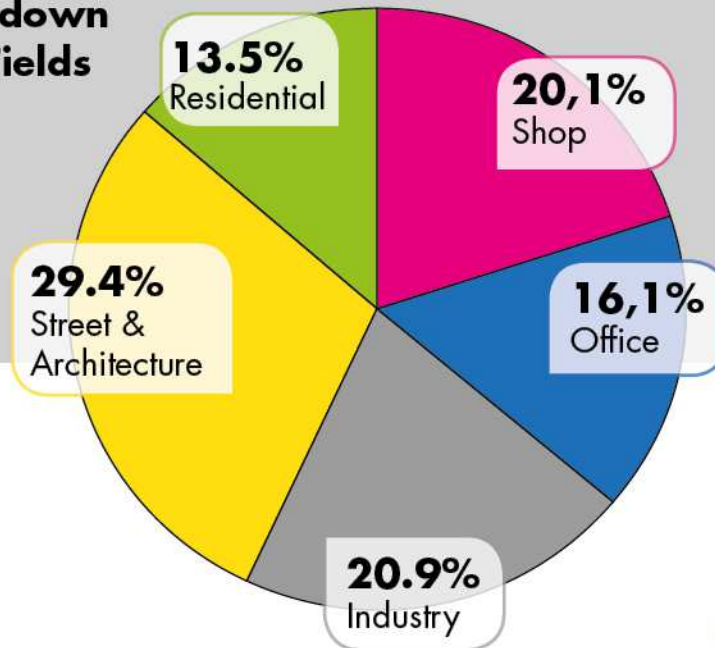
100%

## ▶ Panasonic Corporation

Alongside lighting systems and luminaire operating components, Panasonic also produces home electronics, technical equipment for households, electronic construction elements and laboratory apparatus.

# Customers and Markets

## ▶ Customer Breakdown by Application Fields



## ▶ Sectors

- Luminaire manufacturer
- Distributors
- Household appliance manufacturers
- Others (f.e. machinery and equipment engineering)

## ▶ Markets

- Represented in 35 countries
- Own locations and distribution partners worldwide
- North America via ULT





# LED Lighting Technology

Facts & Figures

Vision & Strategy

Products & Services

Solutions & Projects

## LED Systems



- ▶ **LED modules**
- ▶ **Drivers**
- ▶ **Optics made of plastics**
- ▶ **Heat sinks**
- ▶ **Connecting technology**

## LED Solutions



- ▶ **LED solutions, f.e. for household appliances**
- ▶ **LED downlights and LEDSpots**
- ▶ **Linear LED solutions**
- ▶ **LED solutions for biological applications**

# Light Control Systems for Indoor Applications

Facts & Figures

Vision & Strategy

Products & Services

Solutions & Projects

**System Network**

**Single Room**

**Multiple Room**

**Smart Night**



**Flex Night**



**Managed Night**





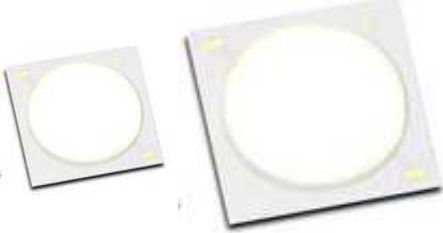


## ▶ LiCS Indoor

- Adjusting light to suit human needs
- Energy savings and cost reductions
- Increase of convenience due to automation
- Reduction of CO<sub>2</sub> emissions

## ▶ LiCS Outdoor

- **Smart Night:** Independent pre-programmed controller
- **Flex Night:** Additional remote programming options
- **Managed Night:** Complete online control and monitoring of the lighting system with LON powerline communication
- **All systems:** Energy savings: > 40 % (without sensor) / up to 60 % (with sensor)

# Overview of VS LugaShop System

Module	<p>&lt; 2.000lm (Residential)</p> 	<p>2000- 5000 lm (Shop + Downlights)</p> 	<p>&gt; 6.000 lm (Outdoor/HighBay)</p> 
Optics/ Accessories			
Drivers			



# COB modules



“Standard”



“standard colours”  
for (super)markets,  
stores, furniture,....

“Food”



Special food spectrums  
for meat, vegetables,  
fruits, bread, ...

“PearlWhite”



“PearlWhite”  
for clothes,  
fashion

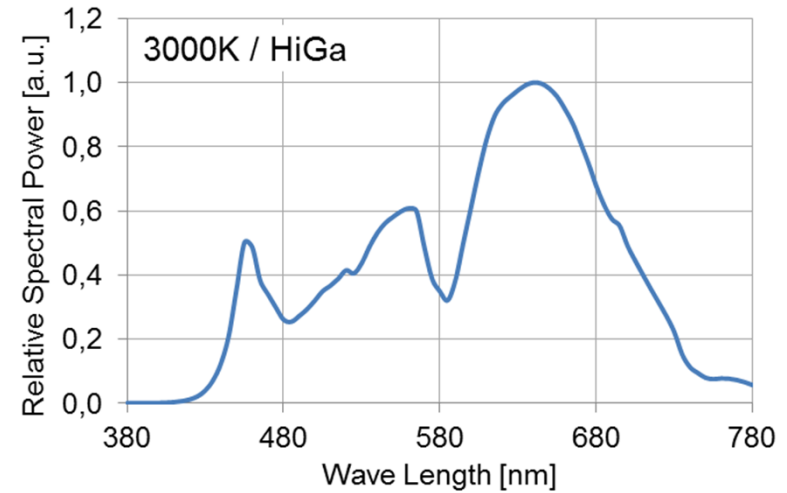
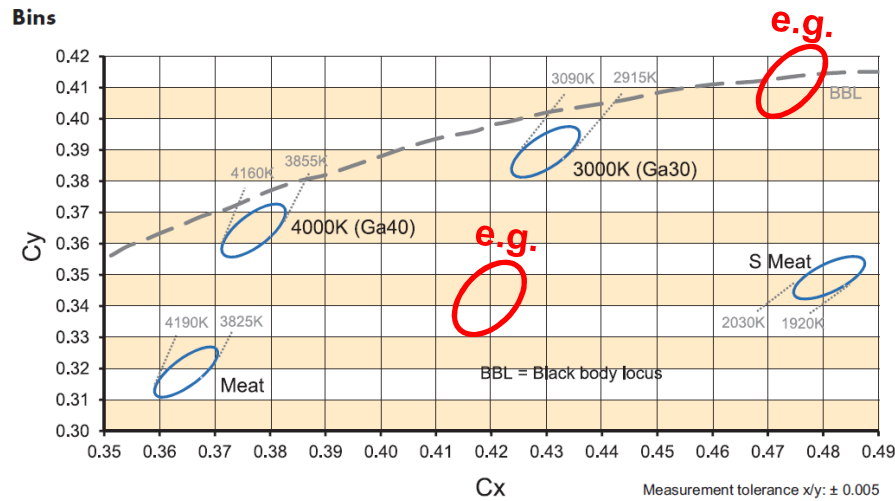


# Customized COB modules

The colours offered „from the shelf“ are not sufficient for your product range?



VS can provide colours/spectrums per customers specification !



Special **colour** in x/y diagram!

and/or

Special **Spectrum** (e.g. HighGamut)



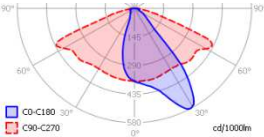
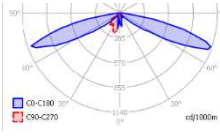
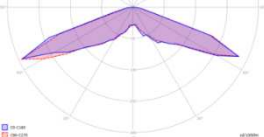
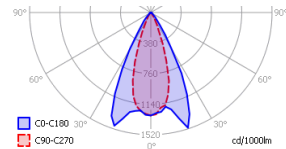
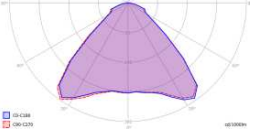
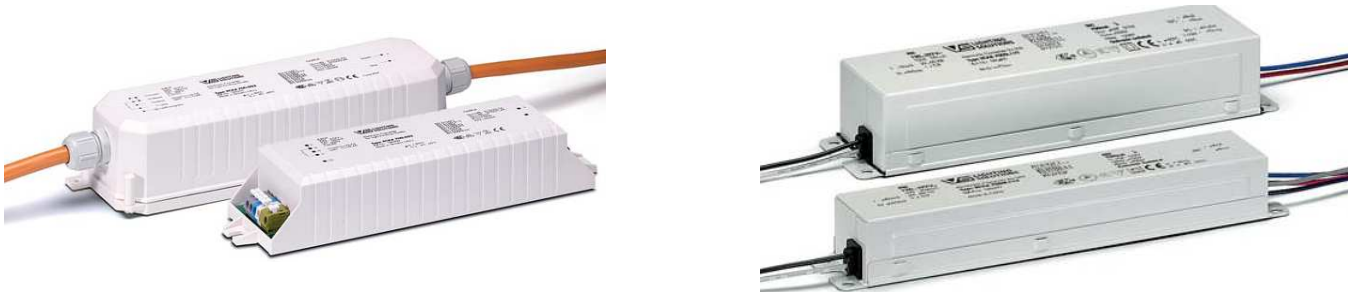
# Overview of VS Linear/Panel LED Module System



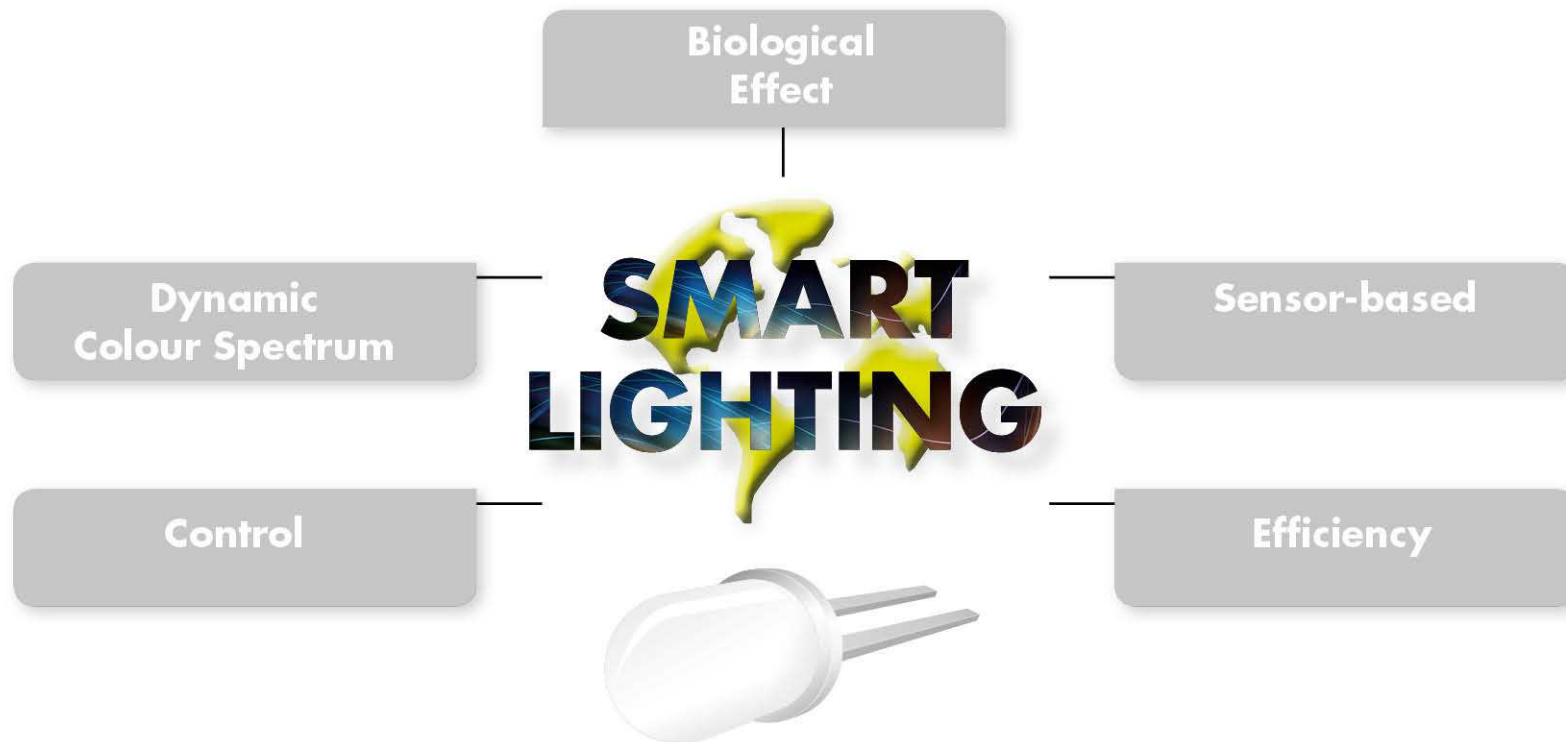
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Module</p>	<p>Luga (Chip-on-Board)</p> 	<p>SMD-Kit 1R L28/56 W4</p> 	<p>SMD-Kit 3R L28/56 W5,5</p> 	<p>W2-Family L14/28/56 W2</p> 	<p>LED-Panels</p> 
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Optics/ Accessories</p>		   <p>Diffuse   Standard   Retail 57M   Retail 457M</p>	   <p>Extra Wide 110°   Diffuse   Wide 90° (ambidirectional)   Wide 60°</p>	 	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Drivers</p>					

# Overview of VS StreetLight Module System



<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Module</p>	<p>IP67 square</p> 	<p>IP 20 modules in different shapes and sizes</p> 			
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Light Distributions</p>	<p>Street ME for ME classes</p> 	<p>Street S for S-classes</p> 	<p>Outdoor Area Area, public spaces</p> 	<p>Sym I for high/low-bay lighting, warehouses, productions</p> 	<p>Sym II for high/low-bay lighting, patrol station illumination</p> 
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Drivers</p>					

▶ **Vision: VS will be the key player for smart lighting by 2019**

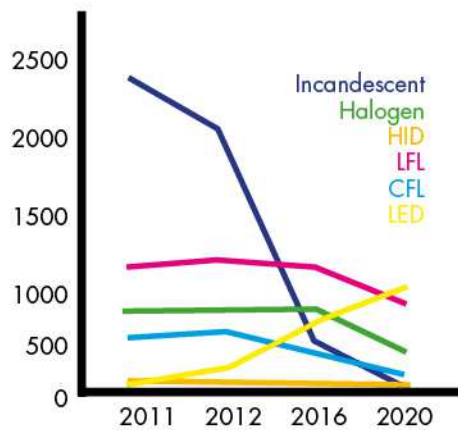
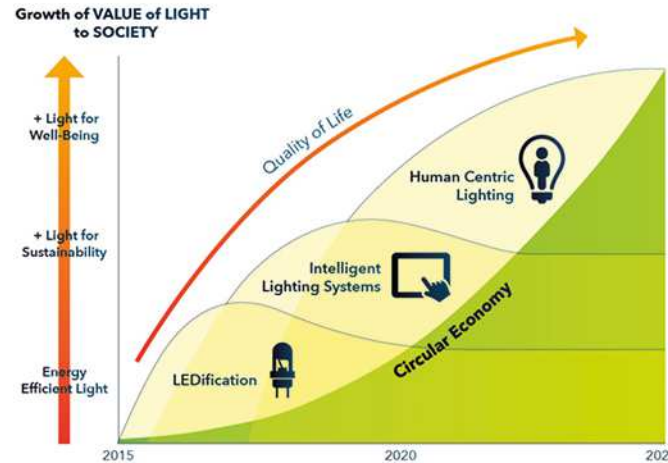




# Intelligent Lighting Control

## ▶ Smart Lighting

- Intelligent lighting control
- Economically and efficiently
- Right kind of light when it's needed



- Efficiency lighting technology will save up to 90% in 2018.
- Extra 6% will be saved with lighting controls.
- Significant additional savings can be achieved by smart lighting systems.

Vossloh-Schwabe conducts research into and develops technologies that positively influence physiology. The aim is the creating of light scenarios that positively influence workplaces, educational establishments, health-care institutions or animal farm and greenhouse.

## ▶ Human Centric Lighting



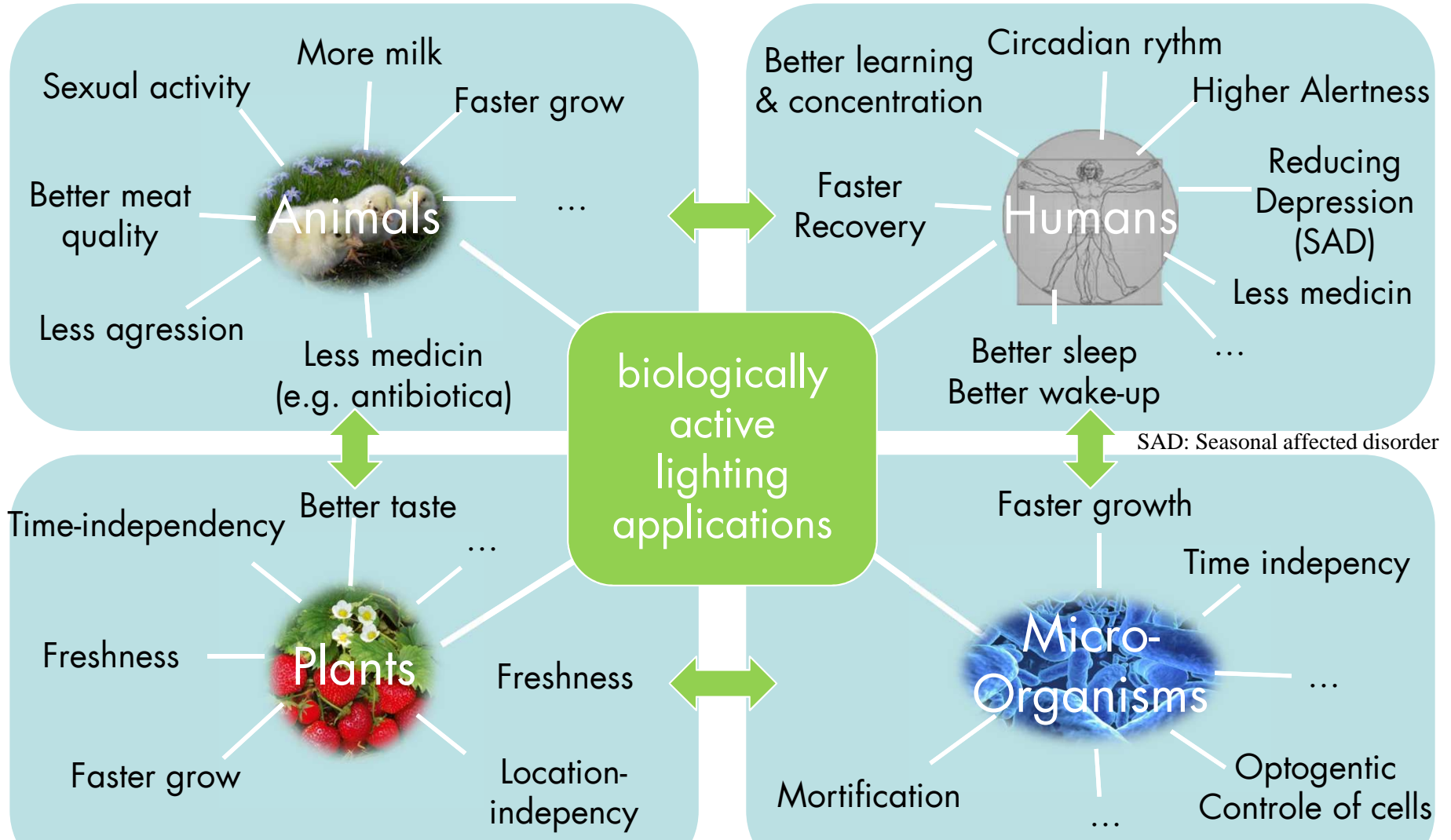
- Targeted modification of biologically effective spectrums
- For active well-being and for improving health and cognitive performance.
- Bio-efficient light to support chronobiological rhythms

## ▶ Animal Farm and Greenhouse Lighting



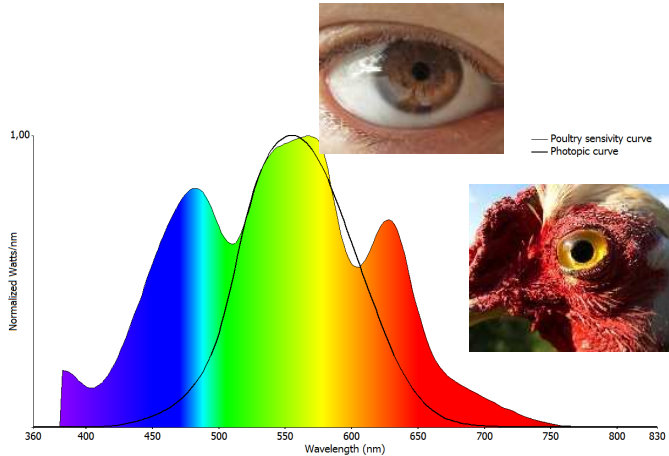
- Optimised light spectrums for plants and animals
- Added value through targeted response of receptors
- Positive effects on growth and reproduction

# biologically active lighting (BioActL)



Application for BioActL can be found, where light influences the mechanisms of biol. process

# Chicken farm lighting



Example: Chickenfarm

Chicken have (as also other animals) another spectrum sensitivity than humans

- Four peaks (380nm, 480nm, 560nm, 630nm)
- Chicken can realize flickering of 1 kHz
- LED light optimized for human needs are often not convenient for chickens



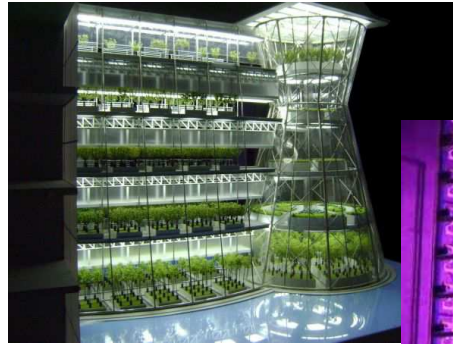
Productivity/output	Wellbeing
Improved body <b>weight</b> and muscle growth	Reduction of <b>diseases</b>
Better meat <b>quality</b> , reduced cooking loss	Less <b>medical treatment</b>
More and heavier <b>eggs</b>	Better <b>visual acceptance</b> of food, other poultry and environment
Reduced <b>feed consumption</b> per egg laid	Less <b>cannibalism</b>
Improved <b>reproduction</b> rate (sexual activity)	Lower <b>agression</b> (feather picking rate)
Higher <b>yield</b>	Less <b>stress</b>
More (time-) <b>controlled</b> egg layment	





# Greenhouse lighting application

- Greenhouse
- Urban / Indoor farming
- In-vitro
- Climate chamber
- Field lighting (mobil)
- Plant factory



# Human centric light

RESEARCH

## FORSCHUNGSPROJEKT "OLIVE" - INHALT

Optimierte Lichtsysteme zur Verbesserung von Leistungsfähigkeit und Gesundheit

Intelligente Beleuchtung durch

- **Energieeinsparung**

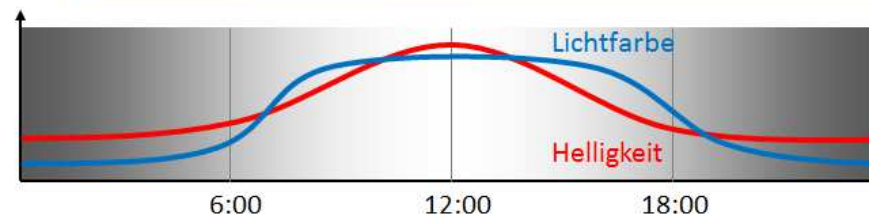
Berücksichtigung des natürlichen Lichts

- **Gesundheitsförderung**

Stärkung des circadianen Rhythmus

- **Anpassung an die Sehaufgabe**

Sensoren, Vernetzung und Gestensteuerung





**ATKearney**

We differentiated seven indoor segments for further analysis

## Relevant application segments for human centric lighting



**Industrial (Repetitive)**

- Repetitive, manual work, e.g. piecework with little to no automation
- Focus on day shifts



**Industrial (Advanced)**

- Advanced manual work with little to some automation, e.g. tool making
- Focus on day shifts



**Office**

- Desk work in dedicated office areas/buildings
- Excluding home offices



**Education**

- Classrooms in primary (6-12 yrs) and high schools (12-18 yrs)
- Focus on students (and teachers)



**Medical**

- Hospitals, in particular corridors, recreation and ward rooms
- Focus on patients (and medical staff)



**Residential (Elderly Care)**

- Care homes for elderlies with and without physical constraints
- Focus on elderlies (and staff)

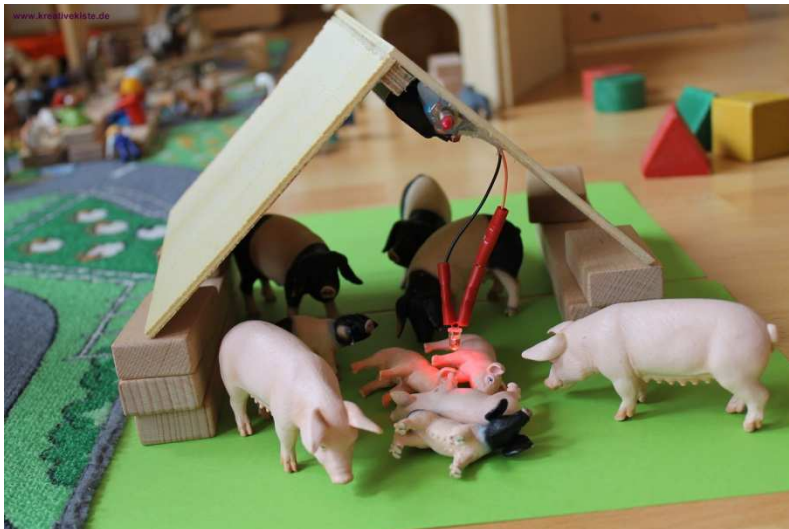


**Residential (Homes)**

- Both own and rented flats and houses
- All income segments
- Including home offices

Source: ELC, A.T. Kearney, Thinkstock

## "Lens Applications - From Piggery to Butchery" ?



... modern lighting is not only illumination





# CROSS VALUE INNOVATION

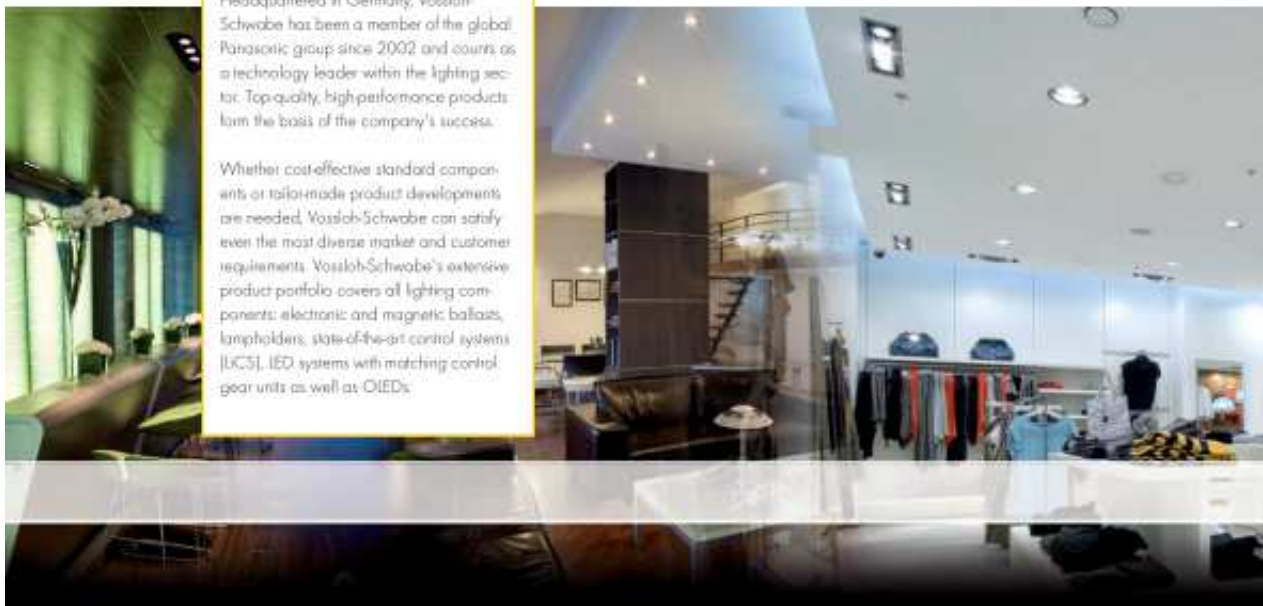
**Thank you for your attention.**

## Большое спасибо за внимание!

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, high-performance products form the basis of the company's success.

Whether cost-effective standard components or tailor-made product developments are needed, Vossloh-Schwabe can satisfy even the most diverse market and customer requirements. Vossloh-Schwabe's extensive product portfolio covers all lighting components: electronic and magnetic ballasts, lampholders, state-of-the-art control systems (LCS), LED systems with matching control gear units as well as OIEDs.



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