

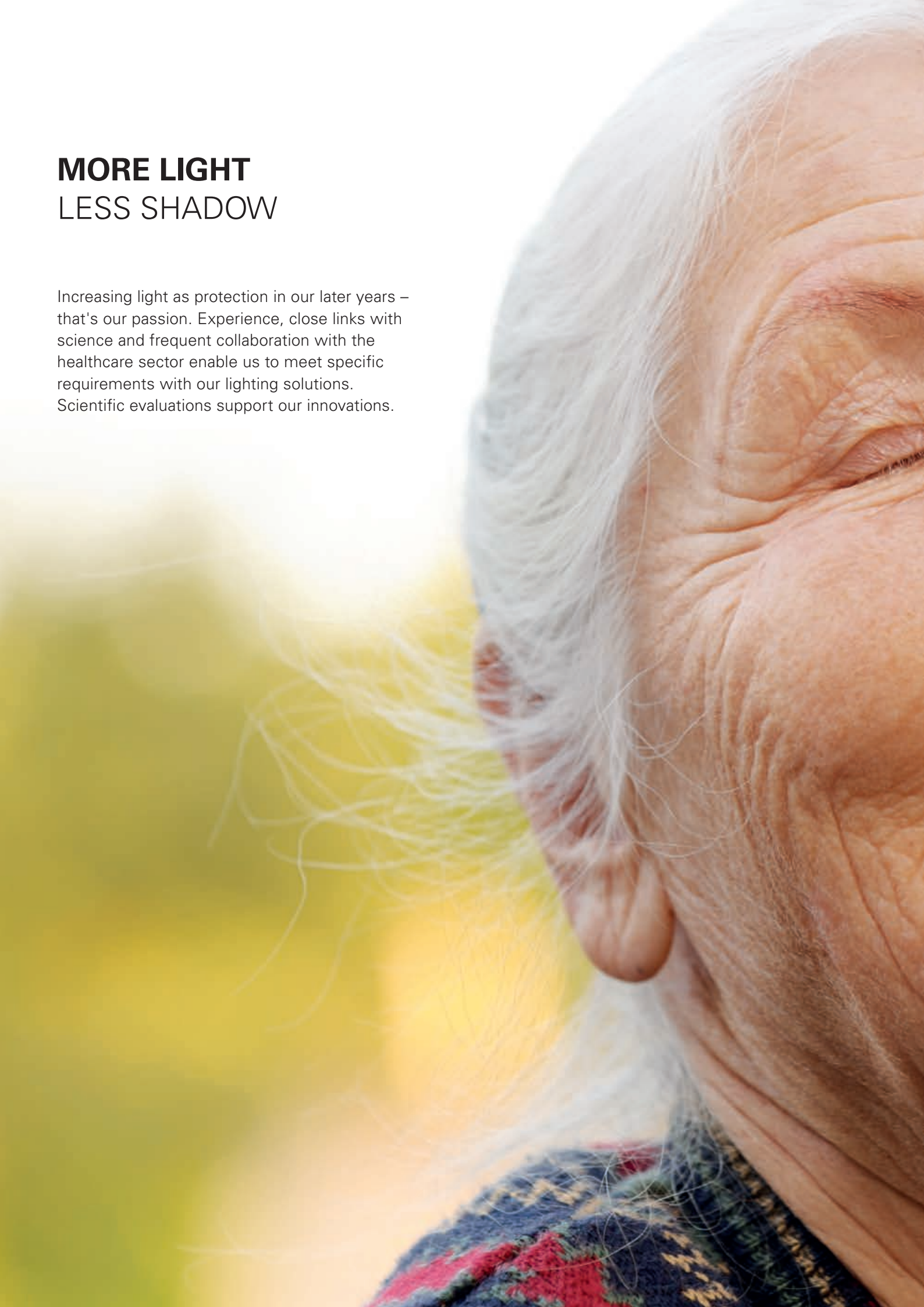
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**LIGHTING FOR SENIOR CARE**  
GOOD LIGHTING ENRICHING LIFE



## **MORE LIGHT** LESS SHADOW

Increasing light as protection in our later years – that's our passion. Experience, close links with science and frequent collaboration with the healthcare sector enable us to meet specific requirements with our lighting solutions. Scientific evaluations support our innovations.







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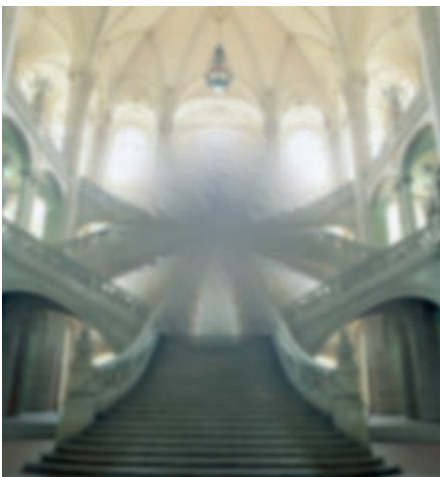


# PERCEPTION

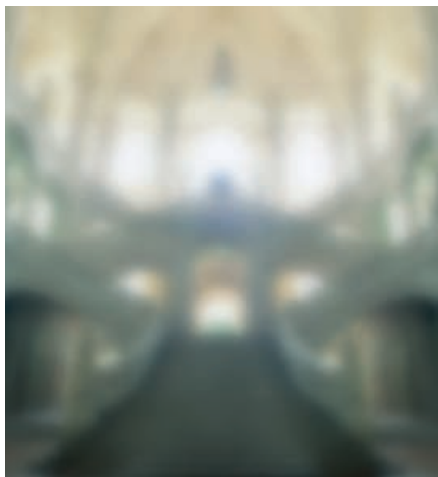
## SIGHT IN OUR SENIOR YEARS

When eyesight deteriorates due to age or illness, it has far-reaching consequences for independence. Those affected quickly become anxious and increasingly insecure about moving around. Light cannot correct deteriorating eyesight, but it can help to compensate, restoring self-confidence. Proper illumination helps avoid visual missteps and prevent falls.

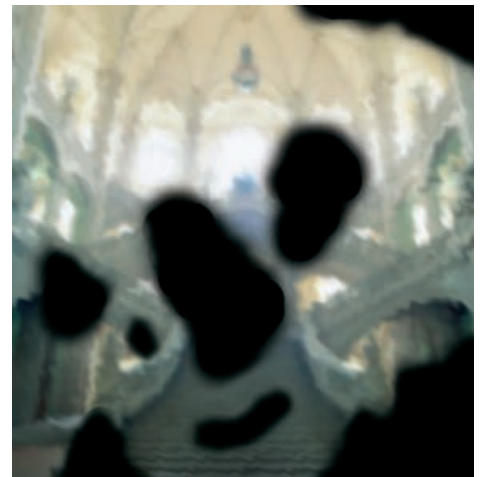
### Age-related visual impairments



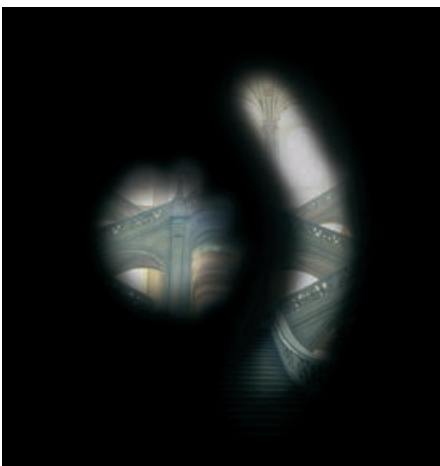
Macular degeneration



Cataracts



Diabetic retinopathy



Glaucoma



Retinitis pigmentosa



# FALL PREVENTION

## LIGHT AS A SILENT HELPER

One in three “over 65s” typically have a fall at least once a year. Among “over 80s”, this figure is one in two.<sup>1</sup> Serious injuries, such as hip fractures, lead to a lasting reduction in independence for the majority of those affected. A bad fall can also cause the person to fear further falls and to limit the scope of their activities as a preventive measure.

### Alarming figures <sup>1</sup>

- There are between around 1.6 and 2 million falls per year in Germany
- 30-40% of falls are preventable
- 30-40% of accidents occur while standing up or sitting down
- 20-25% of fall-related injuries are avoidable

### Risk factors for falls <sup>3</sup>

- Medication
- Previous falls
- Difficulties with mobility and balance
- Incontinence
- Reduced cognitive abilities

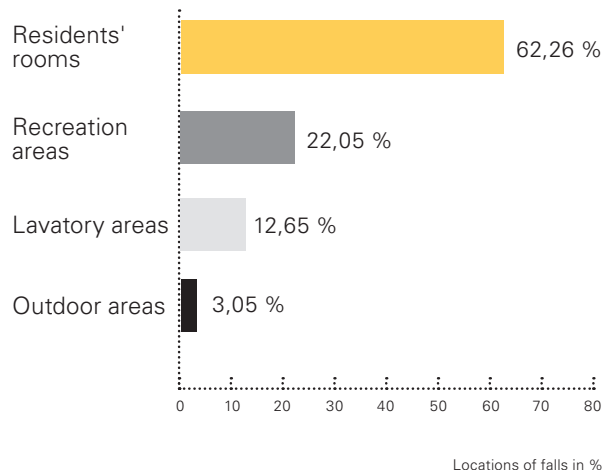
### List of references

- 1 Prof. Dr. Cornelius Becker: Evidenzbasierte Sturzprävention im Pflegeheim (Evidence-based Fall Prevention in Care Homes), German Federal Institute for Fall Prevention, Robert-Bosch Hospital, Stuttgart
- 2 C. Becker MD et. al: Epidemiology of Falls in Residential Aged Care: Analysis of More Than 70.000 Falls From Residents of Bavarian Nursing Homes, 2011
- 3 C. Heinze, U. Rissmann, T. Dassen: Angewandte Pflegeforschung (Applied Care Research). PrinterNet 2/04, Berlin

### Falls in senior care homes <sup>2</sup>

- Most hospital patients and senior living residents fall in their room
- Falls also occur in bathrooms and corridors
- Fall rates are high in hospitals and in rehabilitation and geriatric wards

### Locations of falls <sup>2</sup>





### Light-related causes of falls



negative

positive

- Shadows (sharp transitions between light and dark and shiny patches) are interpreted as obstacles
- Reflections on the floor are confusing and are interpreted as water



negative

negative

- Shadows due to incorrect lighting increase the risk of missteps
- Passing shadows can be unsettling and frightening



negative

positive

- Shadows across a person's face caused by lighting trigger fear and change the appearance of the face



negative

positive

- Dark ceilings and recesses make areas feel confined and threatening



Preserving the independence of residents begins with exercise programs to maintain mobility but also includes modifications to the environment such as lighting, floor coverings and handrails. Sophisticated lighting design helps to instill a feeling of security and increases residents' confidence when moving about. Elderly people can thus enjoy a more active involvement in their surroundings. Pleasant lighting also encourages use of the recreation and communal areas.

#### Interior design using light



- Orientation light by the bed close to the floor
- Room light for basic lighting

#### Other light-related causes of falls

- Older people are very sensitive to glare, which can cause them to miss obstacles in their path
- Older people require more time for their eyes to adjust to: extreme transitions between light and dark, for example between the corridor and the resident's room

#### Fall prevention as a central issue

- Suitable measures in senior care facilities and geriatric wards in hospitals enable an active life
- Many falls and associated costs can be prevented
- Interior design, including using lighting adapted to the requirements of the elderly, in combination with exercise programs, constitute useful measures





# DEMENTIA

## THE GREATEST CHALLENGE

Dementia patients require intensive support and care – often around the clock. The progression of the disease causes the sufferer to be increasingly confused by his surroundings. It is difficult for the person concerned to process environmental stimuli properly and to react accordingly. Consequently, secondary symptoms such as anxiety, agitation, passiveness or delusions can develop. Some also experience day/night confusion, which in some cases is a complete reversal of the wake/sleep cycle.

Lighting for people with dementia must perform three main functions:

Sufficient, low-shadow basic lighting

- Fall prevention and accessibility
- Avoidance of missteps

Biologically effective lighting

- Regulation of the body's internal clock
- Stimulation in the morning and calming effect in the evening

Care and examination lighting

- Care and medical treatment
- Examination lighting with optimal color rendering properties

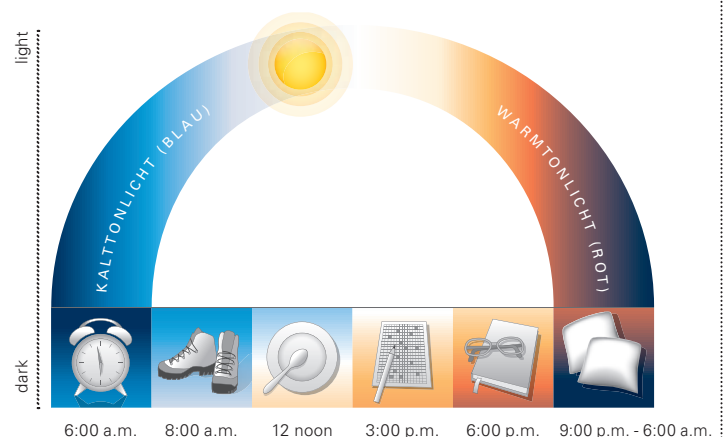
### VISUAL TIMING LIGHT

Biologically effective lighting



VISUAL TIMING LIGHT is a light management system using daylight tracking. It is biologically effective human-centric lighting and is a form of circadian lighting.

- Structures daily routine
- Promotes hormonal balance
- Improves sleep/wake cycle
- Leads to increased activity and well-being









# BASIC PLANNING PRINCIPLES

## PERFECTION IS OUR GOAL

Whether a new building or renovation, in the recreation area, bathroom or residents' rooms – light is an important design tool. Used effectively, lighting can have a positive impact on well-being, health and capability. Lighting should not dominate the room, but blend harmoniously into the overall architectural design. Sophisticated lighting design should take into account the daily needs of residents and caregivers as well as how the individual rooms will be used. Addition light sources, such as windows, skylights etc., must also be considered.

Area	Light scenario	Illumination intensity E[lx]	Light color	Type of lighting
CORRIDORS	day lighting close to floor (10 cm above floor) eye level (140-160 cm above floor)	200 - 300 Lux 500 Lux (cylindrical)	warm white/daylight white warm white/daylight white	direct/indirect direct/indirect
	night lighting, close to floor	20 - 50 Lux	warm white	direct/indirect
RECREATION AREAS	day lighting close to floor table height (75 cm above floor)	200 - 500 Lux 500 Lux	warm white/daylight white	direct/indirect
RESIDENTS' ROOMS	care light bed level (85 cm above floor)	300 - 500 Lux	warm white	direct/indirect, depending on care case two-component lighting
	reading light, work light bed level/reading level (if necessary, separate additional lighting)	300 - 1000 Lux	warm white	direct/two-component lighting
	living area light, close to floor	100 - 500 Lux	warm white	direct/indirect
	night light, close to floor monitoring lights for care staff at night, close to floor	50 - 100 Lux approx. 5 Lux	warm white warm white	indirect indirect
LAVATORY AREAS	For residents: basic lighting close to floor, mirror lighting, accent lighting at face level	200 Lux 200 - 500 Lux	warm white	direct/indirect

# RECOMMENDATIONS

## FEATURES OF GOOD LIGHTING

Daylight and artificial light, colors and materials form a whole. This interplay can be targeted to facilitate architectural and interior design. Along with the calculated use of color, proper use of light also plays a major role. Sophisticated light planning can compensate for reduced mobility and sensory abilities caused by advancing age. In some cases, some symptoms of dementia can also be reduced.

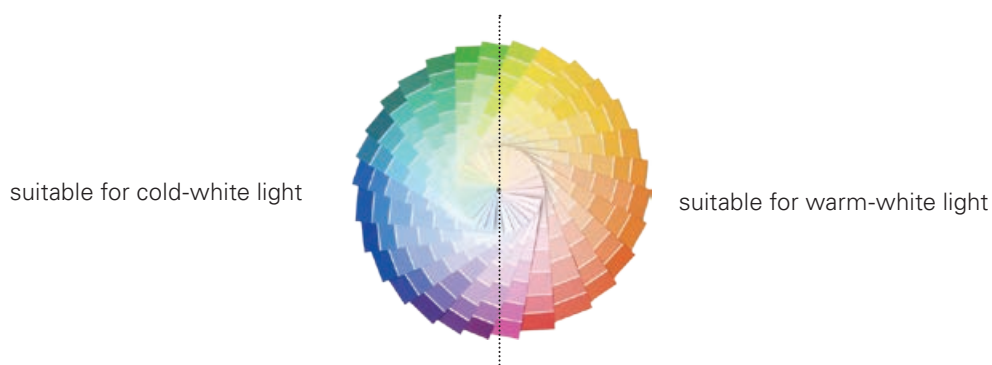
### Proper lighting in the right location

- Entrances to buildings should be particularly well-lit during the day and dimly-lit at night, as the entrance performs a "gateway role" and the eye adapts to the light/dark transition
- Reduce illumination intensity at the exits in living areas to ensure the safety of particularly vulnerable residents
- Illuminating communal areas, corridors and lounges encourages their use
- Emphasize doors to washrooms, recreation areas or public spaces with effective lighting
- Low-shadow lighting prevents missteps and falls

### Color temperatures and color rendering

- The interaction between color temperatures and the color scheme of the rooms should be considered
- Warm-white light is preferred in the living area
- VTL changes the look and feel of the room throughout the day to help adjust the circadian rhythm of residents
- Good color rendering in a dining area enhances the appearance of food

### Lighting color as a room design tool





## FAVORABLE

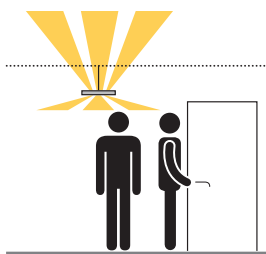
**Recommended room lighting**

## Direct/indirect lighting

- Good energy efficiency
- Good glare reduction
- Casts few shadows
- Room appears bright
- Low levels of reflection
- Uniform lighting

## Two-component lighting

- Direct/indirect lighting is supplemented using a care and examination light or reading light, which can be switched on and off independently
- Recommended illumination intensity in accordance with VDI/VDE-guideline 6008-3
- Elderly people require illumination intensity which is up to four times higher than younger people



Direct/indirect



Two-component

## UNFAVORABLE

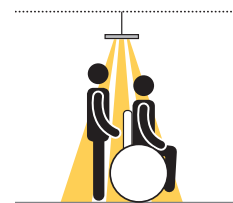
**Unfavorable room lighting**

## Direct lighting

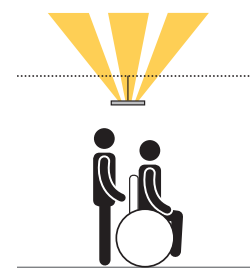
- Reflected glare and unfavorable shadows
- Confusing reflections on the floor
- Room appears dark and oppressive
- Poor glare limitation for people lying down

## Indirect lighting

- Average to poor energy efficiency
- Diffuse lighting atmosphere as contrasts become blurred

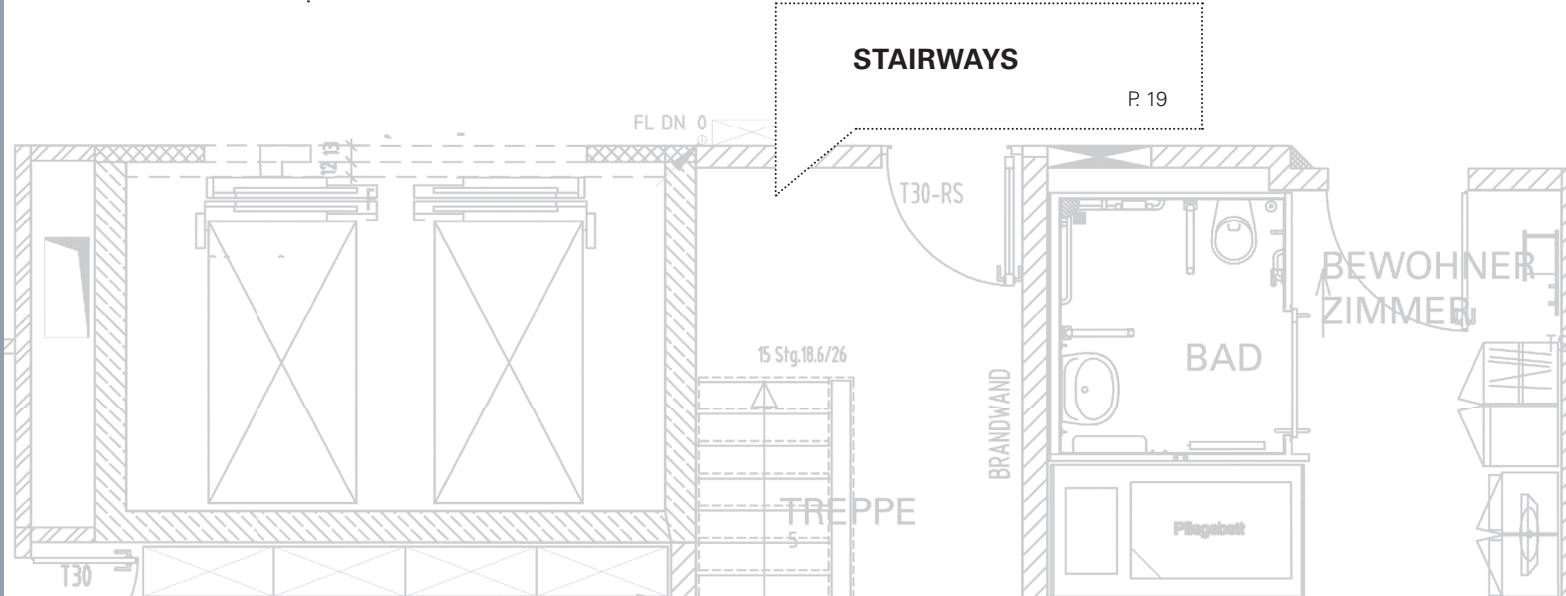
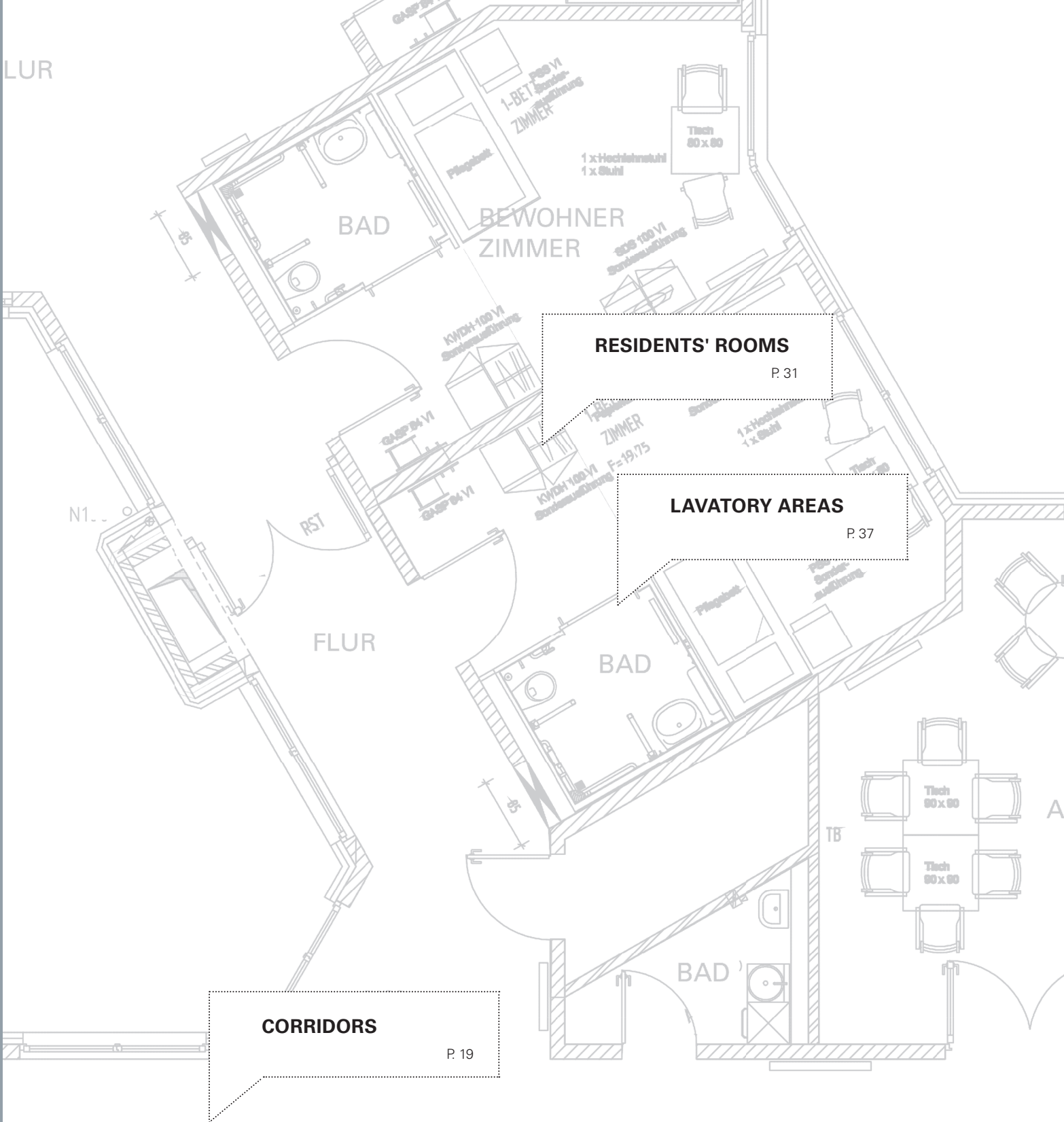


Direct



Indirect

LUR

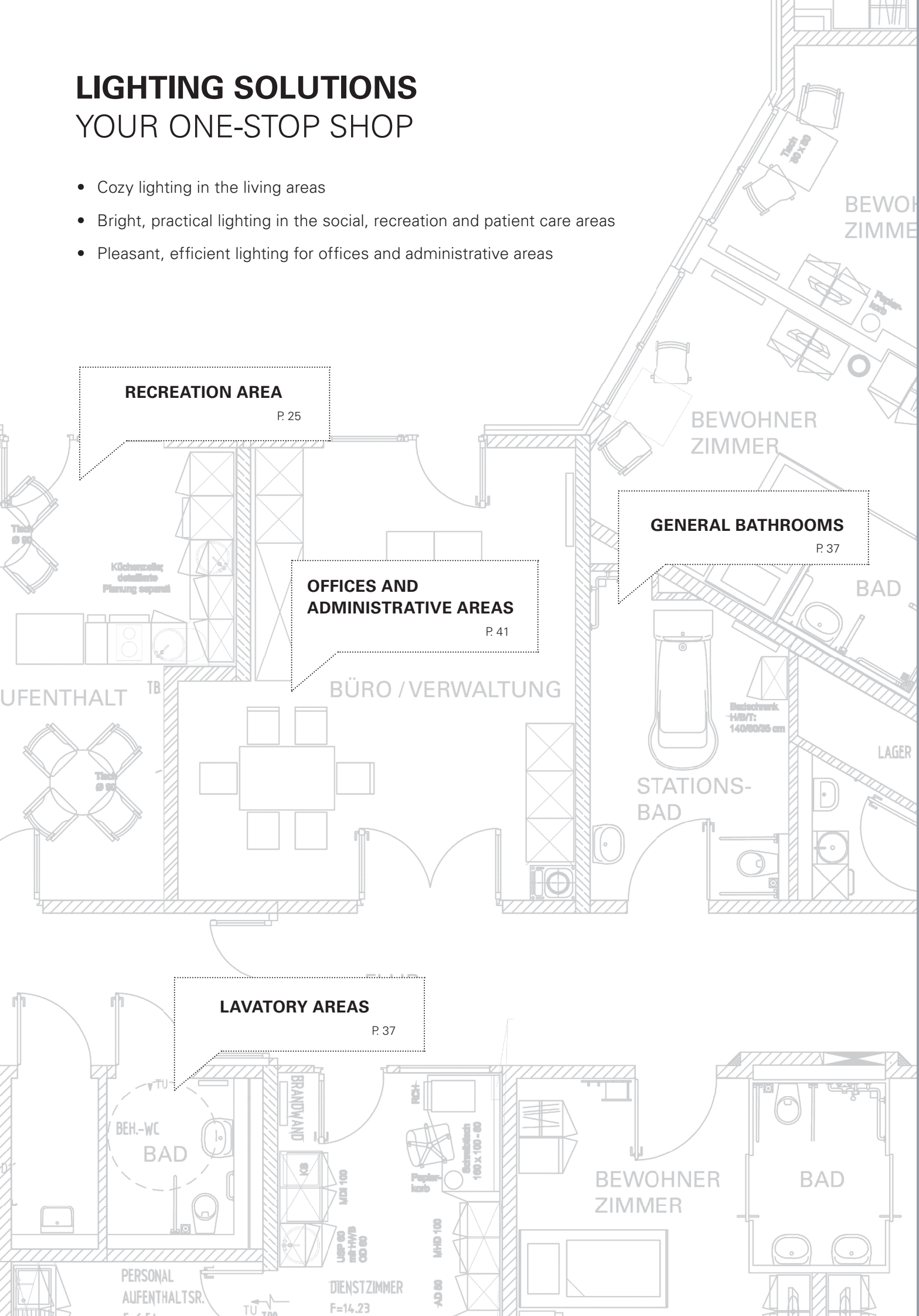




# LIGHTING SOLUTIONS

## YOUR ONE-STOP SHOP

- Cozy lighting in the living areas
- Bright, practical lighting in the social, recreation and patient care areas
- Pleasant, efficient lighting for offices and administrative areas









OBLO



VANERA ORBIT



VANERA



AMADEA PENDANT



AMADEA

## CORRIDORS AND STAIRCASES



ViVAA



RIGU



CUBE

# CORRIDORS AND STAIRCASES

## SAFETY AS A TOP PRIORITY

In the interests of holistic care, healthcare facilities are now equipped to fully meet the requirements of the elderly in relation to safety and security. This is essential to ensure that residents feel at home and can move around as freely as possible. Further light planning aspects should also be considered, such as the illumination values in accordance with VDI/VDE Guideline 6008-3 and accessibility requirements.

### Windowless corridors

- Optimal room lighting creates conditions similar to daylight
- Combined use of wall and ceiling lights accentuates rooms
- Interplay of light and color encourages movement and promotes use of sitting areas

### Recesses and corners

- Small orientation lighting at eye level emphasizes doorways and dark recesses or corners
- Ambient light is supplemented by orientation lighting

### Corridors with windows and doors

- Changing lighting conditions unsettles residents
- Low-shadow lighting and supporting artificial light should be used to balance light levels where outside light sources are a factor
- A uniform, glare-free lighting system offsets these differences

### Stairways

- Lighting which is as low-shadow as possible makes visual perception easier
- Use of different colors, materials or special fabrics makes recognition and use of stairs easier
- Indirect lighting prevents confusing shadows















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AMADEA

## RECREATION AREAS



ViVAA



AMALIA

# RECREATION AREAS TOGETHER, NOT ALONE

Healthcare facilities now often offer a garden area adapted to the needs of the elderly, providing a calming environment for light exercise and relaxation. However, some elderly residents rarely use this facility. Could this be due to dazzling sunlight or the risk of falling in bad weather? A safe and comfortable design for the recreation areas assumes even more importance in these situations. This includes a sophisticated lighting solution.

## Harmony between space and light

- General lighting with indirect/direct lighting
- Low-shadow ceiling lighting, minimal reflection and good glare limitation prevent missteps
- Interplay of light and color influences spatial perception and should be considered when selecting the lighting color (daylight white or warm white)

## In tune with nature

- Emphasis of the day's structure using VTL biodynamic light management
- Emulation of the natural progression of daylight with focus on stimulation in the morning and relaxation in the evening
- Emphasis of the day's structure by encouraging activity in the morning/daytime and tiredness in the evening









VIVAA



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## RESIDENTS' ROOMS



RIGU



CUBE



VIVAA

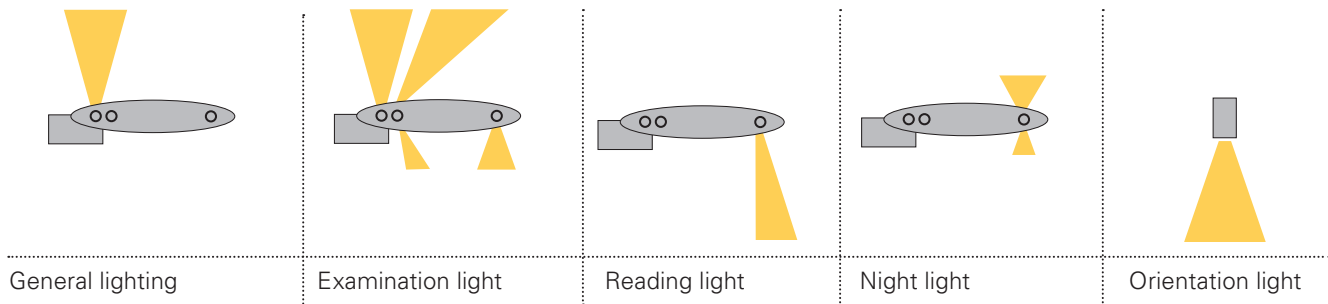


AMALIA

# RESIDENTS' ROOMS

## CENTRAL TO LIGHT PLANNING

A resident's room is a multi-functional area: it is the real living area for the resident, in which care and medical treatment are also administered. Statistically, falls most often occur in residents' rooms. A versatile lighting system meets the diverse requirements. These include a room light, a reading/care light and orientation lights.



### General lighting

- Individually switchable direct/indirect lighting for uniform, glare-free illumination
- Make close-up vision and distance vision possible without causing tired eyes
- In rooms specially designed to provide special care for those with advanced dementia, the use of biologically effective lighting (VISUAL TIMING LIGHT) is recommended

### Reading and relaxing

- Optimal lighting conditions for reading and relaxing
- Low heat generation to prevent burning or discomfort
- User-friendly, easy to position and to clean

### Administering care and examinations

- Best lighting conditions for personal hygiene and medical treatment
- Care staff should not be cast in shadows due to incorrect lighting
- Two options: wall light with individually switchable direct light (examination light) or reading/care light which can be used as an examination light

### Sleeping and orientation

- Integrated night light to guide caregivers
- Comforting night lighting is effective in combating anxiety or agitation, especially for people with dementia
- Adjustable illumination intensity which does not disturb sleep
- Orientation lighting to illuminate the floor







AMALIA & VANERA



AMALIA











VANERA ORBIT



OBLO

## LAVATORY AREAS



VANERA LED Bath

# LAVATORY AREAS

## FOR A GOOD START TO THE DAY

Even a windowless washroom can offer a sunny start to the day using sophisticated lighting. A uniform, low-shadow wall light creates a pleasant ambiance and helps when attending to personal hygiene. Wet areas can increase the risk of falling. Lighting which is sufficiently bright and shadow-free allows for much better spatial perception and increased safety.

### Positive self-perception

- Wall light with indirect/direct lighting
- Positive self-perception due to shadow-free lighting of the face
- Ideal color rendering properties and shadow-free lighting for personal hygiene

### Shower area

- Minimized shadows and uniform illumination improves spatial awareness
- Safe movement reduces the risk of falling
- High level of safety due to IP 44 splash-proof rating









LAVIGO



PARA.MI

## OFFICES AND ADMINISTRATIVE AREAS



ViVAA



ATARO



OBLO

# OFFICES AND ADMINISTRATIVE AREAS

## FORM AND FUNCTION

People these days strive to achieve a sense of well-being, whether at work or in their spare time. Light therefore plays a fundamental role in office life, as it influences essential processes in the human body. Pleasant, glare-free light of daylight quality increases motivation and promotes the feel-good factor among employees. Waldmann lights provide perfect lighting for the workplace.

### Sense of well-being

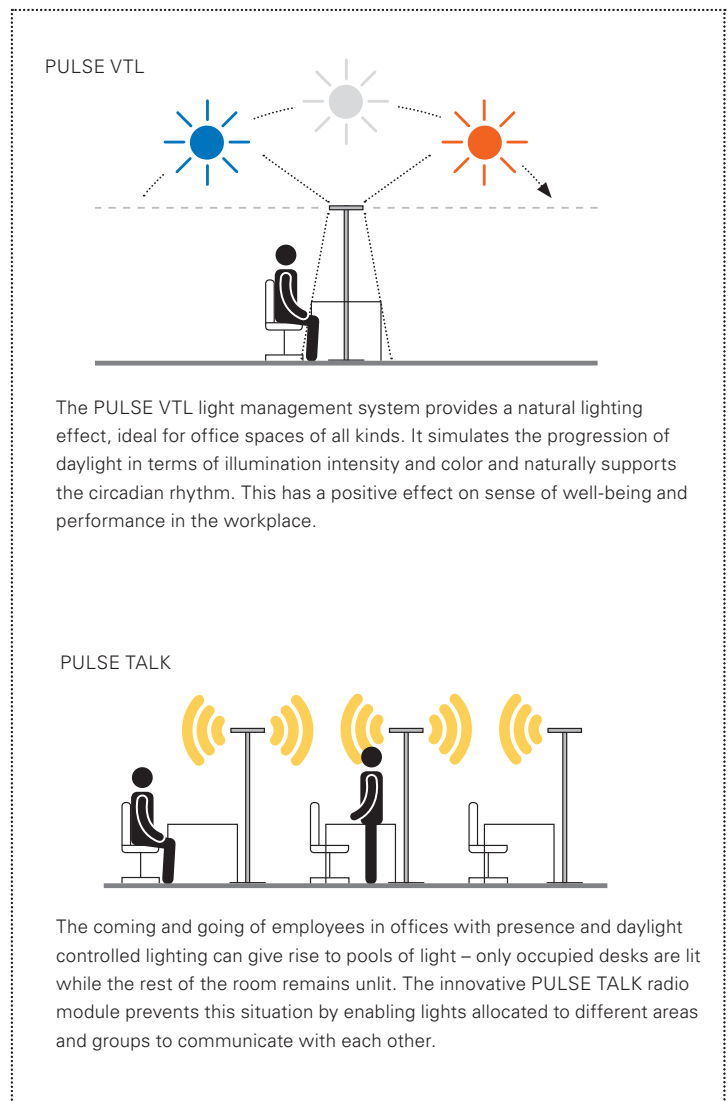
- Natural and healthy working environment
- Motivating lighting in the office using the PULSE VTL
- Avoidance of pools of light using PULSE TALK

### Individuality

- Lighting solutions adapted to type of work, job profiles and personal requirements
- Choice of different colors and options offers creative freedom

### Cost-effectiveness

- Cutting-edge sensor technology and intelligent control enable savings to be made
- Reliable presence detection and intuitive daylight adjustment
- Exceptional light efficiency due to high-performance LED modules and light-amplifying CDP microprisms









ATARO



ATARO





PARA.MI







PARA.MI



# LIGHTING SOLUTIONS OVERVIEW

## THE RANGE AT A GLANCE

	CORRIDORS AND STAIRCASES	RECREATION AREAS		RESIDENTS' ROOMS
MOVEMENT/ VISION	 <p>ViVAA</p>	 <p>VANERA</p>	 <p>VANERA ORBIT</p>	 <p>AMADEA COMPACT</p>
ORIENTATION	 <p>CUBE</p>		 <p>RIGU</p>	
READING/CARE	 <p>AMALIA</p>  <p>MEDICOOL</p>  <p>COSY / COSY LED</p>			
WORKING				

**OFFICES AND ADMINISTRATIVE AREAS**



AMADEA



OBLO

**LAVATORY AREAS**



VANERA BATH



VANERA ORBIT



OBLO



LAVIGO



PARA.MI



ATARO

**ViVAA**

SOPHISTICATED. HIGH-PERFORMANCE.  
ECONOMICAL.

- Surface-mounted or suspended luminaire (500/300 mm)
- Diameter 400 mm/600 mm
- SENS, DALI or VTL light management
- On request: radio-control, emergency lighting
- Glare reduction: CDP microprisms or satin white acrylic

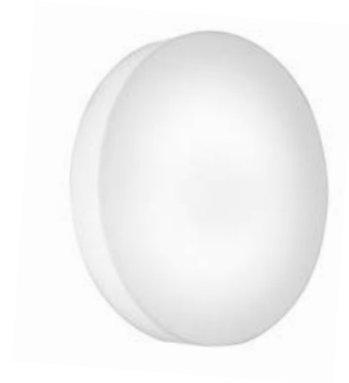
Light distribution	direct/indirect
Luminous flux	5300 lm - 11,000 lm
Light efficiency	98 lm/W - 111 lm/W
Color temperatures	3000 K, 3000-6500 K, 4000 K
Color rendering	Ra > 80

**VANERA ORBIT**

HIGH-QUALITY. DISCREET. UNIVERSAL.

- Wall or ceiling surface-mounted luminaire
- Diameter 395 mm/595 mm
- DALI light management
- Glare reduction with satine PMMA acrylic lens

Light distribution	direct/indirect, mainly direct
Luminous flux	1100 - 4700 lm
Light efficiency	82 - 90 lm/W (LED)
Color temperatures	warm white 3000 K, 4000 K on request
Color rendering	Ra > 80





## VANERA

TIMELESS. HIGH-PERFORMANCE. VERSATILE.

- Wall or ceiling surface-mounted luminaire
- Various lengths 600 mm/643 mm/900 mm/924 mm/1200 mm
- DALI, VTL light management
- On request: radio-control, emergency lighting
- Glare reduction: prism cover (PMMA)
- Versions: VANERA, LED, LED VTL, LED BATH, VTL, BED, BED RC, BATH, VANERA One

Light distribution	direct/indirect
Luminous flux	1400 lm - 6200 lm
Light efficiency	42 lm/W - 83 lm/W
Color temperatures	warm white 3000 K, 4000K on request
Color rendering	Ra > 80



## AMADEA

COZY. CLASSIC. UNIVERSAL.

- Wall or ceiling surface-mounted luminaire
- Various lengths 615 mm/910 mm/1210 mm
- DALI, VTL light management
- On request: radio-control, emergency lighting
- Glare reduction: DRS Double Reflector System
- Versions: AMADEA Standard, VTL, BED, BED RC, COMPACT

Light distribution	direct/indirect
Luminous flux	3300 lm - 12700 lm
Light efficiency	57 lm/W - 66 lm/W
Color temperature	warm white 3000 K
Color rendering	Ra > 80



**OBLO**

SIMPLE. PRACTICAL. ROBUST.

- Wall or ceiling surface-mounted luminaire
- Glare reduction: opal acrylic light cover
- Diameter 300 mm/370 mm

Light distribution	direct
Luminous flux	1200 lm/1900 lm
Light efficiency	92 lm/W/90 lm/W
Color temperature	warm white 3000 K
Color rendering	Ra > 80

**ATARO LED**

MODERN. EFFICIENT. ATTRACTIVE.

- Suspended, freestanding or desk-mounted luminaire
- Glare reduction: AMBIO microprisms including Light Forming Technology
- DALI light management

Light distribution	direct/indirect
Luminous flux	9800 lm
Light efficiency	90 lm/W
Color temperature	neutral white 4000 K
Color rendering	Ra > 80



## LAVIGO

MINIMALISTIC. FUNCTIONAL. EFFICIENT.

- Freestanding luminaire, also available as TWIN-T or TWIN-U
- Glare reduction: CDP microprisms including Light Forming Technology
- Light management: PULSE VTL, PULSE TALK, PULSE HFMD, PULSE PIR

Light distribution	direct/indirect
Luminous flux	5000 lm/8000 lm/10000 lm/12000 lm/16000 lm
Light efficiency	115 lm/W
Color temperatures	4000 K direct (PULSE VTL 2700 – 6500 K indirect)
Color rendering	Ra > 80



## PARA.MI

INDIVIDUAL. PRACTICAL. TIMELESS.

- Task luminaire
- Individual elements and colors combinable
- Flexible attachment: base, clamp or rail system

Light distribution	direct
Light Output	8 W
Illumination intensity	600 lm
Color temperatures	3000 K, 4000 K
Color rendering	Ra >85





**AMALIA**

ELEGANT. STURDY. FLEXIBLE.

- Operation using backlit buttons
- Easy to position
- Luminaire head can be turned through 360°
- Attachment to Dewert bed motor systems (on request)
- Extensive accessory and mounting options\*

Light distribution	Reading light - direct, night light - indirect
Light Output	9 W
Illumination intensity	approx. 1000 Lux/0.5 m
Color temperature	warm white 3000 K
Color rendering	Ra > 80

reddot design award  
winner 2012**MEDICOOL**

TRIED AND TESTED. DEPENDABLE. PRACTICAL.

- Indicator for locating the switch
- Available with spring balanced arm or flexible arm
- Luminaire head can be turned through 270°
- Compatible with various mounting options\*

Light distribution	direct
Light Output	14 W
Illumination intensity	approx. 450 lx/0.5 m
Color temperature	warm white 2500 K
Color rendering	Ra > 80



## COSY

SMALL. POWERFUL. UNIVERSAL.

- Convenience switch with indicator for easy location (not pictured)
- Easy to position
- Compatible with various mounting options\*
- Light distribution: direct

Light Output	15 W
Illumination intensity	approx. 4600 lx/0.5 m
Color temperature	warm white 2700 K
Color rendering	Ra > 80



## RIGU

DISCREET. RELIABLE. FUNCTIONAL.

- Orientation light
- Low power consumption
- High-quality materials

Light distribution	direct
Light Output	3 W
Luminous flux	144 lm
Color temperature	warm white 3000 K
Color rendering	Ra > 80



## CUBE

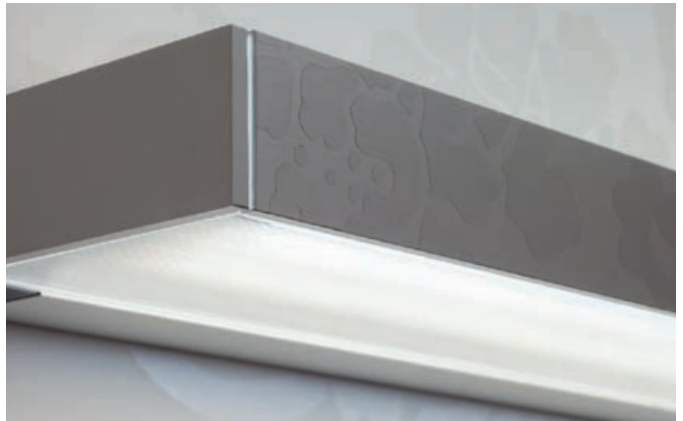
EFFECTIVE. FLEXIBLE. ROBUST.

- Orientation light
- Low power consumption
- High-quality materials

Light distribution	direct/indirect
Light Output	6 W
Luminous flux	326 lm
Color temperature	warm white 3000 K
Color rendering	Ra > 80



\* Derungs components



VANERA: customized front cover designs on request



## CUSTOMIZED SOLUTIONS

### OFF-THE-SHELF LIGHTING IS A THING OF THE PAST

Our lighting solutions can be personalized to reflect the varied styles of today's healthcare and senior living facilities. There is an extensive range available with solutions to suit every type of institution and budget. Customized designs and color variations provide inspiring interior design options, while modular equipment packages offer suitable lighting for every need. The possibilities are endless.

#### Designs and colors

- Available to order in any RAL color
- Various patterns or finishes on request

#### Technical equipment

- Biodynamic light management with VISUAL TIMING LIGHT
- State-of-the-art LED luminaires
- Presence sensor and much more



AMALIA: various light shade/body designs on request



ViVAA: various trim ring/casing/suspension tube designs on request

# VISUAL TIMING LIGHT

## THE CHOICE IS YOURS

ViVAA VTL



### Sunshine for rooms

The ViVAA's elegant polished stainless steel luminaire head not only looks good, its highly-efficient LED technology and outstanding light yield make it a real trailblazer in terms of cost-effectiveness.

VANERA VTL



### The modern classic

The VANERA, with its timeless, simple silhouette, is particularly well-suited to hallways and corridors and shines with light at the highest level. The room is uniformly illuminated.

AMADEA VTL



### The cozy room light

Not only does it have a special charm, but it is also distinguished by excellent lighting efficiency. The AMADEA illuminates every room uniformly.

DALI control system



### The heart of lighting control

VTL lighting units can be controlled individually using the DALI short address and their intensity can be adjusted (dimming).

The control system is equipped with two DALI lines for up to 64 DALI devices per line.

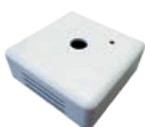
Operation using the iPad or buttons



### The modern control option

Lighting can be controlled entirely via an iPad app, allowing simple activation of customized lighting moods.

Daylight sensor and presence sensor



### The cost-effective accessory

The VTL system is extremely versatile. Additional system components, such as the daylight sensor and the presence detector further optimize energy efficiency.

# SERVICES

## WE'RE HERE TO HELP

With our comprehensive range of services, you have the full spectrum of support available for your project. We are happy to offer you a full service package as well as individual services as part of our modular approach.

### Design advice

We are happy to advise you. Discover that light is not just light and learn more about the different benefits of our lighting solutions.

### Light planning

Our lighting planners will draw up a customized, sophisticated lighting plan according to your requirements and preferences.

### Project management

If required, we will provide comprehensive project management: from conceptual design and preparation of specifications through to documentation and coordination of delivery.

### Commissioning

We not only assemble the lighting units for you, but also ensure that they are optimally positioned, adjusted and connected to BUS systems.

### Maintenance

If required, we are happy to provide cleaning, lamp replacement and regular operational testing services.

### Spare parts service, repair and warranty

Do you have a question about one of our products or require a spare part? We will be happy to help.



## **OUR PASSION**

### LIGHT FOR PEOPLE

Derungs is the division of the Waldmann Group which specializes in designing solutions for the medical and healthcare sector. We have been developing and producing high-quality lighting solutions for over 75 years. Our VISUAL TIMING LIGHT biodynamic light management system makes us a trailblazer in the field of human-centric lighting. Consultation and recommendations are available through Waldmann's sales departments.





### Our lighting expertise

- Treatment lights
- Examination lights
- Care and reading lights
- Magnifying lights
- Room and orientation lights
- Visual Timing Light (human-centric lighting)

**Derungs** 

A company of the Waldmann Group.

#### List of references

The content draws on the following sources:

- 1 Prof. Dr. Cornelius Becker: Evidenzbasierte Sturzprävention im Pflegeheim (Evidence-based Fall Prevention in Care Homes), German Federal Institute for Fall Prevention, Robert-Bosch Hospital, Stuttgart
- 2 C. Becker MD et. al: Epidemiology of Falls in Residential Aged Care: Analysis of More Than 70.000 Falls From Residents of Bavarian Nursing Homes, 2011
- 3 C. Heinze, U. Rissmann, T. Dassen: Angewandte Pflegeforschung (Applied Care Research). PrinterNet 2/04, Berlin
- 4 Original Study, Epidemiology of Falls in Residential Aged Care: Analysis of More Than 70,000 Falls From Residents of Bavarian Nursing Homes (2011)

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123rf – pages: p. 1, p. 2-3, p. 4, p. 10  
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Center of Expertise for Care & Health:



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