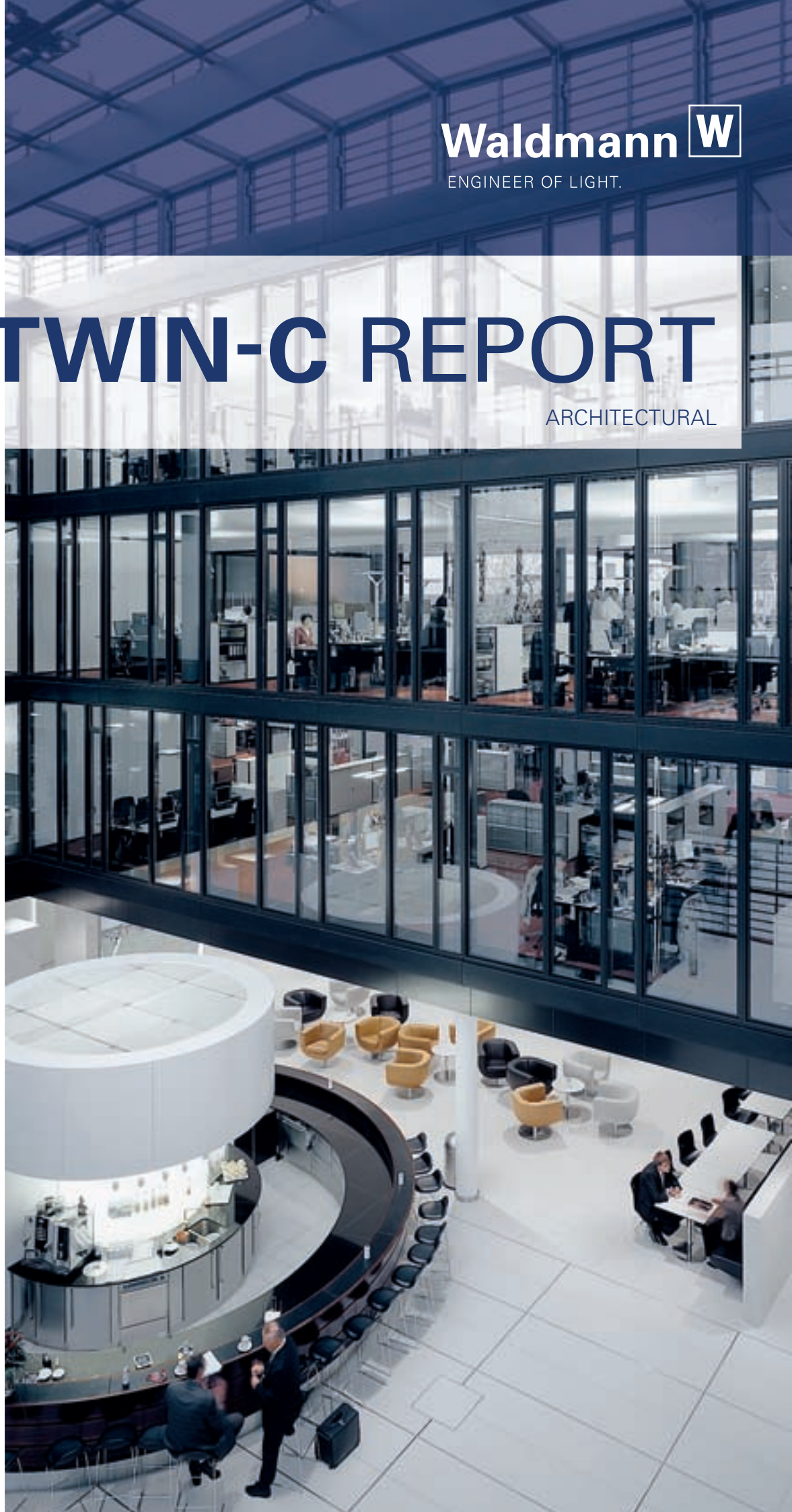




# TWIN-C REPORT

ARCHITECTURAL

UP-TO-DATE INFORMATION ABOUT INTELLIGENT LIGHTING SOLUTIONS FROM WALDMANN | MARCH 08



# INTEGRAL DIMENSIONS

## INTEGRATED LIGHTING CONCEPTS FOR SANTANDER CONSUMER BANK, MÖNCHENGLADBACH



2

Universal, integral thinking with a defined purpose—this is the impression conveyed to the observer when viewing the newly constructed Santander Consumer Bank in Mönchengladbach, Germany. The carefully coordinated components combine functional structures with aesthetic significance. Here, the “office” work environment is considered a living environment that creates atmospheres - atmospheres that reflect the defined identity of the company. The “Demonstrating and creating mobility” principle is intended to create additional impetus to further expand the company’s existing high-profile position as a financial services provider, domestically and abroad. In order to implement this principle, completely new approaches were required, which in all areas resulted in absolutely new solutions. Little room for individual working, but plenty of tailor-made room for team and project work, presentations and conferences were the rules of thumb. The illumination of the workplaces had to blend with the overall design, so that, on the one hand, the functional, individual visual tasks of each employee can be perfectly performed and, on the other hand, building management system-related requirements were covered. In concrete terms, this means system thinking, i.e. the uncompromising minimization of energy consumption, while achieving exemplary lighting comfort at the same time. Daylight and artificial lighting are symbiotically linked in all applications by technological systems.

The ideal concept of a room without boundaries, bathed in light, which positively motivates, promotes communication and work processes, and triggers a profound sense of unity, has been consistently implemented in the office configuration of Santander Consumer Bank. A high level of daylight in the work rooms, however, also plays a key role from energy points of view. Specifically, this means high lighting comfort, which takes the individual needs of each employee into consideration, and intelligent lighting technology, which automatically controls the light intensity at each workplace as a function of the daylight. Based on these requirements, two special variants of the Waldmann “tycoon” free-standing luminaire with integrated “pulse” light management system were used. The planners and users unanimously welcomed the well-defined luminaire geometry, the pleasant, glare-free light, and the special lighting design comfort. The option provided to each employee of being able to individually adjust two different lighting levels directly at the workstation was considered unique. In addition, each individual luminaire is connected to the bus system integrated in the building. As a result, the lighting can be interactively adjusted individually and collectively and detailed monitoring of the efficiency data is possible. A total of 900 dimmable special variants of the indirect/direct “tycoon” luminaire were installed, which were equipped with a matching special base.



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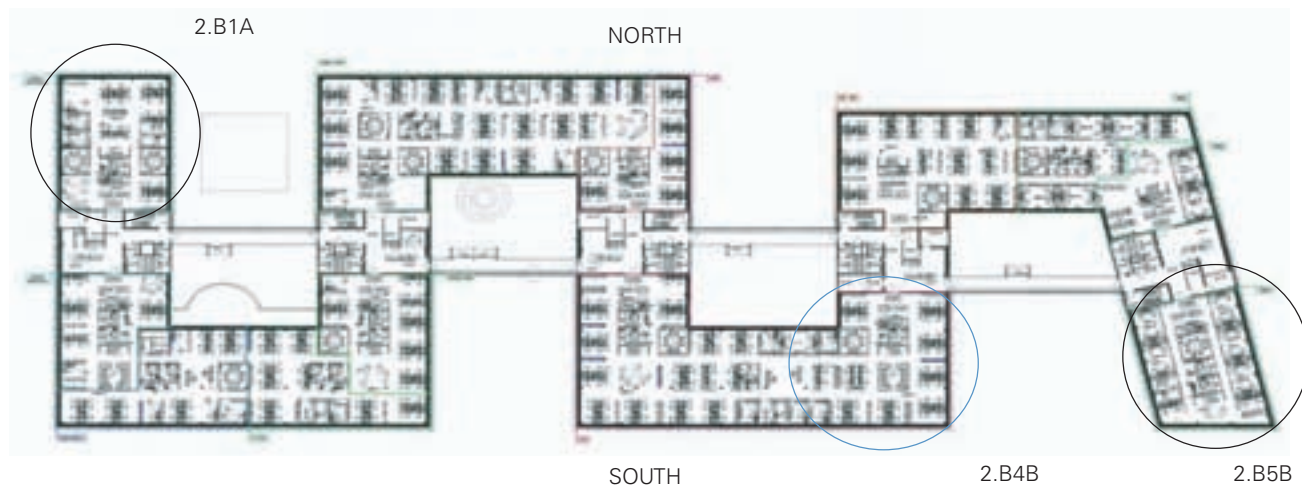
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2 Instead of using conventional cubicle structures, open work floors were created. Natural lighting comfort with intelligent technology demonstrated by the example of the “tycoon” free-standing luminaire with integrated “pulse” light management system. (plant photography HPP Hentrich-Petschnigg & Partner GmbH + Co. KG, photograph: Jochen Stüber)

3 Integrated wall panel for controlling and adjusting the individual components.

4 Interfaces for the power supply and connection to the in-house bus system.



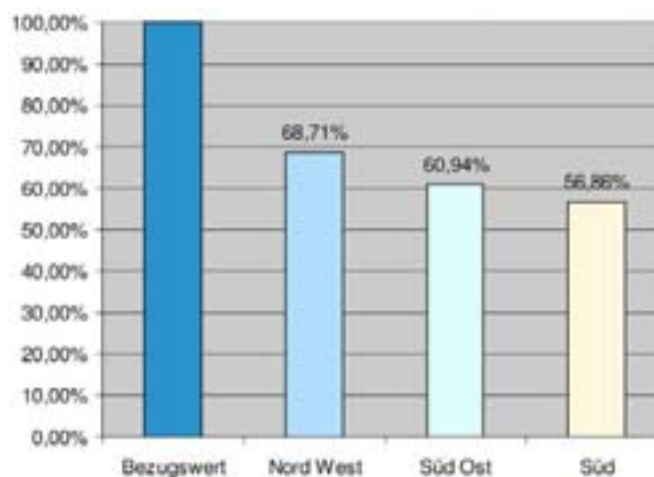


| 2.B1A                  |  | 2.B4B                                     |  | 2.B5B                  |  |
|------------------------|--|-------------------------------------------|--|------------------------|--|
| NORTHWEST              |  | SOUTH                                     |  | SOUTHEAST              |  |
| A= 14.65 m x 20.50 m = |  | A= 24.00 m x 14.65 m + 14.65 m x 5.65 m = |  | A= 14.65 m x 20.00 m = |  |
| Room height            |  |                                           |  |                        |  |
| Reflectance values     |  |                                           |  |                        |  |
|                        |  |                                           |  |                        |  |
| Installed power        |  | 6.11 kW                                   |  | 3.76 kW                |  |
| Average output         |  | 3.47 kW                                   |  | 2.29 kW                |  |
| Potential              |  | 43.1 %                                    |  | 39.1 %                 |  |

Monitoring three defined test zones demonstrates the different power consumption levels or energy savings potential

Measurement period: 2nd half of 2007

The reference value is defined as installed power without light management system and average output duration. (Source: Waldmann)



**Builder-owner:**  
VR-Leasing Onyx GmbH, Eschborn

**Architects:**  
HPP Hentrich-Petschnigg & Partner  
GmbH + Co. KG, Düsseldorf

**Office furnishings:**  
Objektform Essen

**Functional lighting equipment**  
Herbert Waldmann GmbH & Co. KG  
Villingen-Schwenningen



# TWIN-C – NEW ECONOMIC EFFICIENCY



TWIN-C is the combination of intelligent lighting solutions (Concepts) with compatible components (Components) – to provide proper lighting in the right location. The effects for the company are extraordinary:

## LIGHTING EFFICIENCY

### 1 ENERGY SAVINGS

- Rising energy costs, the “Building Passport”, and the Minergie standard compel a new way of thinking.
- In the future, proper lighting using little power will become an important factor to consider in the quality of a lighting system.

### 2 ECONOMIC

- Useful and purpose-oriented lighting planning.
- Focus on the visual task zone, not on the entire room.
- Consideration of individual user requirements.
- Use of daylight through daylight sensors.
- Use of presence detectors.
- Connection to modern building management systems (LON, KNX).

## LIGHTING QUALITY

### 3 HEALTH

- Proper lighting lowers sick leave and absenteeism and ensures that non-wage labor costs decrease in the medium- to long-term.
- Optimized illumination of computer workstations.
- Consideration of age-related lighting needs

### 4 PRODUCTIVITY

- Increased comfort resulting in greater motivation and well-being, despite energy savings.
- Creating upscale surroundings through a harmonious environment, lighting mood, and lighting design.
- Optimization of performance through individual adjustability.
- Improved concentration through improved lighting quality. Influence on metabolic processes relevant to health and well-being.

## MORE ABOUT TWIN-C:



### TWIN-C brochure

Did you know that 40% of all building-related costs, in relation to the life cycle, are energy costs and that more than two thirds is attributed to lighting?

TWIN-C shows ways to lower energy costs and increase lighting comfort. To ensure that rising energy costs do not automatically result in higher expenses for your company, increased energy efficiency plays a crucial role. In the office, investing in proper lighting, however, means not only savings in day-to-day energy costs, but at the same time greater attention by the employees, less fatigue, improved concentration, and better performance.

Minimized energy consumption at maximized user comfort is the goal of a future-oriented lighting design. TWIN-C ensures an equitable consideration of these requirements. Request our brochure and learn more. We will show you based on different TWIN-C lighting concepts how “the right lighting combination” can increase your company’s success.

[www.waldmann.com](http://www.waldmann.com)