



Rotterdamse Stijl

Lichtplan Rotterdam



SUMMARY

Lighting Plan Rotterdam

The municipality of Rotterdam has developed an urban lighting plan which is based on the strategy of 'Smart light'. Rotterdam consulted the existing lighting plans of Hamburg, Frankfurt, Gent and Lyon as a reference. These plans focus primarily on the beautification of the historic city centers. Rotterdam, in contrast, has developed a lighting scheme which integrates functional lighting with ambiance lighting on a city-wide scale. With this approach, Rotterdam is leading in Europe.

The expertise of Ulrike Brandt Light, Hamburg was commissioned to achieve this plan.

The ambitions

The primary task of public lighting is to guarantee traffic safety on the streets of Rotterdam and community safety in the public domain. The Lighting Plan also accommodates the following three specific policy ambitions of the municipal government:

1. To achieve a better design-quality of both dayscape and nightscape in order to strengthen the leisure function of public space;
2. To achieve more efficient maintenance of public lighting by introducing standardization in lighting fixtures and masts, thus putting a halt to the increasing diversity which makes current maintenance overly expensive and inefficient;
3. To reduce energy levels and energy pollution by applying technological innovations which contribute to sustainability on a city-wide scale.

The nightscape of the city

Rotterdam is currently strengthening its urban qualities as an attractive residential, working and leisure city. The public domain has been recognized as a precondition for building an attractive city. Until recently, public space was primarily designed by day. With the introduction of this plan, new priority is being given to the 'architecture of the night'. Besides the primary task of public lighting for infrastructure, the plan involves the lighting scheme for specific urban identities, spatial typologies and icons. The plan demonstrates how a strategic lighting scheme contributes to city branding and night-time economy.

Specific urban identities which are characteristic of Rotterdam by night have been addressed in the urban lighting plan.

- Rotterdam, city on the waterfront
The waterfront is presently being transformed into a leisure area. This enables a better perception of the views over the river and along the shores. The lighting strategy therefore introduces less light dispersion and light pollution along the river Maas.
- Rotterdam, green city
In pursuance of ecological goals for flora and fauna and the policy of 'dark skies', parks and green areas will generally refrain from public lighting unless they are intersected by connecting traffic routes which require lighting for traffic and community safety.
- Rotterdam, city of architecture
Strategies for the illumination of icons, national heritage buildings, monuments and historic neighborhoods are based on the theme of city branding. These strategies are further designated in the Lighting scheme for the City Center (part 3).



The strategy of 'Smart light'

The Lighting Plan Rotterdam offers a surprising uniformity and simplicity in the proposed strategy.

It is precisely the integral approach of addressing the three ambitions of design quality, maintenance and sustainability simultaneously which constitutes the innovative strategy of 'Smart light'.

- Use warm white light;
- Use lower, more balanced lighting levels within the NPR-norm but at the lower end of the range;
- Use more directed light, correct positions and less blinding; protect 'dark skies';
- Use less masts and less fixtures; reduce the diversity of types of masts and fixtures;
- Use more efficient and innovative lighting techniques.

Warm white light

Applying warm white light (2800-3200 Kelvin) as the new urban standard will strengthen the spatial structure of the city and will make the orientation of road networks and waterways more legible at night. Warm white light optimizes the recognition of colors, facilitates visibility, general orientation and community safety. Furthermore, white light requires less energy than the traditional sodium lamps which emit yellow light.

Lower, more balanced lighting levels

Evenness in lighting eliminates dark spots along the street, thus contributing to general safety. By applying more balanced lighting, the functional levels

of public lighting can be adjusted to the lower end of the NPR-norm, thus reducing energy.

Directed light: correct positions and less blinding

When lighting is directed effectively, this reduces blinding and excessive light dispersion. It also eliminates light pollution, thus contributing to the European milieu-policy of 'dark skies' in addition to reducing energy.

Less masts and fixtures

In order to reduce the amount of masts and fixtures on the streets, the amount of power points for public lighting must be reduced. This can be achieved by using innovative lighting techniques with an improved technical performance. Furthermore, the diversity of masts and fixtures can be reduced by introducing a limited number of design-families for masts and related fixtures. Subsequently, masts can become multifunctional for lighting, traffic and signage. An intelligent and multifunctional design-concept for masts also facilitates standardized maintenance.

The Lighting Plan proposes new standard masts and fixtures in the city based on empirical tests or 'mockups'. One such mockup, situated on the Westerkade, tests a series of catalogue-fixtures for the waterfront.

The Lighting Plan also proposes a series of technical guidelines. These refer to mast heights, mast intervals and light point heights (advised by the Nederlandse Praktijk Richtlijnen and Rotterdam Style), light levels (NPR), light direction (G-class), light color (Kelvin) and light source (lamp).



Efficient innovative lighting techniques

The Rotterdam Climate Initiative offers a platform for the business community, government authorities and municipal organizations to join forces in promoting sustainability. The concrete target is a 50% reduction in CO2 emissions in 2025 as compared to 1990. The issue of energy reduction in public lighting has become increasingly relevant since the widespread research on LEDs. LEDs are expected to reduce energy by 30% since these direct bundles of light eliminate unnecessary light dispersal and light pollution.

Of prime importance in Rotterdam is also the need to benchmark lower lighting norms within the confines of traffic and community safety. The city government has thus begun to dim the main thoroughfares from 23.00 pm to 5.00 am by 50% as a means to contribute to the city's long-term commitment to reducing emissions.

Design guidelines in accordance with Rotterdam Style

The Lighting Plan Rotterdam is part of a larger municipal project entitled The Handbook Rotterdam Style (2008). This handbook is directed towards achieving a coherent design and continuity for the quality of urban space. The Lighting Plan Rotterdam corresponds to the spatial typology introduced by the Handbook Rotterdam Style. By using the spatial typology as a foundation for the Lighting Plan, it has become possible to make a lighting plan on an entire city-wide scale.

For example, The Handbook Rotterdam Style classifies the spatial typology of the city using the organizing principles of line, area and place. The Lighting Plan follows these same spatial categories of line, area and place.

In addition, The Handbook Rotterdam Style adds accent layers to emphasize existing structures or history. The Lighting Plan has combined these accent layers with the identities of Rotterdam (waterfront city, city of architecture, green city) to propose lighting design principles for these specific categories.

Designing layers of light

The Lighting Plan introduces the principle of designing 'layers of light'. Layers of light and lighting accents can be introduced for extra ambiance and orientation. Examples are façade and canopy lighting, illumination of architectural icons and accenting connecting routes. Using this principle of layered light, the lighting of shop windows can be designed together with the public lighting of the sidewalk. This approach strengthens the City Lounge, a policy for the town centre as an leisure area and its public domain as the 'living room of the city'.

Light architecture, a professional discipline

The Lighting Plan Rotterdam aims to introduce a new professional discipline to the municipal organization of urban development, planning and design. It aims to incorporate the nightscape in the design of streets and buildings in addition to the dayscape. The new concept is the 'architecture of the night'. This concept not only lends itself for making designs but also for judging the quality thereafter. This approach facilitates the interdisciplinary collaboration of the departments of Town Planning, Public Works and Rotterdam Climate Initiative of the city government.



City of Rotterdam and Public lighting

Facts & figures

630,000 inhabitants

106,900 luminaires

Annual costs of approx. € 11,2 mln

- Management and maintenance
- Debt servicing charges
- Energy
- Costs of gridmanagement

Energy consumption 22,7 mln kWh/year

