

2226
Lustenau, AT





"2226" building, Lustenau | AT

Building owner: AD GmbH, Lustenau | AT

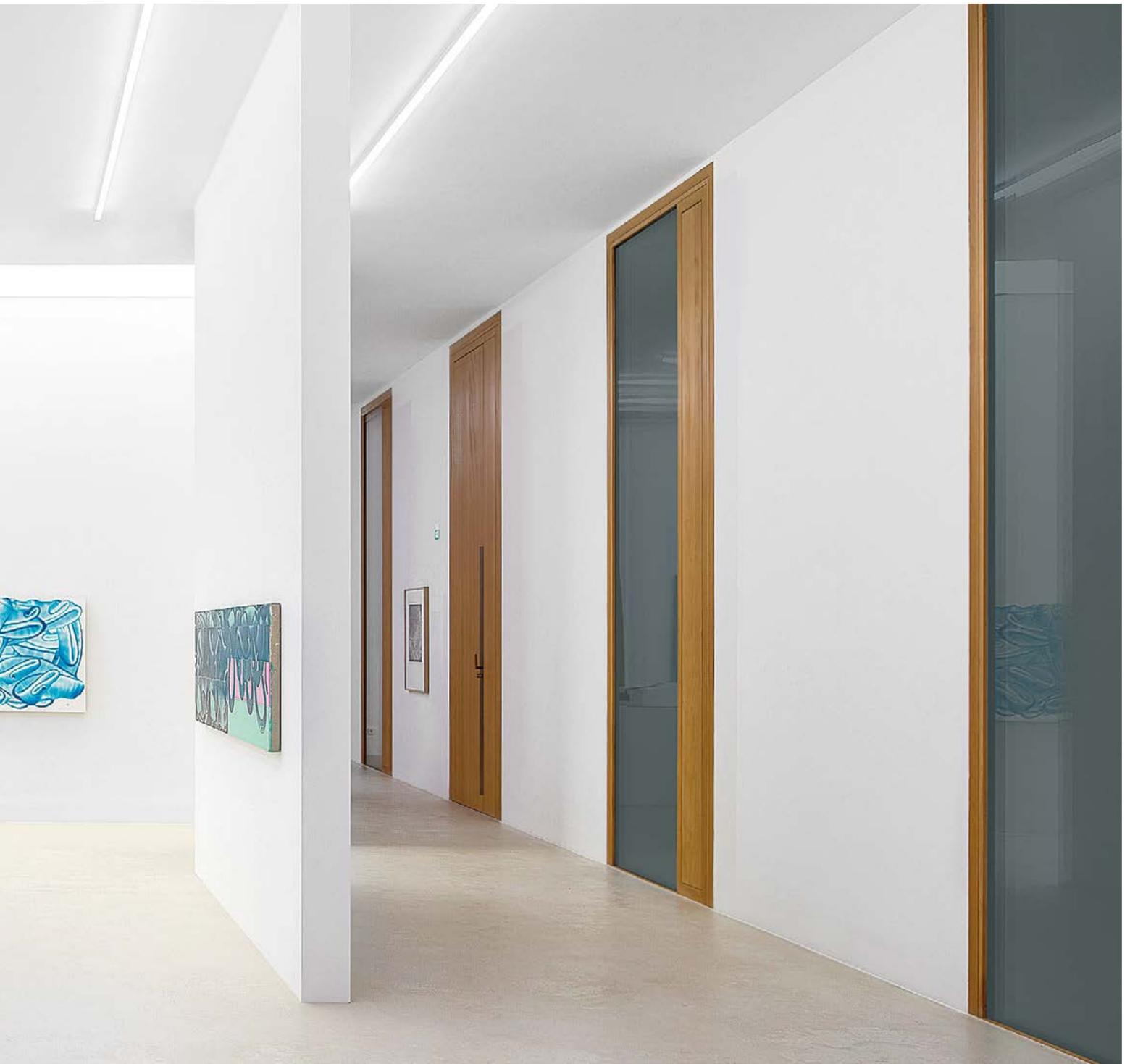
Architecture: be baumschlager eberle, Lustenau | AT

Energy optimisation: Lars Junghans, Michigan | US

Lighting design: Symetrys, Lustenau | AT

Electrical design: Elmar Graf GmbH, Dornbirn | AT

Lighting solution: LINARIA light line, PANOS infinity LED downlight, LED light surfaces, free-standing luminaires



More comfort with less energy

"2226" is an archetypal sustainable building. The basic idea is to achieve an extraordinarily high level of comfort whilst using as few technical systems as possible. As a result, the six-storey building does not require any heating, cooling or mechanical ventilation. Architect Dietmar Eberle relies instead on solid walls and the air-cleansing effect of lime, high ceilings and large room depths, elegant materials, effective air circulation and the optimum use of daylight.

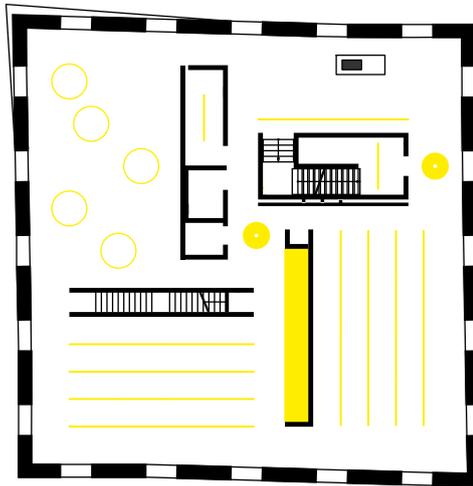
Artificial lighting compensates for the absence of daylight in the evening and at night. The lighting solution ensures visual conditions in which people feel comfortable, helping make sure that they are focused and motivated to work. Light is also an essential element for orientation in the building. Light lines, spotlights and light surfaces deliver both an element of design and high lighting quality.

Lighting for the office and communication

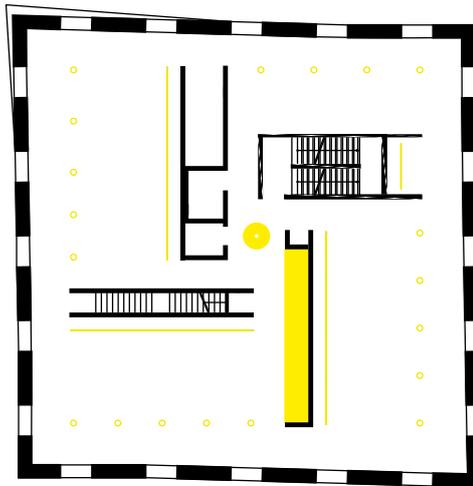
Putting people at the centre of modern office concepts



The name "2226" refers to the essential component of human wellbeing. A pleasant interior temperature of between 22 °C and 26 °C is permanently maintained without heating, cooling or mechanical ventilation systems.



Ground floor with gallery



Upper floor with free-standing luminaires



Increasing the sense of wellbeing

A good lighting solution creates conditions in which people feel comfortable, so that they are focused and motivated to do their work. Factors such as even illumination of the work surface, friendly-looking faces and bright walls and ceilings have a direct influence on the physical and mental wellbeing of users.



Creating identity

A lighting solution that can be adjusted to suit personal preferences, with variable colour temperature and lighting intensity, helps raise employee satisfaction and create identity. High quality product design and architectural lighting arrangements additionally play a vital role here.



Reducing costs

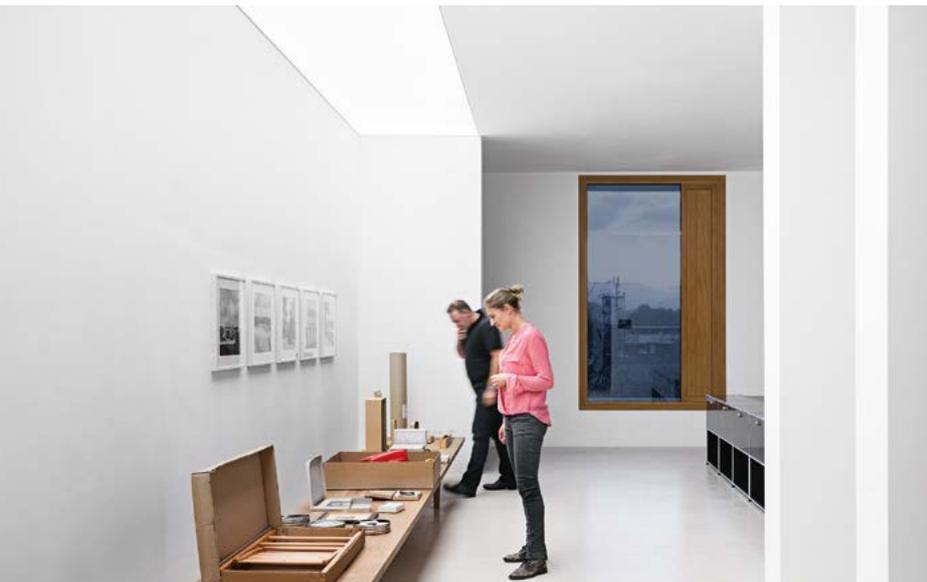
Lighting solutions have a direct effect on operational costs through energy efficiency, long service life and lighting management systems. Corporate image can also profit from a sustainable environmental policy.

Lighting for the office and communication

Innovative lighting concepts make an impact

♥ Increasing the sense of wellbeing

Architect Dietmar Eberle set the emphasis firmly on wellbeing with a modern building concept that includes both rooms to work in and places to meet. In addition to the “be baumschlager eberle” architecture studio a series of other offices, a cafeteria and a renowned gallery have all found a new home within the 2500 square metres of floor space. Different lighting requirements arise from these various functions within the application, which are all fulfilled with just four types of luminaire. Light lines and spotlights deliver general lighting and guidance, whilst flat light surfaces create a high level of employee stimulation thanks to their biological lighting effect. Individually adjustable lighting for work-spaces is achieved with a range of free-standing luminaires which have joined the team in the new architecture studio.

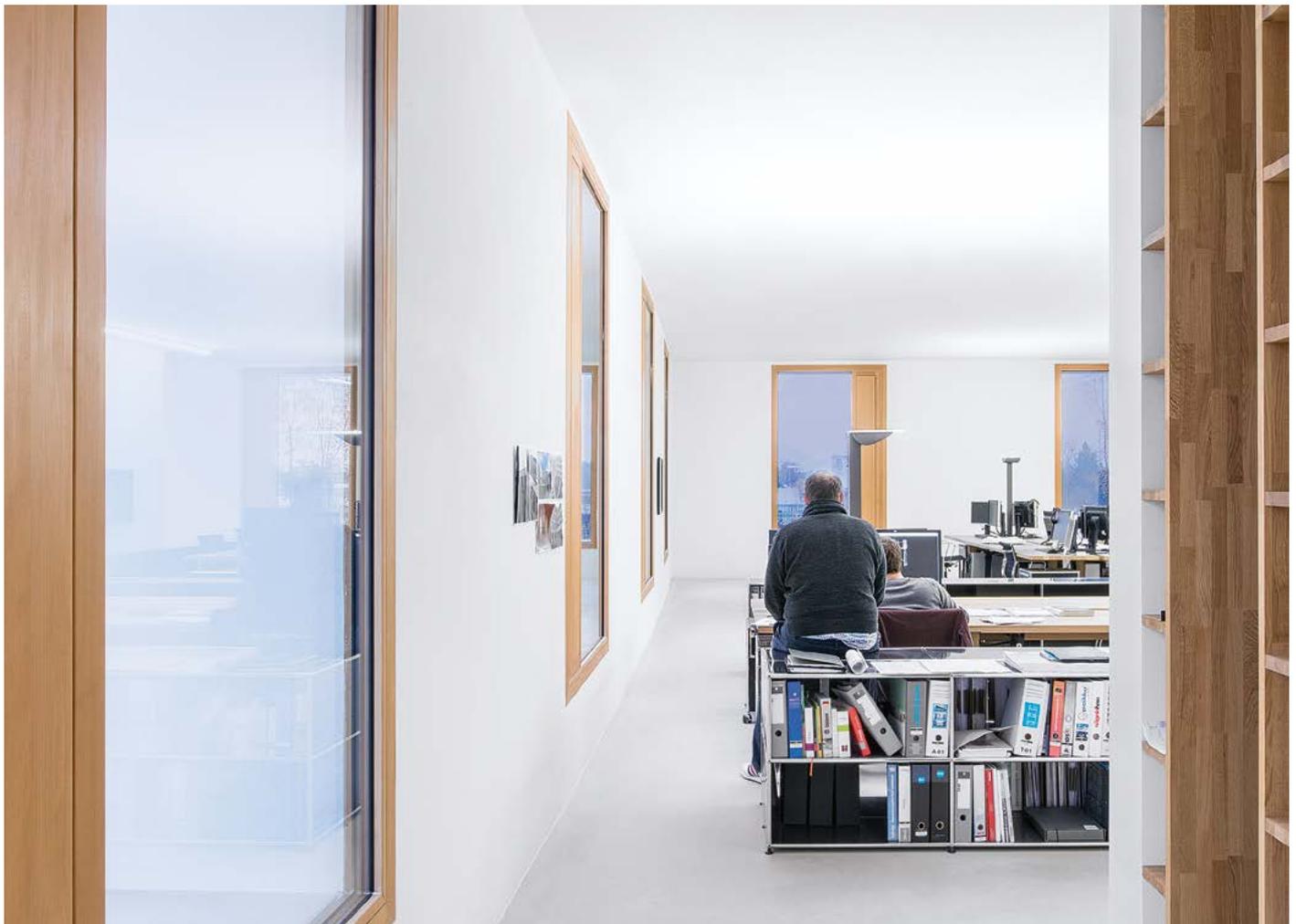


High-quality materials, pleasant proportions and a tailored lighting solution combine to create visual calm.



LINARIA shows its value as both a horizontal surface-mounted luminaire and a vertical recessed strip, helping facilitate orientation for visitors and staff.

Ample daylight and a unique lighting solution with inear, flat and point light sources support a pleasant and creative working atmosphere in the offices.





Creating identity

The white rendered cube on the outskirts of the town of Lustenau has soon become a frequently-visited reference project for technical prudence. There is certainly an abundance of high-quality materials on show. Luminaires from Zumtobel complement the generous composition and use of space. The real luxury lies in the simplicity. Each floor, offering four function rooms, has been designed to be modular and flexible. The windmill-style layout of the rooms is also reflected in the lighting concept. A round PANOS recessed downlight with suspended decorative glass marks the middle of the building. Light lines then radiate out into the rooms to deliver general illumination. Depending on the area of application, these are supplemented by further light lines, LED light surfaces or point light sources.



The discreet LINARIA batten luminaires emphasise the building's architecture thanks to its extremely sleek structural shape and particularly scores points in the exhibition and communication zones with its low-key design.



Reducing costs

By deliberately moving away from conventional building technology, on-going energy costs have been reduced to a minimum. Staff, computers and lighting are used as sources of heat instead of an actual heating system. Ventilation and shade are controlled by revolving wooden blinds in the massive window apertures, fitted on the right or left side of the window to offer maximum protection from the sun. The external window ledges can absorb up to 21 litres of rainwater and serve to bring further daylight into the application by acting as an additional horizontal surface of reflection. Natural light is optimally supplemented by contemporary artificial light sources from Zumtobel. The products used in the building offer excellent luminaire efficiency and sustainability with a long product lifecycle. The individually connectible free-standing luminaires are even being re-used – they were a popular part of the lighting solution in the previous architecture studio before the recent relocation.



Atmosphere instead of machines



Dietmar Eberle, Architect

be baumschlagler eberle, Lustenau | AT

This versatile building functions without heating, cooling or mechanical ventilation systems. Was it possible to align the lighting with this “more comfort with less energy” principle?

The factors that contribute to the comfort of a building are the atmosphere, the humidity, the CO₂ value, the temperature and the highest possible degree of daylight, or generally speaking, the brightness. All of these factors also need to retain a certain degree of individual control.

The atmosphere is more important to you than machines.

What creative contribution does the architecture and particularly the light make in this context?

The creative contribution from the architecture is all about simplicity, orientation and familiarity. This includes as much daylight as possible and individually controllable artificial light.

What role does daylight play and which tasks does the artificial light fulfil?

Distributing the daylight as evenly as possible in the rooms using the ceiling height and window layout is certainly worthwhile. It is important to avoid strong light contrasts. The artificial light is simply an extension of the daylight. It is important that the artificial light is only used when there is not enough daylight available, otherwise the artificial light also transmits energy in the form of heat.

How is your workspace lit and how do you personally see the development of office lighting over the next few years?

The sense of wellbeing in my office is created by using different light sources and therefore different atmospheres for particular tasks. Office lighting will consist of two components in the next few years - general lighting of approximately 200 to 300 lux, to support the atmosphere of the room, which can then be supplemented with 700 to 800 lux on the work surface.

Lars Junghans

Energy optimisation, Michigan | US

How can a building without heating, cooling and ventilation systems fulfil employee requirements in terms of personal wellbeing?

The building automation system software has been optimised to ensure that general comfort conditions and air quality in the rooms are tailored to meet the needs of the users, without requiring a large amount of technology. The aim was to find the optimum balance between a good building envelope and future-orientated technology, which still sets itself apart from conventional high-efficiency buildings.

What experience and which calculations support your recommendations for energy optimisation?

Architects and engineers of building technology are generalists in various ways. Developing the energy concept for the "2226" building was very interdisciplinary, because knowledge from the areas of user comfort, air quality, user behaviour, structural physics, thermodynamics, fluid mechanics, lighting technology and automation all came together. Mathematical algorithms were used for optimisation during the planning of the energy concept and building automation system, which can solve non-linear and complex problems. The dynamic temperature effects in the building were analysed with simulation software. CFD (Computer-aided Fluid Dynamic) software was used to understand the distribution of the CO₂-concentration and air flow. In addition, experiments were carried out to verify the results generated by the computer. Uncertainties in building operation and calculations were taken into account during the analysis.

What tasks did the lighting solution have to fulfil in this context?

The lighting solutions in "2226" are partly intended as effect lighting. This can also be seen in the exhibition area on the ground floor. In my opinion, the lighting is part of the whole work. The linear lighting in the office area provides general lighting. In combination with the individual workplace lighting, this is an excellent solution.



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