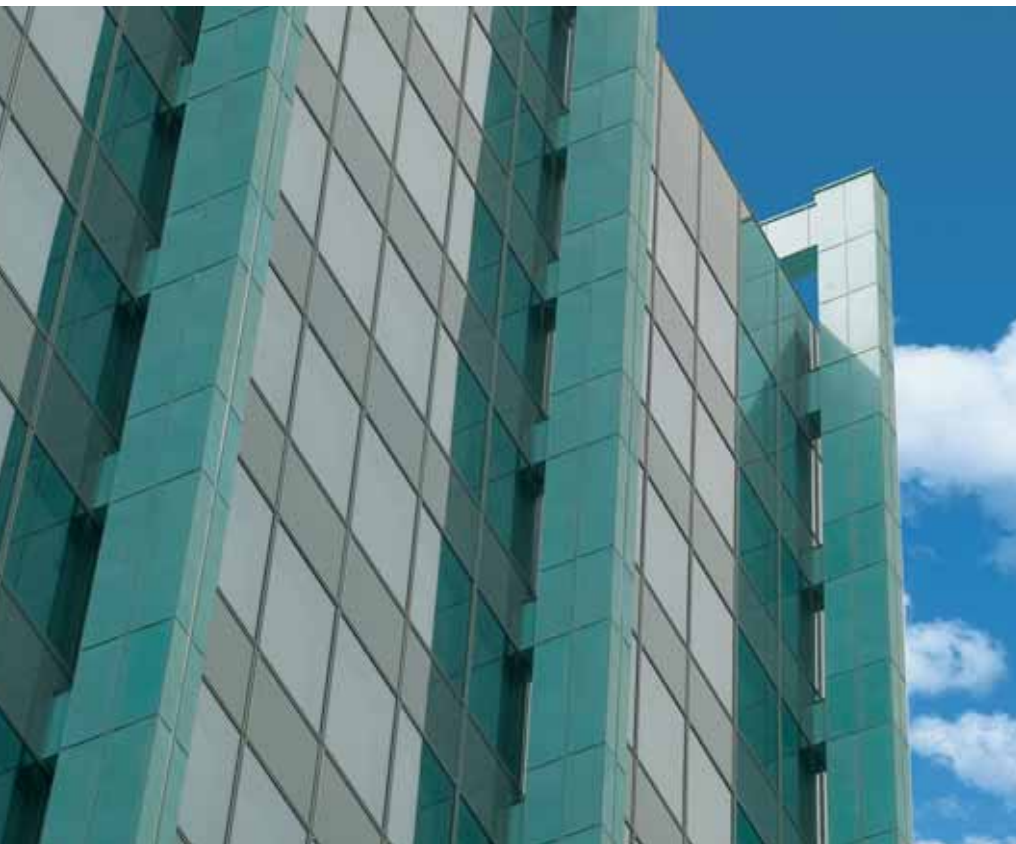




Swiss National Insurance Building, Frankfurt / Germany



Project
Swiss National Insurance Building,
Frankfurt am Main / Germany

Client
Swiss National Insurance Society,
Basle / Switzerland

Building trust
Emch+Berger AG
(Structural Design), Basle / Switzerland

Architect
Pielok Marquardt Architects
with Project Partners Jürgen Hartmann,
Offenbach / Germany

Façade construction
BUG-Alutechnik GmbH,
Kennelbach / Austria

Completion date
June 2006

Usable floor area
8500 m²



The Successful Refurbishment of a Monument



Frankfurt is the city of high-rise buildings – they have been shaping the city's skyline since the 1950's and 1960's, unlike in any other German city. A landmark building on the bank of the River Main is the Head Office of the Swiss National Insurance Society, based in Basle / Switzerland.

This is not simply the refurbishment of just any building, but the refurbishment of the oldest high-rise building in the banking quarter. The 16-storey building reaches 56 metres up towards the sky – quite a formidable height back in 1964 when the building was constructed. The high-rise building also assumes a key position in Frankfurt's cityscape, as it stands directly on the Untermainbrücke and marks the entrance to the city, rather like a tower bridge, when the city is approached from the direction of Sachsenhausen.

►
The light-control venetian blinds permit an almost unimpeded view from the desk out over the River Main.



Hans-Martin Marquardt und Andreas Pielok,
Pielok Marquardt Architects,
Offenbach / Germany

"The refurbishment required us to be very sensitive when dealing with this listed building. In order to meet today's demand for a flexible floor layout, we reduced the façade grid to 1.25 metres and used especially slim aluminium profiles, in which invisible parallel hinged windows are integrated."

Striking architecture

The stark, rational style of the Swiss National Insurance Building, built in the "international style", combined with its fine proportions, give the building a timeless elegance. Its exceptionally striking support structure has created a unique appearance and has given the high-rise building the status of a Frankfurt monument. Floor structures are suspended between an internal core and five external concrete steel frames, which span the building like over-sized supporting handles. The construction of the building is not the only feature that catches the eye, the copper cladding on the frames has the effect of making the building stand out from its surroundings. The light-coloured cladding elements stand out from the darker façade and, in so doing, reinforce their three-dimensional effect.



Façade design

The architects, Pielok Marquardt from Offenbach, working in collaboration with their project partners Jürgen Hartmann, permitted themselves a small correction with the windows, in order to create a more flexible floor layout in the building. They modified the almost compact-like square structure into a longer "portrait" format, which has had the effect of visually stretching the façade and creating a more slimline look. Furthermore a tubular striped screen print design, in shades of grey, was designed specifically for the building, dividing up the façade horizontally along the sill lines.

Natural lighting

Internally the architects have set great store by ensuring that the building is technically state-of-the-art. As daylight is a fundamental prerequisite for the effective use of a building, the design of an appropriate sun shading system played a key role. Daylight control systems help

to improve the energy efficiency of buildings, in that they regulate the amount of solar heat that enters a building and so have an effect on the thermal comfort experienced by the users.

Sun and glare protection

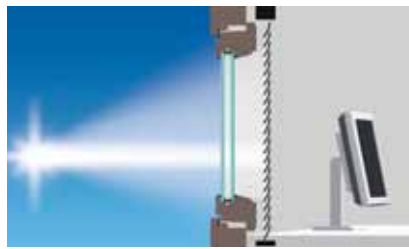
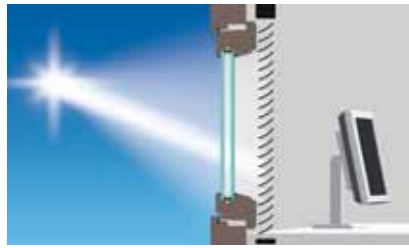
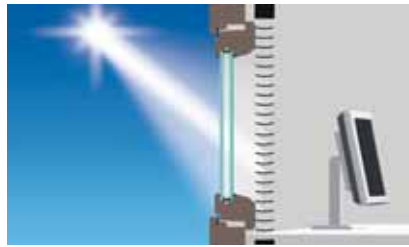
Solar screen glazing and an internal sun shading system, ensure that the temperature in the work space remains pleasant, even during the summer months. To provide effective use of daylight, all the windows in the building were fitted with WAREMA light-control venetian blinds – thereby ensuring sun and glare protection at the work place and optimum lighting in the work space.

Daylight control system

- 1000 Light-control venetian blinds E80L, semi-perforated slats
- Sun and glare protection
- Optimum lighting right to the very depths of the building
- The perforations in the slats ensure that visual contact is maintained with the outside world, without this reducing comfort, in terms of temperature or privacy
- Improved "well-being" in the work place
- Reduced absenteeism and thus better performance
- Lower energy costs by reducing the cooling requirement and need for artificial lighting

Further information can be found at www.warema.de

► The highly-reflecting slats are adjusted to follow the position of the sun. The blind is closed even more, the lower the sun – but a view outside is guaranteed by the semi-perforated slats.



Light-control

The key element of the venetian blind system used on the Swiss National Insurance building is a white, concave, semi-perforated light-control slats. To a greater or lesser extent, this maintains contact with the outside world, even when the slats are closed, as the blind appears partially transparent through the perforations. The highly reflective slats deflect the light up to the ceiling of the work space – guaranteeing an even amount of glare-free lighting right into the very depth of the building. This increases the employees' feeling of well-being at work and lowers the energy costs of artificial light. The slats have cable guidance which prevents them from swaying in a draught. The stainless steel cables and fittings also give the sun shading systems a visually sophisticated and high-quality look.

Control

The slats of the light-control venetian blinds are automatically adjusted to follow the path of the sun in a controlled way, both as a function of the calculated position of the sun and any adjacent buildings. This prevents the sun's rays and solar heat from entering the building and, at the same time, provides the space with diffuse daylight. The venetian blind system can also be adjusted manually by the user using an operating unit, if so required.

Building automation

The sun shading systems in the Swiss National Insurance Building are automatically controlled by a LONWORKS® system, comprising a weather station, motorised control units and venetian blind keypads. The data measured externally by the LON sensor unit is digitally translated into a BUS protocol and thus made available to all the BUS units.

If a limit value, such as a specific external lighting value, is exceeded, the vene-

tian blinds on the building are automatically lowered and the slats are positioned in such a way as to ensure that there is guaranteed protection from the summer heat. The ideal position is determined as a function of the time of day and the season, but also as a function of the direction the façade faces and any adjacent buildings.

The motors are controlled by a 6-unit motorised control system. This processes all the data required and can control up to six light-control venetian blinds independently of each other. The advantage of the LONWORKS® technology, compared with conventional systems, is that the decentralised processing of the data makes this system especially effective and fail-safe.



Night cool-down

The motors to open the parallel hinged windows are controlled by a 4-unit motorised controller. At 10 pm, the windows are automatically opened in order to allow the interior space to cool down during the night. Should the wind speed exceed 8 m/s – as registered by a sensor on the weather station – the windows close automatically, leaving only a slim ventilation gap of a centimetre in width. The windows are fully closed if the wind speed exceeds 18 m/s.

Localising risks

If the fire alarm goes off, a contact on the fire alarm central unit automatically sends a command to raise all the light-control venetian blinds and close all of the windows. The individual windows in the floors affected by the fire can then be opened in order to allow any smoke to escape.

The measures put in place during the refurbishment allow the building to be

utilised effectively. The external appearance of the Swiss National Insurance Building has changed very little, rather its original state has been restored. The particular significance of the building is thus preserved, in spite of the ever-growing number of high-rise buildings in Frankfurt.

Controls

- 119 LON motorised control units 6M230 to control the light-control venetian blinds
- 114 LON motorised control units 4MDC3 to control the parallel hinged windows for slot ventilation, night cool-down, fire and fault alerts
- 4 LONVCU acting as fire control units
- 2 LONVCU acting as centralised control units

Further information can be found at www.warema.de



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