

ONLY
GLASS
—

MEDIAFACADE



FACADE-INTEGRATED MEDIATECTURE

TRANSPARENCY IN MOTION

ONLYGLASS.DE

MEDIAFACADE TIMELINE

SYMBIOSIS OF ARCHITECTURAL DESIGN AND LIGHTING

EVOLUTION OF LIGHTING & FACADES

The staging of architecturally well-designed buildings through illumination is an idea which has existed for centuries. Architecture combined with lighting gives prestige to a building. The only difference in combining architecture and lighting from the past to today is that lighting technology has advanced.

Today we use lighting to transform buildings into communicating objects. One way to do this is by projecting images onto a building. The company URBANSCREEN has completed several projects using this technique. However, with this technology, the façade of the building acts as a »passive« element and does not have an »active« role in comparison with a media screen. Due to environmental regulations regarding projections (space in front of the building, only at dawn or at night, sensitivity to extraneous light) the application of this technology is often limited to special events.



As always, the development of media façades has been influenced and characterized by their economic value as mediums for selling advertising content. Active media façades have changed the role of the façade from »passive« to »active« allowing the building to be transformed into a communicating object.

It was the French carmaker André Citroën, who firstly arranged for the change from a passive to an illuminated façade. In 1925, he transformed the Eiffel Tower into an advertising façade, using 250.000 bulbs which had been installed on the outer skin of the tower. This campaign lasted for ten years and the images were visible from 30 km.

The next generation of lighting used »neon lamps«. This »neon« advertising technique used light bulbs and light tubes to display advertising content.

A simple animated effect became possible by switching the »neon lamps« on and off.

Since the end of the last century »neon lamps« have been increasingly replaced by LED bulbs and large LED screens. The development of LEDs and LED screens has been significant. Information can now be presented through text and images and changed at any time. This technological development opened up new opportunities for lighting designers and media agencies.

However all of these technologies have the following disadvantages:

- In most cases, they are installed in front of the façade having a substantial influence on the architectural design of the building.
- Due to their opaque characteristics, their application is ideally suited to brick style buildings so as not to block light when placed over windows or glass façades.
- Their weight in addition to supporting structures has a significant influence on the structure of the façade. Without additional structural requirements the installation is unlikely to be realised.
- Difficult to clean.

The modern form of LED screens whilst solving the problem of transparency do not eradicate the other disadvantages as already discussed. The impact of these older technologies can have a strong effect on the architectural appearance of the building from a negative and disappointing perspective.

The modern architect has developed a deeper understanding of media façades and the impact that these new media technologies can have on the architecture of the building and their effect on the surrounding urban spaces. Until now the media façade has really been similar to a large monitor or screen showing artistic or commercial context.

DEVELOPMENT INTENT

The next step however is the complete integration of the media screen within the physical fabric of the building as an alternative to an additional structure placed over it. The full integration into the building will have a physical and virtual effect on the building itself and the urban spaces surrounding the buildings. This intersection between physical places and virtual worlds is nowadays referred to *Mediatecture* (Christoph Kronhage).

Architects ideally prefer a solution which is integrated directly into the glass façade of a building, with no additional structural requirements which also appears to be invisible when switched off.

The integration of an LED screen directly into a façade is possible by placing the LEDs directly into the insulating glass unit (IGU). With this technique the IGU not only preserves its thermal insulation but becomes a modern media façade. This revolutionary solution assures the combination of high transparency, integration, no structural issues and is easy to clean.

A corresponding progression must meet three requirements:



Maximum transparency

This means minimum dimensioning of the circuit board and modules at the same time.

Integration into the insulating glass of the façade

This coincidentally means:

- Individual adaptability to the pane shape and pane size,
- A concept for heat management within the pane to increase the lifespan of the electronic components,
- Cable routing within the façade construction.

Low weight

Use without additional structural requirements is possible.



UNIQUE SELLING PROPOSITION

The particular unique selling points of ONLYGLASS MEDIAFACADE directly arise from the above-mentioned aims of development:

- 1.** With a width of just 4 mm, the thinnest circuit board in the world has been developed for ONLYGLASS MEDIAFACADE. In comparison, competitive systems are 10–14 mm. Three further advantages arise from this circumstance:
 - Very high transparency
With a 20 mm pixel pitch transparency is 80 % and with a 80 mm pixel pitch transparency is 95 %!
 - Very high resolution and image quality
No other transparent system has a minimum pixel pitch of 20 mm and therefore over 2500 pixels per m². Systems with a minimum pixel pitch of 60 mm (about 260 pixels/m²) or 80 mm (about 156 pixels/m²) are mainly offered.
 - Very high brightness
On one hand the high pixel density leads to large light output per m² (6000 nit with a pixel pitch of 20 mm—nit=cd/m²). On the other hand, due to the particular layout of the LEDs the brightness per pixel is doubled with a pixel pitch of 30 mm and even trebled starting from a pixel pitch of 40 mm.
- 2.** ONLYGLASS MEDIAFACADE is precisely adjusted to the size of each individual pane and is therefore virtually invisible when switched off. At the same time this means that the façade image is not distorted in any way and the planned architecture comes into its own. Furthermore, integration into the insulating glass protects the electronics thus making it easier for the façade to be cleaned. The maximum single measurement of a pane is 2700 mm x 3500 mm. For this reason it is possible to have ceiling-high glazing with just one pane.
- 3.** The additional weight amounts to a maximum of 3.5 kg/m² at a pixel pitch of 20 mm and accordingly decreases upon an increasing pixel pitch. With a glass weight of at least 30 kg/m² this corresponds on a structural level to an additional load of about 11 %. The excess weight has no effect on suction and compressive loads. Therefore there will be no additional static requirements to be taken into consideration when it comes to new buildings. In general, one also can integrate the ONLYGLASS MEDIAFACADE into existing buildings if their façades consist of double glazing units.