

building envelopes  
and facade engineering  
made by **seele asia**

seele



**The seele group of companies, with headquarters near Munich in Germany, is one of the world's top addresses for the design and construction of facades and complex building envelopes. The technology leader in facade construction was founded in 1984.**



Our customers benefit from our indepth knowledge of structures made from glass, steel, timber or aluminum, unified in just one company. In order to measure up to our own standards we combine the development and manufacturing of our building materials with technological expertise and the utmost individuality for unique creative concepts.

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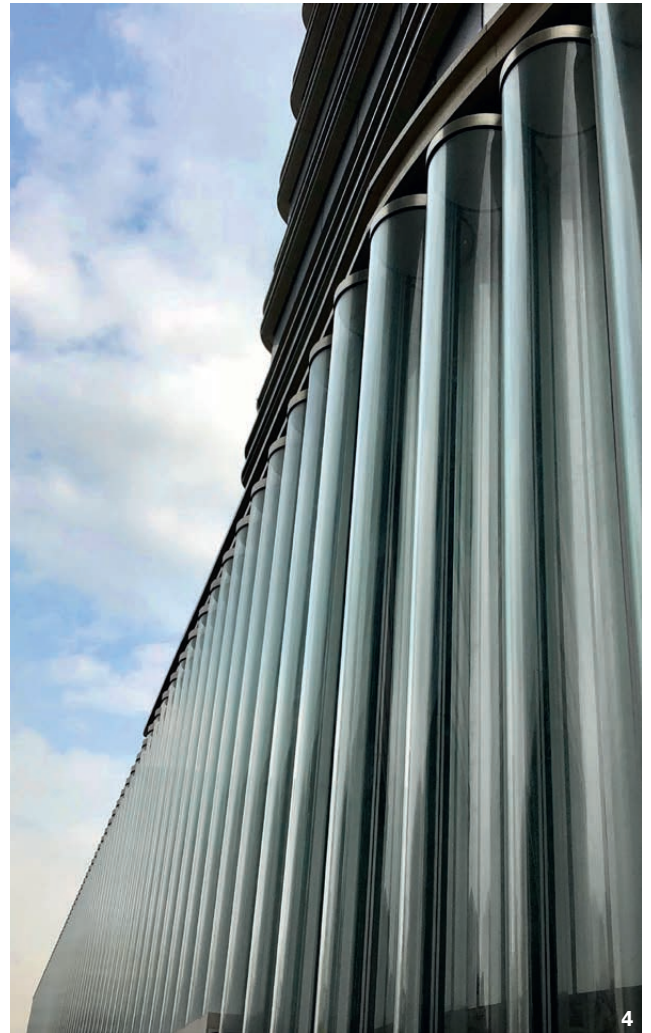
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New World Centre, Hong Kong

**unique glass tube facade for the new world centre in hong kong. a highlight of the facade is the special LED technology in which the lights can be switched separately.**

**1** The space between inner and outer facade is encapsulated. Dried air can be supplied with slight overpressure so that no condensate or dirt is deposited on the glass tubes.





**2** Since the climatic and static requirements for a building in Hong Kong are particularly high, the local building authorities required static proofs, reports and two performance mock-ups. Due to the high competence in testing, seele received the approval for the implementation of the glass tube facade.

**3** Installation of 9m long glass tubes with a special trussing system and tower crane.

**4** Furthermore the tubes are self-supporting and designed for high wind loads.

The New World Centre is a hotel and office building complex in Kowloon, Hong Kong. Originally, the New World Centre consisted of two hotels, two office towers, a shopping centre and apartments.

seele's scope of work included the design, fabrication and installation of the new glass tube facade. The tube facade consists of 307 tubes made of laminated safety glass, 238 half and 69 full tubes with a height of 9m and 90mm diameter. The halftubes are connected with aluminum profiles and each is fitted with a polished duplex-stainless steel lid (base and top) fixed with structural silicone. The full tubes are constructed according to the CCF technology (Closed Cavity Facade).

Apple Stores, Hong Kong, Singapore, Bangkok

**in the past, glass always needed something to hold it. we've changed that.**



Gravity doesn't sleep. We all know that. To defy gravity, in the past glass structures had to be supported by other materials. Metals, for instance. seele has given glass new capabilities. These days, fixings are invisible, even obsolete. Glass supports itself – as walls, stairs or bridges. seele turns glass into a flexible design element for a new, purist idea of space – outside becomes inside, inside becomes outside. So, it is no wonder that an innovative company such as Apple relies worldwide on the fascination of glass made by seele.

**1 all-glass design for apple retail store in hong kong** The Apple Retail Store in Hong Kong was opened in 2015 and is located on the most famous shopping street in the city, Canton Road. This store has three floors and the 14.5m high structural glass facade allows uninterrupted views of ground floor and upper floor.

**2 apple retail store in singapore – 14m high all-glass facade** This store also complies with Apple's new design guidelines, which include the characteristic maximum transparency and openness of the facade. In this project, seele was responsible for design, production and installation.

**3 all-glass design for thailand's first apple retail store** The store has opened at ICONSIAM, the luxury shopping centre in the heart of Bangkok. The design required seele to supply two huge structural glass facades that ensure maximum transparency in both directions – outwards towards the garden terrace and inwards towards the shopping mall.



Apple Stores



**with the luxury facade, seele realized one of the largest suspended all-glass facades, and thus set new standards in facade construction.**





**1** In a project duration of under two years, the entire engineering, production and assembly was carried out. With the luxury facade, seele realized one of the largest suspended all-glass facades.



project film

## ICONSIAM luxury facade, Bangkok, Thailand



**2** Glass fins form the supporting structure for the suspended all-glass construction. These were assembled from parts with lengths of up to either 16m or 8m.

The shape of the 5,300sqm facade (luxury facade) is geometrically utmost complex: For static reasons, the glass facade had to be suspended from the ceiling, wherein the glass panes are inclined in two directions and arranged in a zig-zag-shape. seele faced this challenge and developed an outstanding technical solution for the up to 24m high all-glass facade.

Glass and steel were produced within the seele group. 333 glass fins (up to 8-fold laminates) and 333 glass panes with a length of up to 16m were manufactured and 103t structural steel and 118t stainless steel were processed into stainless steel shoes, consoles and other elements.

## ICONSIAM wisdom hall, Bangkok, Thailand



**facing towards the chao phraya river, the glazed triangular front facade provides an optimal view of the river and the city.**

At the front a steel A-frame weighing about 80t had to be erected to support the cable net facade, which consists of 64 triangular panes of glass held in place by 14 tensioned steel cables connected at 21 nodes.

To the left and right of this triangular front facade, the side facades by seele consist of 72 panes with a solar control coating plus ceramic frit printing. The intensity of the printing is greatest at the top of the facade and gradually decreases towards the bottom so that at eye level the printing on the glass is no longer visible. Between the sides and the front facade there are 10 external fins, each 24m long, which function as structural members while also providing shade. The fins are part of the lighting concept, creating different plays of light and shadow inside wisdom hall.

**1** The design by architects Carpenter | Lowings included a cable net front facade with glass facades sloping back from this at the sides, all provided by seele.

**2** Owing to the situation on site and the weight of the steel A-frame (about 80t) for the triangular glass front facade, the frame could not be lifted to the topmost platform in one piece. Therefore, the 17 separate parts were lifted up to a platform supported on falsework in front of wisdom hall, where they were then welded together and painted.



ICONSIAM wisdom hall



The Sky Tray is a 60 sqm glazed floor which cantilevers from the building and allows visitors to have a breathtaking view vertically down through the floor to the street. It consists of six glass panels which were mounted on the primary structure. Each glass panel has a dimension of  $4 \times 2.7$  m, is built as  $7 \times 12$  mm low iron glass laminate and weighs around 2.6 t. As the installation took place in over 300m height, the lifting of each glass panel needed high accuracy and monitoring of any emerging wind.



**1** Bangkok's tallest building MahaNakhon is with its distinctive sculptural appearance and its 314 m height an architectural eye-catcher.

**2** On top of the building, a visitor centre is welcoming everyone enjoying 360° views of the city.

MahaNakhon, rooftop viewing platform & glass cylinder, Bangkok, Thailand

on top of the building, a visitor centre is welcoming everyone enjoying 360° views of the city. seele was responsible for the sky tray, a glass observation platform, and a double glass cylinder with a spiral staircase.



The 18m high glass cylinder with its 600sqm curved glass surface consists of an inner and an outer cylinder. Inside the cylinder a hydraulic lift extends over four floors. A spiral staircase was installed between the two glass cylinders. The peculiarity of the cylinder lies in the joints between the glasses: The prevailing weather conditions at the site required a system that provides the necessary stability of the entire cylinder.

**3** The second construction is a glass cylinder which consists of an inner and outer cylinder with 600sqm curved glass surface. Inside the cylinder a hydraulic lift extends over four floors.

## Fendi Store, Tokio, Japan

**1** Fendi appointed international facade construction expert seele to devise a technical solution and build the facade for its new store in the Ginza district (Chūō City) in Tokyo.



seele provided stainless steel arch elements with a special marble-look paint finish for the unconventional design by the architects from Curiosity. The 80 arch elements form 40 round arches that are screwed to the rectangular laminated glass panes via a supporting framework. Owing to the radius and their size, each deep-drawn stainless steel arch is made up of several separate parts that were welded together according to very tight tolerances so that the final appearance is impeccable.

The 620sqm of glass, some of it printed, lends the building a visual lightness and creates a harmonious link with the round arches in stainless steel. The two 12 mm plies making up the laminated glass panes are up to approx. 5.1 m high x 1.7 m wide. Digital printing was used to apply the randomly positioned white stripes to the glass, which still permits views in and out.



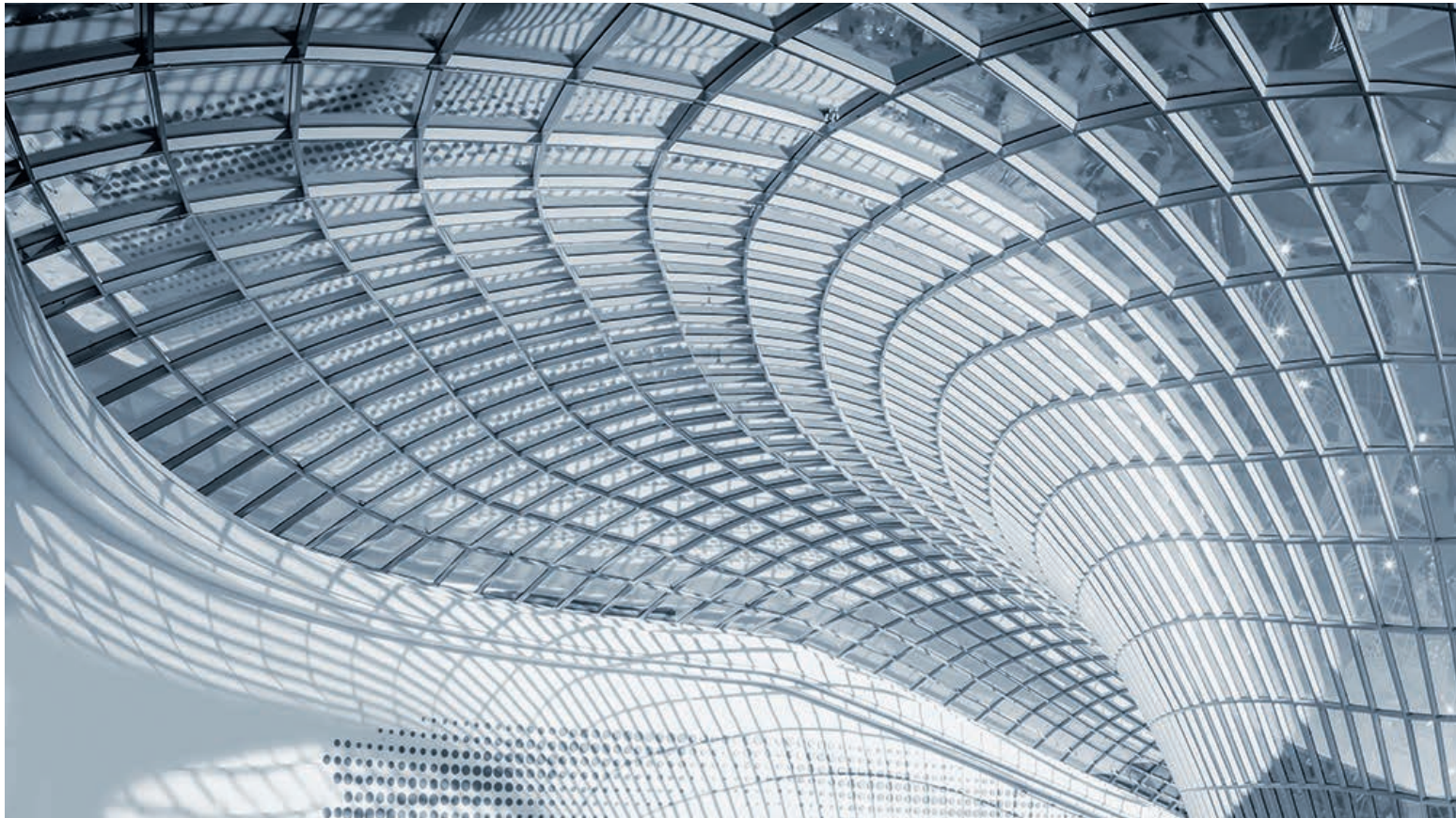
**2** Digital printing was used to apply the randomly positioned white stripes to the glass, which still permits views in and out.

**3** In order to check the design and the performance in advance, seele built mock-ups of two element types and tested them in Gersthofen.



**the special paint finish ensures that the completed building will have the look of a remarkable combination of classical architecture and modern materials.**

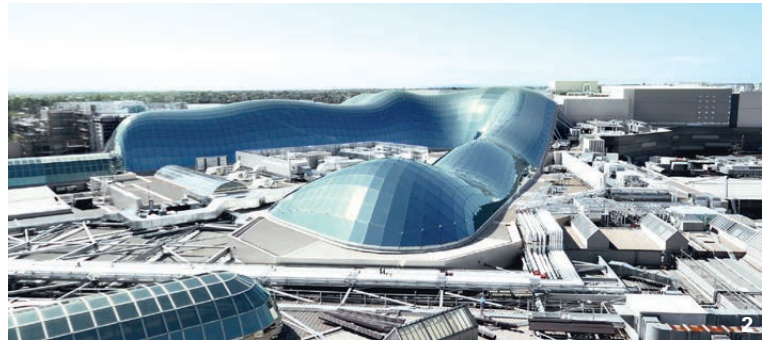
## Chadstone Shopping Centre, Melbourne, Australia



### **a wave of enthusiasm made of 2,672 insulating glass panes.**

Chadstone, Australia's "fashion capital," now has thousands of additional square metres of office and retail space. seele was responsible for the enormous steel-and-glass roof with a total area of 7,080 sqm. The defining element of the design is the high, dome-like glass roof that enables plenty of daylight to reach several floors. The free-form shell structure spans up to 44 m, takes on changing forms and geometries and reaches a dramatic height at the centre.





- 1** The complex free-form gridshell for Australia's largest shopping centre spans up to 44 m
- 2** seele was responsible for the incomparable steel-and-glass roof with a total area of 7,080 sqm.
- 3** The accurately fabricated steel structure preassembled by seele was positioned on the building site according to very tight tolerances.



project film

Even more in Melbourne, where buildings frequently have to withstand strong winds and extreme heat. However, a clever construction concept ensured that the roof was economically viable and ready on time. A total of 2,810 steel nodes, 5,168 steel rods and 54 edge beams were fabricated and delivered to Australia in twelve months. Pre-assembly of large elements took place off-site. A strict logistics timetable ensured fast erection.

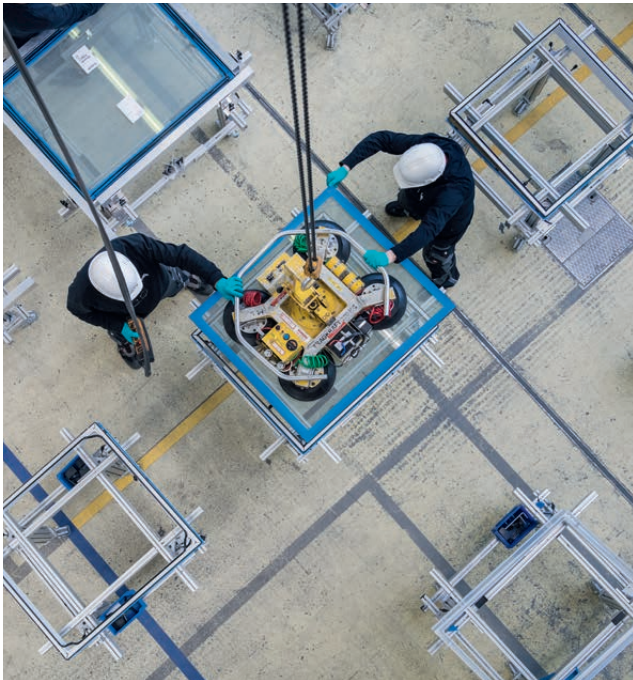
seele headquarters, Gersthofen, Germany

## perfection from engineering to logistics.

Turning that design into uncompromising reality calls for a partner who is fully familiar with the whole range of options and can mix further innovative solutions into those options. That's exactly where our dedication counts. Our role is to find solutions that take your ideas even further. We are not just planners and designers. We are experts in fabricating, building and finishing your projects.



seele headquarters





seele testing area, Gersthofen, Germany

## putting excellent facade competence to the test.



**1** Every special facade technology must be tested. For example, at seele's test site a new glass tube facade with CCF technology for the New World Centre was tested. The tubes are self-supporting and designed for high wind loads.

**2** At the test site in Gersthofen, full-scale mock-ups are built under realistic conditions to verify all quality requirements with regard to design and performance.

**3** Testing glass for ICONSIAM.

The entire seele group of companies uses the test and inspection centre in Gersthofen, Germany, which offers facilities for trying out new facade solutions. Here, load and performance tests are carried out under realistic conditions. Engineering services and facade structures are tested according to international guidelines as well as test scenarios developed in-house using true-to-scale mock-up buildings. Individual approval is required for almost all building envelopes. Extensive tests are usually necessary for the realisation of complex building

envelopes. Particularly in the case of special solutions with sophisticated geometries, it is essential to test the impact of extreme thermal cycling loads on critical design details in accordance with the applicable standards. In the case of international projects, relevant tests are carried out on full-scale mock-ups under extreme loads.

## seele asia

Right from an early stage, seele recognised the potential of this vibrant city and quickly founded the Hong Kong branch **seele hongkong Ltd.** in 1994. The branch is responsible for sales and for overseeing large facade construction projects. Many years of activity and the groundbreaking skills of seele hongkong Ltd. are evidenced by numerous buildings. Those include one of the world's largest airports – Hong Kong's Chek Lap Kok International Airport. The latest highlight is the unique glass tube facade for the New World Centre in Hong Kong. seele's scope of work included the design, fabrication and installation of the new glass tube facade with the highly innovative CCF technology and a special LED lighting between the tubes.

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Since 1996 **seele (S) PTE Ltd.** is responsible for sales and for overseeing challenging facade construction projects in Singapore and South-east Asia. The facade specialists in the branch have been demonstrating their outstanding expertise for around 20 years in the form of impressive feats of engineering and sensational facade projects.

As a branch **se-project services (Thailand) Ltd.** in Bangkok is responsible for complex facade construction projects in Thailand and South Asia in cooperation with seele (S) PTE Ltd. in Singapore.

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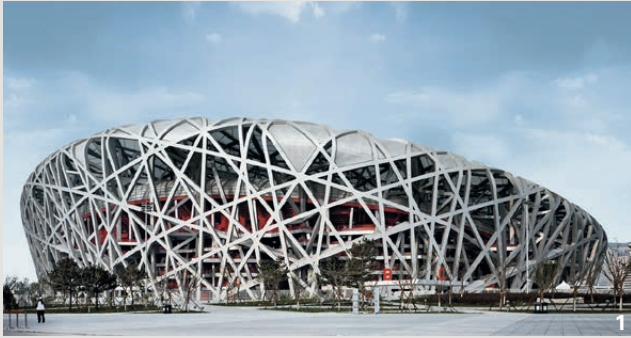
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## seele projects in asia



- 1 Bird's Nest, Olympic Stadium, Peking
- 2 International Finance Centre, Hong Kong
- 3 Grand Theatre Shanghai, Shanghai
- 4 Apple Retail Store, Pudong, Shanghai
- 5 Chek Lap Kok Airport, Hong Kong



### **bangkok**

- ICONSIAM luxury facade
- ICONSIAM wisdom hall
- ICONSIAM Apple Retail Store
- MahaNakhon

### **singapore**

- Apple Retail Store, Knightsbridge

### **hong kong**

- New World Centre
- Seadeck Kiosk TST
- Apple Retail Store, Canton Road
- Chek Lap Kok, Hong Kong Airport
- Repulse Bay Stair
- Discovery College
- International Finance Centre Two
- Tsing Yi Station
- Kowloon Station Renovation & Extension
- The Peak Properties Redevelopment

### **beijing**

- Apple Retail Store, Wangfujing
- Bird's Nest, Olympic Stadium

### **shanghai**

- Grand Theatre Shanghai
- Apple Retail Store, Pudong

### **taiwan**

- Kaoshiung Dadong Art Center

### **tokyo**

- Fendi Store

### **nagoya**

- Apple Retail Store

### **sydney**

- Apple Retail Store, George Street

### **melbourne**

- Chadstone Shopping Centre



eleas

[seele.com](http://seele.com)