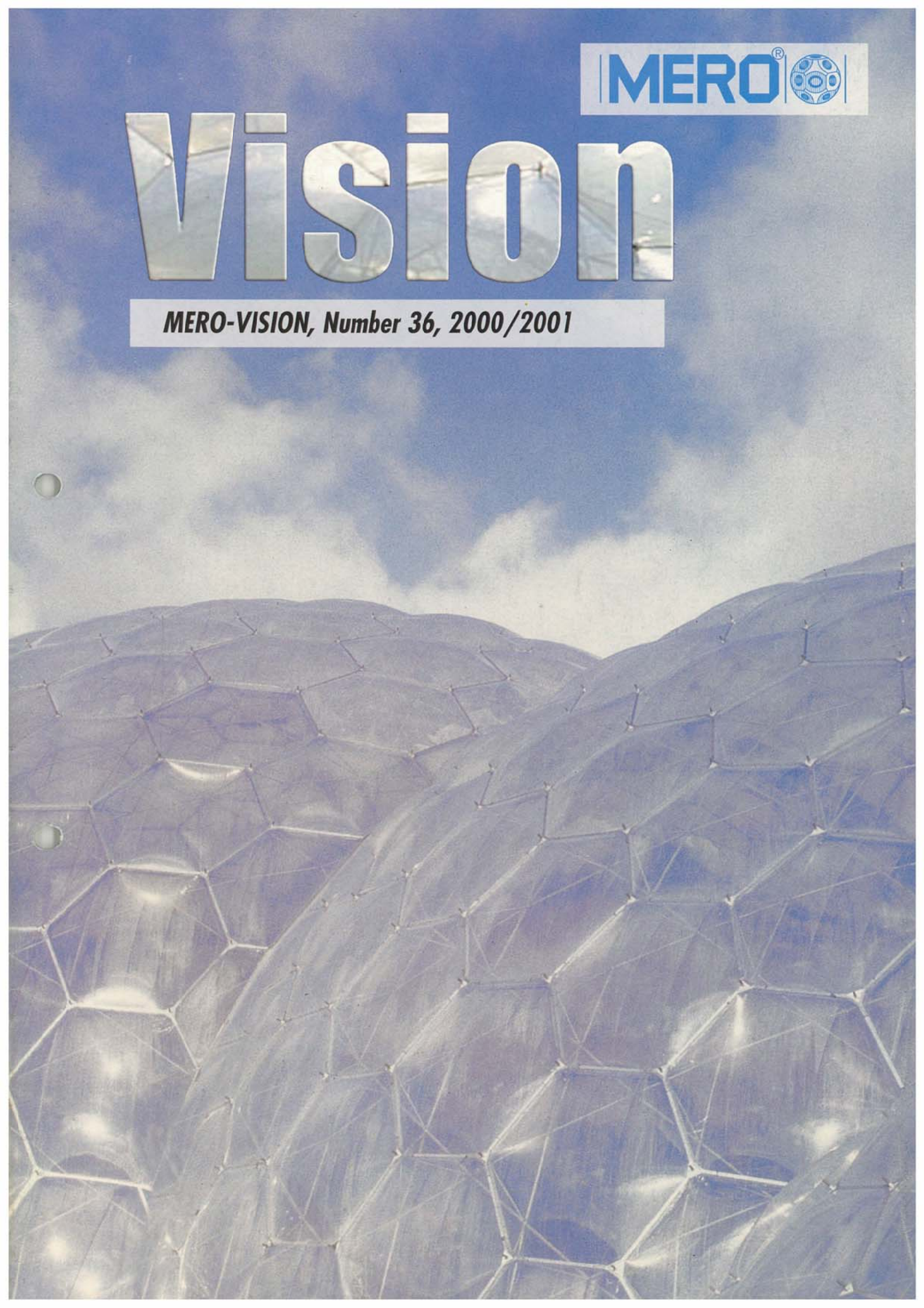


**MERO**<sup>®</sup> 

# VISION

***MERO-VISION, Number 36, 2000/2001***



# Growth through High-Tech Engineering

*A demand for innovative changes in the architecture surrounding us is creating a revolution in structural technology. Bright and transparent building envelopes with the flexibility to adapt to changing factors such as season, weather condition or time of day - new geometric shapes that contrapuntally question traditional architecture, supplement historic buildings to suit modern use and lay the path for future building design.*

MERO's know-how, expertise and drive for innovation are the basis for a number of revolutionary projects that were completed in the year 2000 or are still undergoing construction.

Among experts, the **Eden Project in Cornwall/UK** drew a lot of attention as the world's largest greenhouse, architectural forerunner for the 21<sup>st</sup> century and pioneer project for wide-span, lightweight and filigree roof claddings. The integration of membrane pillows, so-called „cushions” with a radius of up to 16 m is technologically innovative. They give the structure its unique character and let through the essential ultraviolet light for the tropical plants. The weight of the roof of 30 kg/m<sup>2</sup> is setting new records. Architect: Nicholas Grimshaw & Partners, London (pgs. 1, 4/5)

The **Glasgow Science Center** (pg. 12), designed by Building Design Partnership in Glasgow, has opened new areas of expertise for our engineers and project managers with its geometry, cladding (roof skin of titanium sheets, glass envelope) and engineering (Science Center Tower, revolving to suit wind direction). The structural design was carried out by Buro Happold in London.



CAD-Animation Lehrter Bahnhof, Berlin

## **Lehrter Bahnhof, Berlin/Germany**

Designed by gmp - Gerkan, Marg und Partner in Hamburg in cooperation with Schlaich, Bergemann & Partner in Stuttgart for their client - the Deutsche Bahn AG (German Rail) - is the largest single order in the company's history. With a length of 416 m, a glazed area of approx. 30,000 m<sup>2</sup> and curved girders with cable trusses with a span width ranging from 46.2 - 67.6 m, the Lehrter Bahnhof is a particularly ambitious and aesthetic project which will guarantee a solid capacity utilization until the year 2002.

These projects along with a large number of prestigious projects such as the Glasshouse Manufacture for the car manufacturer Volkswagen in Dresden, the wintergarden for the headquarters of General Motors in Detroit and the Arts Center in Singapore emphasize MERO's global success.

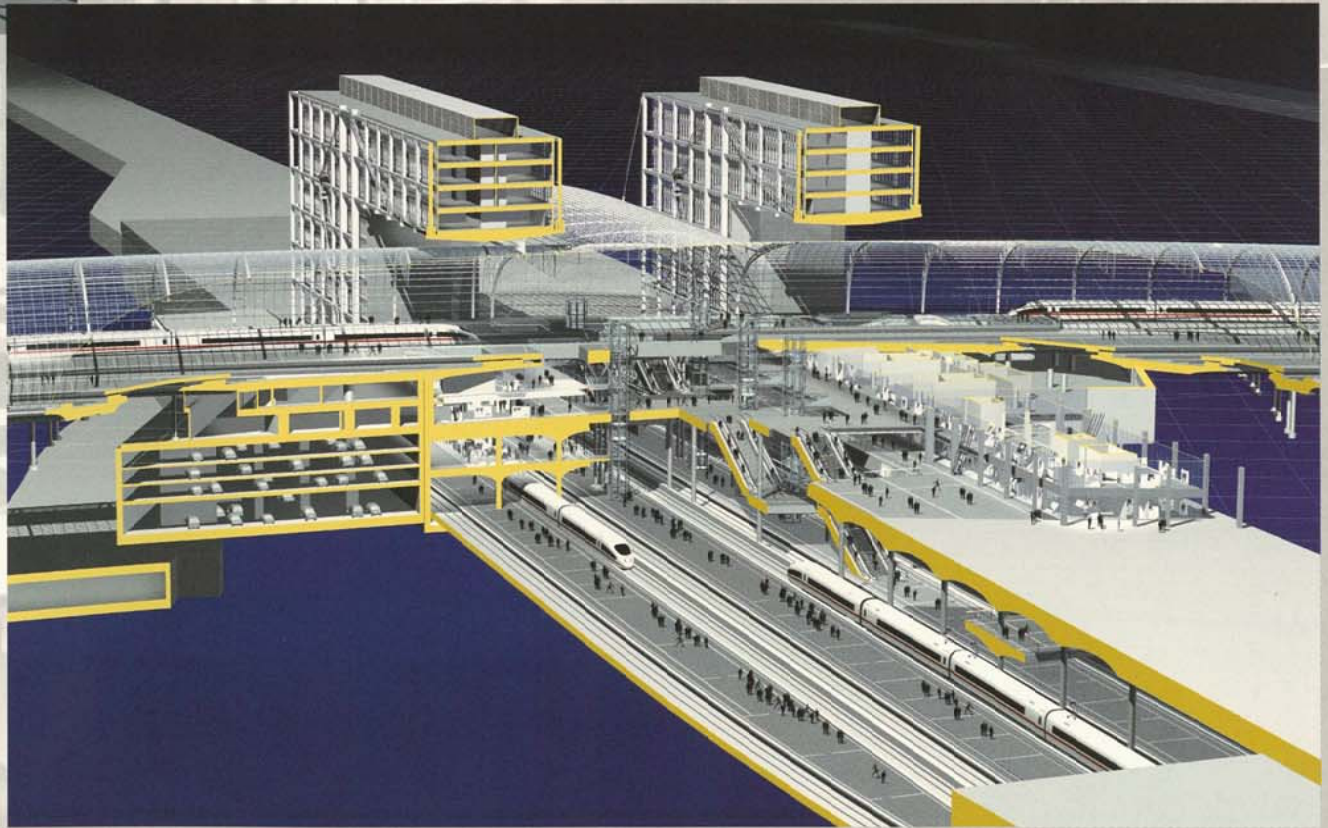
Based on their growth, our US-subsubsidiary, MERO Structures, Inc., in 2001 will be moving into a new, recognizably larger building containing offices and production facilities. Along with providing an additional basis for MERO's international presence, our most recent subsidiaries in Austria and Dubai have already reached their goals in their first full fiscal year.

In 2001 MERO Structures, Inc. in Wisconsin/USA will move into a new office and production facility.



Through intensifying their export activities our **Floor Systems Division** (pg. 20) and their subsidiaries were able to exceed their goals. In addition, they gained further proficiency through new innovations such as cutting individual CAD-supported patterns in stone tiles.

The **Exhibit Systems Division** (pg. 22) benefited from a number of spectacular projects at the EXPO 2000 in Hanover/Germany and was able to further extend their internet presence at [www.meroshop.de](http://www.meroshop.de).



CAD-Animation Lehrter Bahnhof, Berlin

By promoting new technologies MERO will be a driving force in shaping the trends in architecture and engineering and pursuing progressive

ways for ever lighter and more filigree designs with innovative materials.

Dr. Roland Klose  
Managing Director

Josef Rossmannith  
Managing Director

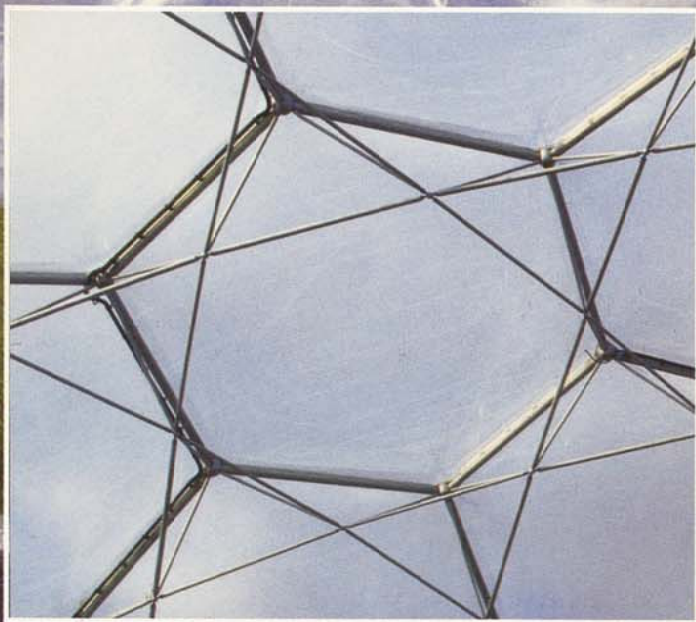
The Eden Project in Cornwall/UK was constructed in a former clay pit with a depth of 70 m for biological studies and exhibitions. Its biomes comprise of several domes varying from 38 - 125 m in diameter stretching downhill to the bottom of the pit. The steel structure is shaped like intersecting spheres. The cladding consists of inflated membrane cushions made of ETFE foil which maximize the ultraviolet from the sunlight needed by the plants. With a total covered surface of approx. 30,000 m<sup>2</sup>, the Garden of Eden will by far be the largest greenhouse in the world. 230 individually controlled ventilation flaps and louvers at the zenith points of the domes provide optimum air flow through the structure.

Arch.:  
*Nicholas Grimshaw & Partners Ltd.,  
London*

Structural Design:  
*Anthony Hunt Association Ltd.,  
Cirencester*



# ... the Largest Greenhouse in the World



The construction consists of a double layer structure of hollow profiles. Top and bottom chord each form hexagonal structures. The nodes of top and bottom chord are connected by diagonals. The bottom layer of the space frame structure is made of the standard MERO nodes and members; the top chord features the MERO bowl node system.

Utilizing bolted connections made it possible to fabricate the whole structure in standardized segments. The total structure was animated and calculated using computer models which simultaneously proved the design and formed the basis for the installation of the structure.

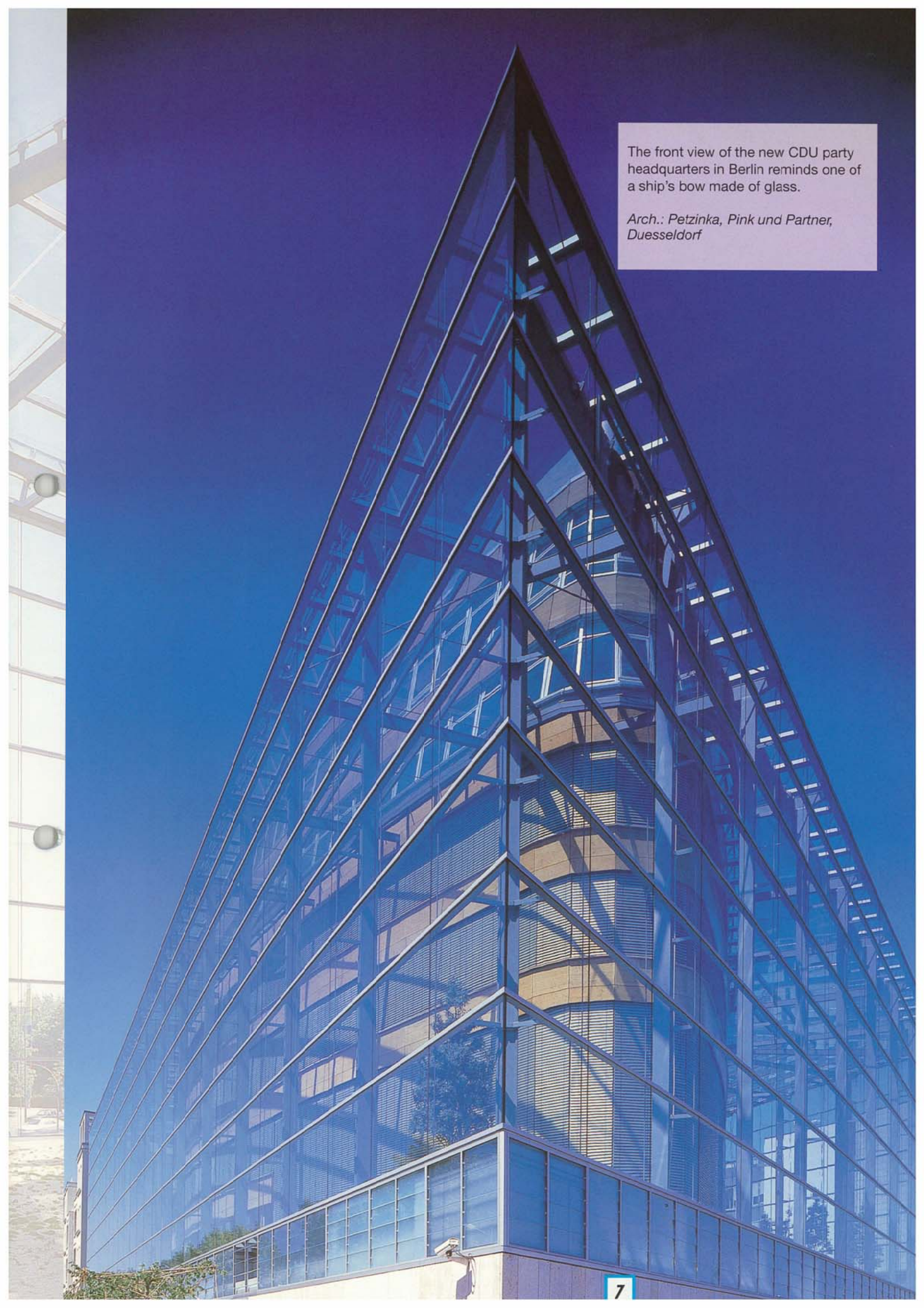
# Glass - Envelopes

***A modern glass envelope provides optimum climate control for the offices and meeting rooms of the new CDU party headquarters.***



The new CDU party headquarters in Berlin is enveloped by a spacious wintergarden providing noise prevention and climate control. In contrast to the glass envelope, which strictly follows the boundaries of the adjacent buildings, the dynamics of the wedge-shaped office complex can fully unfold inside. The facade is rendered highly transparent by separation of the glass layer from the main steel structure. Space frame columns and roof girders are made of welded steel sheet. The cross members of the facade owe their filigree appearance to the fact, that they are connected to the columns by tension rods fixed at their centers. Generously dimensioned openings for air supply and exhaust create a comfortable climate inside.



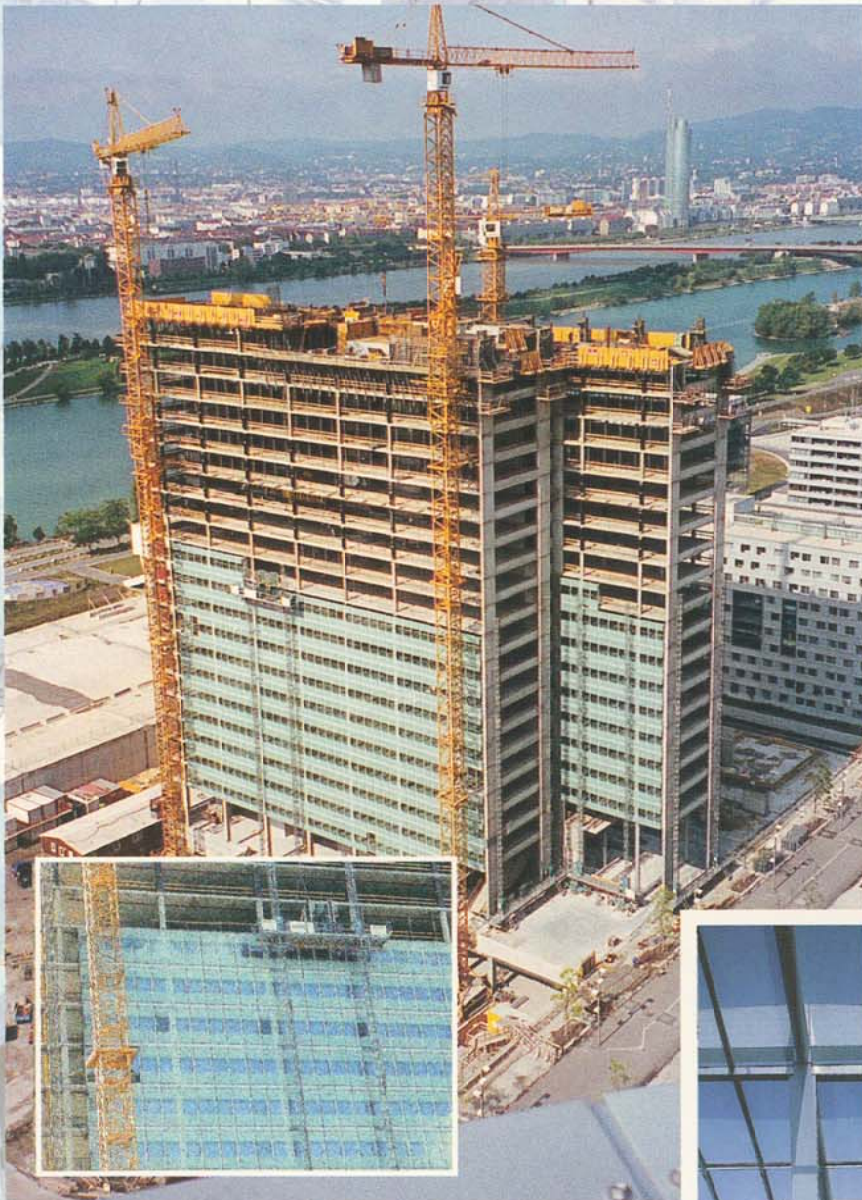


The front view of the new CDU party headquarters in Berlin reminds one of a ship's bow made of glass.

*Arch.: Petzinka, Pink und Partner,  
Duesseldorf*

**Examples of our innovative glass constructions are:**

- Mullion constructions
- Reinforcing glass fins with rotules for point-fixed glazing
- Double facades
- Cable net structures with glazing supported at the corner points



### **Ares-Tower, Vienna/Austria**

The Ares-Tower will be erected in the most architecturally progressive area of Vienna, the Danube City district. It is 92 m high and consists of two slab-shaped high-rise buildings differing in height and laterally shifted along the common axis. The main facade, measuring approx. 15,000 m<sup>2</sup>, is a two-layer facade of aluminum glass elements.

Arch.: Neumann + Partner, Vienna

### **Railway Station Ostbahnhof, Berlin/Germany**

Two-layer ventilated all-glass facade, suspended from the superstructure with steel fins and point-fixed glazing, held at the horizontal joint of the glazing with clamping plates.

Arch.: Gewers, Kühn & Kühn, Berlin – Arcus Architekten, Berlin



### **Lobby ZDF Studios (TV channel), Berlin/Germany**

Bipartite glass fins, arranged at an angle with point-fixed panes of laminated safety glass.

Arch.: Thomas Baumann, Berlin



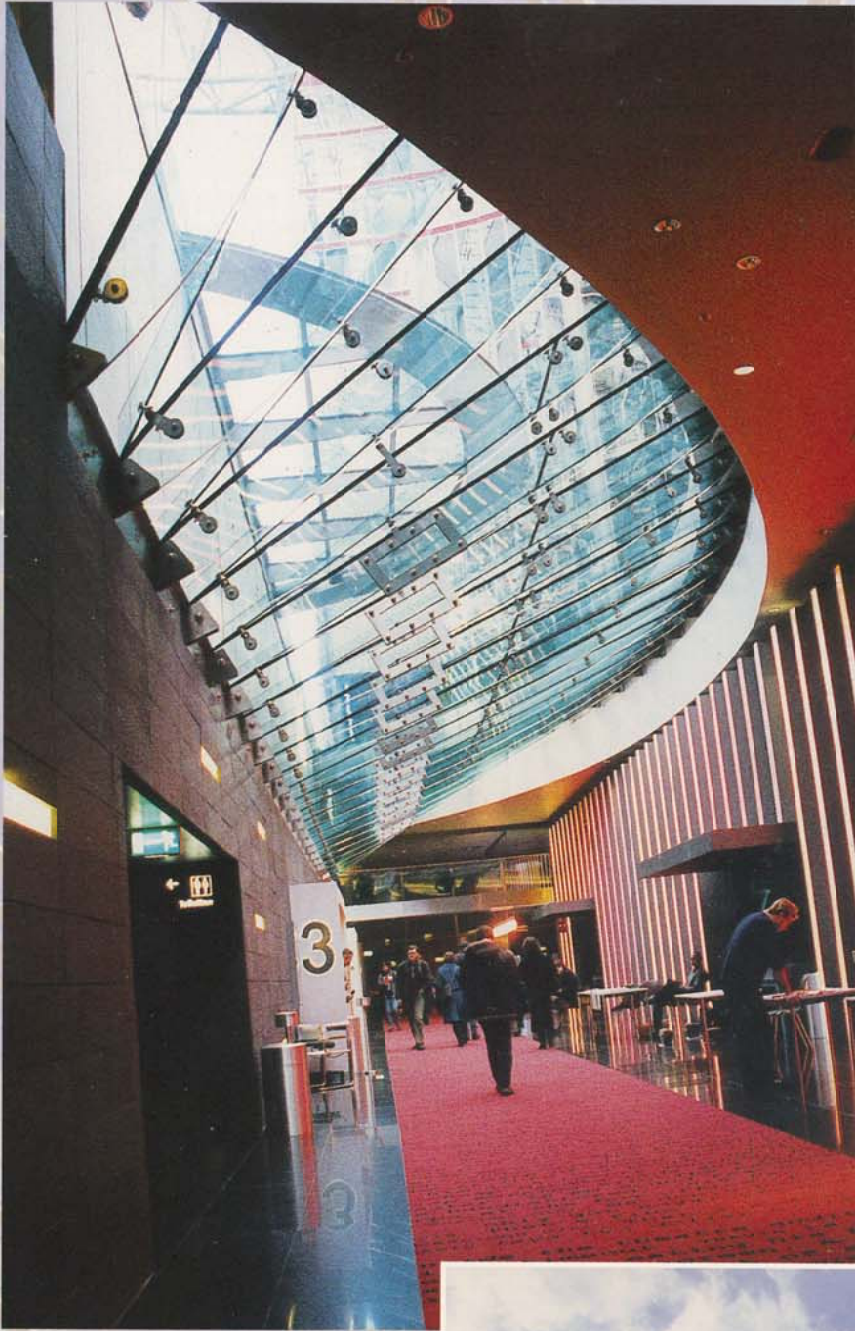




### **German Foreign Office in Berlin/Germany**

The office complex surrounds a rectangular atrium on three sides, while the fourth side is closed off with a glazed facade rising to the full height of the building. The glazed roof rests on a grid of six main girders running parallel to the facade. This grid supports panels of laminated safety glass which are in themselves shaped like a barrel vault in order to enhance the overall stiffness. The glazed facade has an almost invisible supporting framework of steel cables, some of them additionally braced by steel rods.

*Arch.: Müller-Reimann, Berlin*



**Rendezvous Hotel, Singapore**

MERO KK structure with integrated dome

Arch.: SAA Partnerships, Singapore

**Sony Center, Berlin/Germany**

Glazed roof in the foyer of the cinema with supporting structure of bipartite glass fins, arranged at an angle and with cladding of point-fixed panes of laminated safety glass.

Arch.: Murphy/Jahn, Chicago

**Kings Centre, Singapore**

Arch.: RSP Architects, Singapore



**Emirates Towers, Dubai**

Arch.: NORR Group Consultants, Dubai



## Titanium sheets shaped like rough canvas form the roof cladding of the Glasgow Science Center



The Glasgow Science Center is situated on a 17.5 hectare site in the Govan district, south of the river Clyde at Pacific Quay.

It consists of the „Exploratorium“, an exhibition hall for science and technology with a total floor space of approx. 11,000 m<sup>2</sup>, the „3D-Cinema“ with 350 seats and the „Link Building“, a pavilion connecting the buildings, which houses another show room and the ticket counters.

MERO's scope of work includes approx. 620 tons of steel, of which 65 tons were used in the construction of the MERO space frame structure. 4,800 m<sup>2</sup> of glass fixed with the MERO Vario-Clip sealing system went into the glazed facade. The cladding of the 7,600 m<sup>2</sup> roof area consists of isolated titanium sheeting. The roof of the Link Building pavilion is a membrane structure of PTFE coated glass fabric.

Arch.: Building Design Partnership, Glasgow



### Glasgow Science Center, Tower

The observation tower is a lightweight space frame structure with supporting outrigger wings which give it the appearance of a catamaran set up on its stern. The tower stands on a revolving platform. By turning to suit the wind, the wind loads on the tower are minimized. At the heart of the tower is a staircase clad with aluminum panels giving a cross section in the shape of a teardrop.



Glass-walled elevators will be installed in the open ribbed area of the structure and an observation cabin will be erected on top of the tower at a height of approx. 100 m.

Structural Design:  
Buro Happold, London

# ... Membrane Structures



## City Center Doha, Qatar

Various membrane structures with different functions, some of them still under construction. The three pointed membrane tents serve as translucent roofs, while the membrane sails shade the glazed structure beneath them.

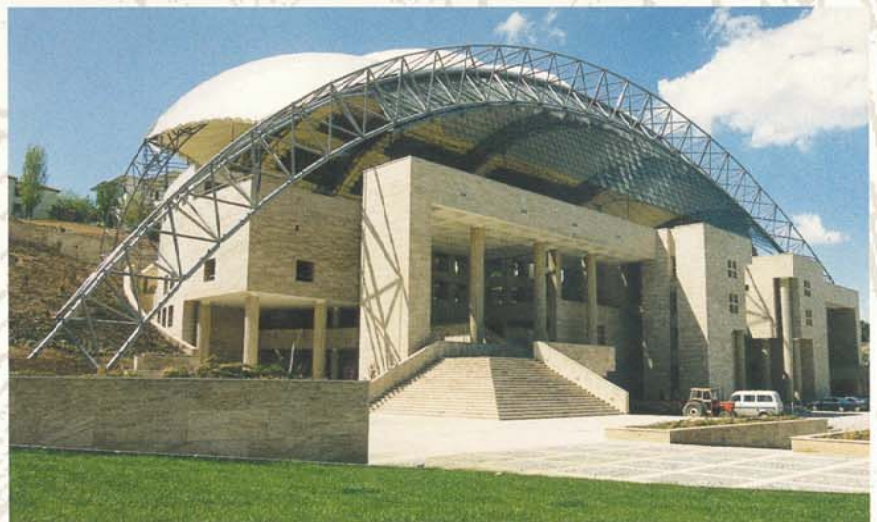
Design: MERO  
Meinhardt Middle East, Qatar



## Hippodrom Ankara, Turkey

Five membrane panels culminating in pointed tents cover an area of approx. 50 x 150 m.

Design: MERO



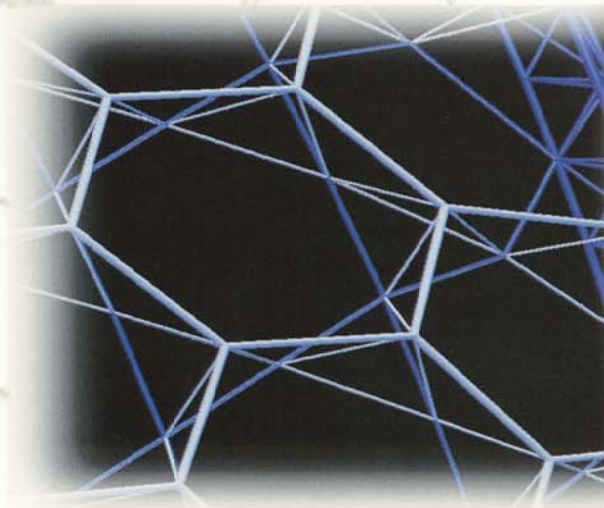
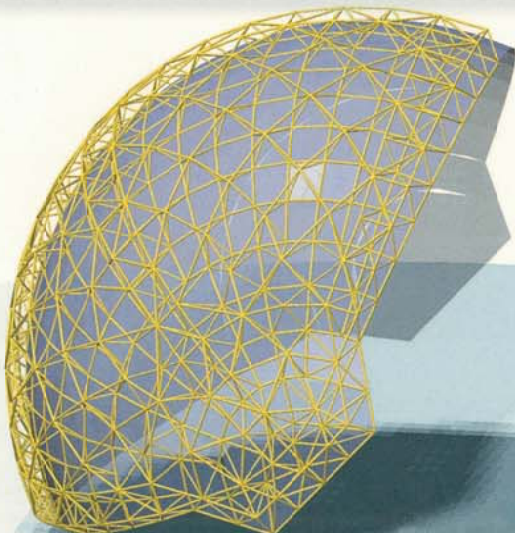
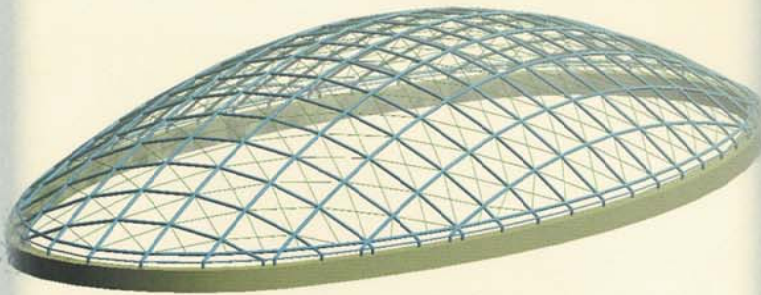
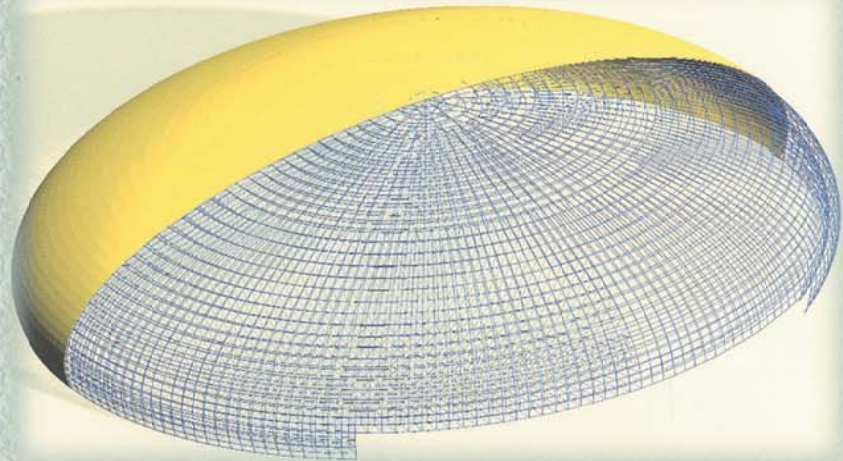
## Bilkent University Ankara, Turkey

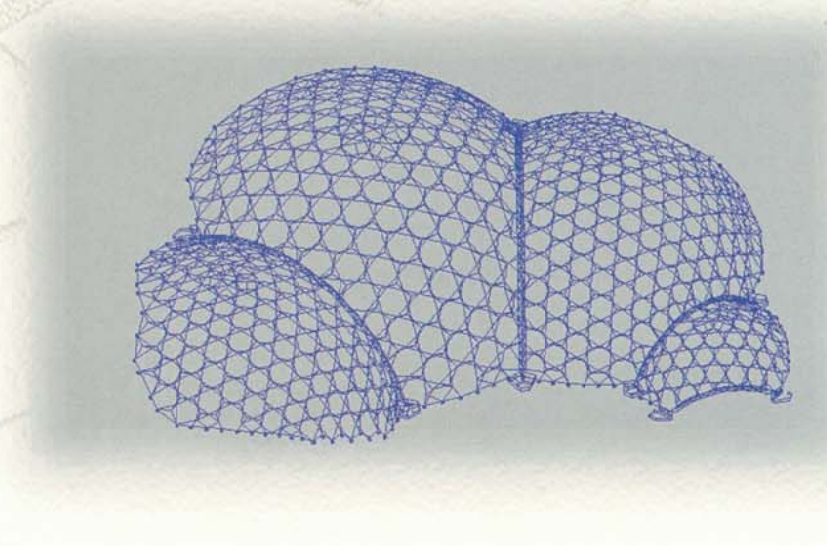
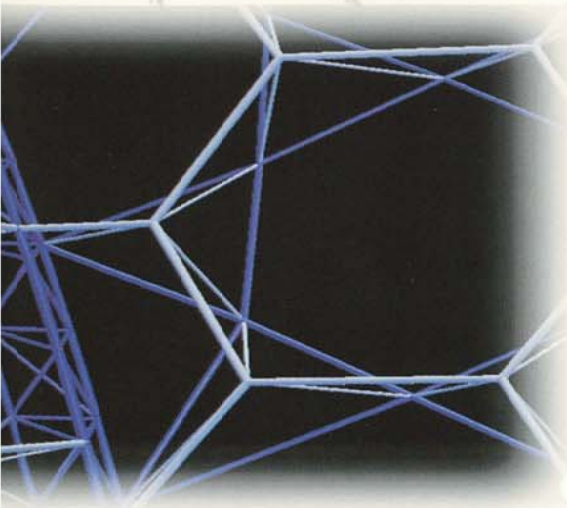
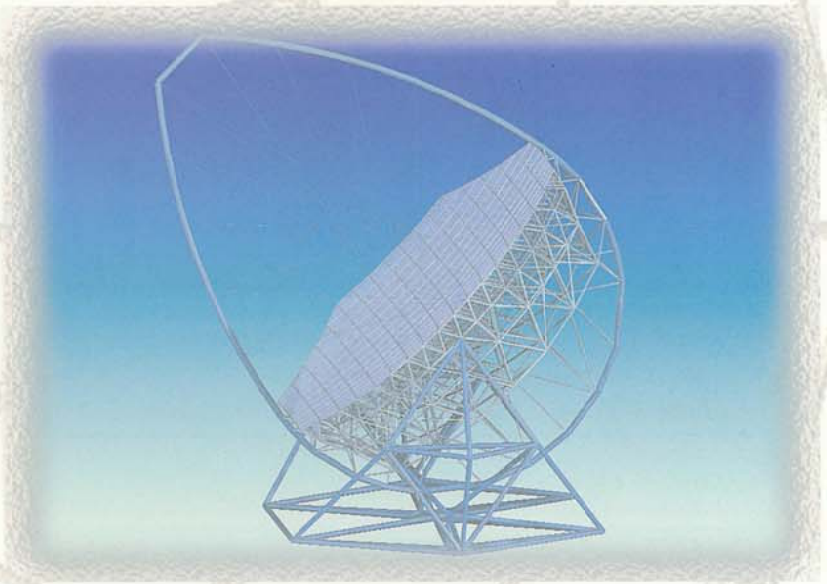
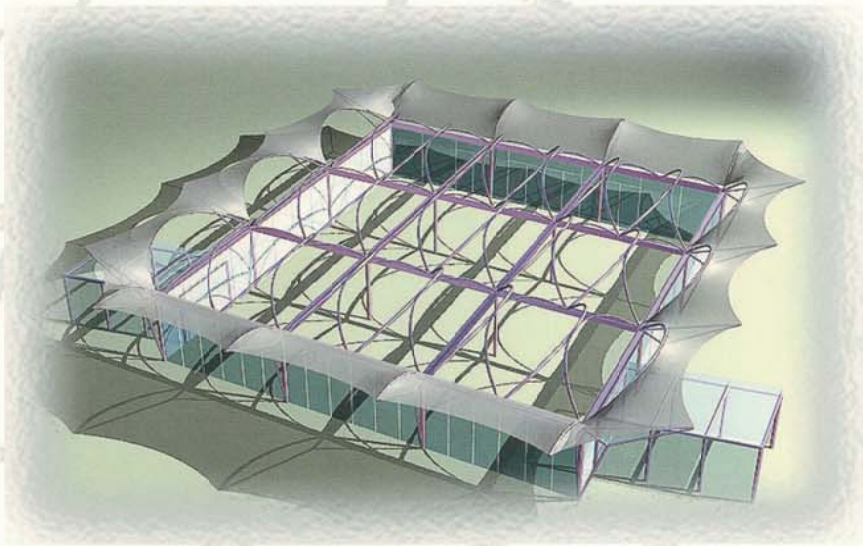
Membrane structure covering the amphitheater of Bilkent University in Ankara. A cable net structure clad with glass shingles stretches between the main girder and the building to protect the stage area from the elements.

Arch.: Erkut Sahinbas, Ankara

**The design of light space frame structures starts with their geometry.**

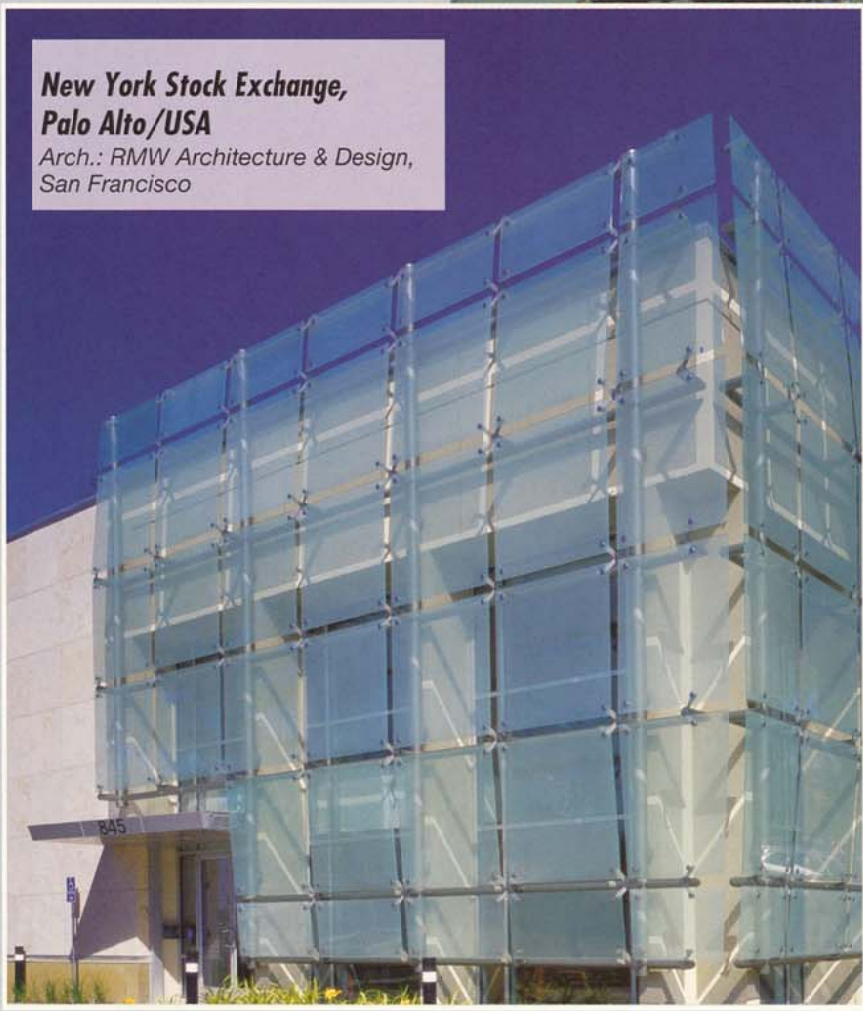
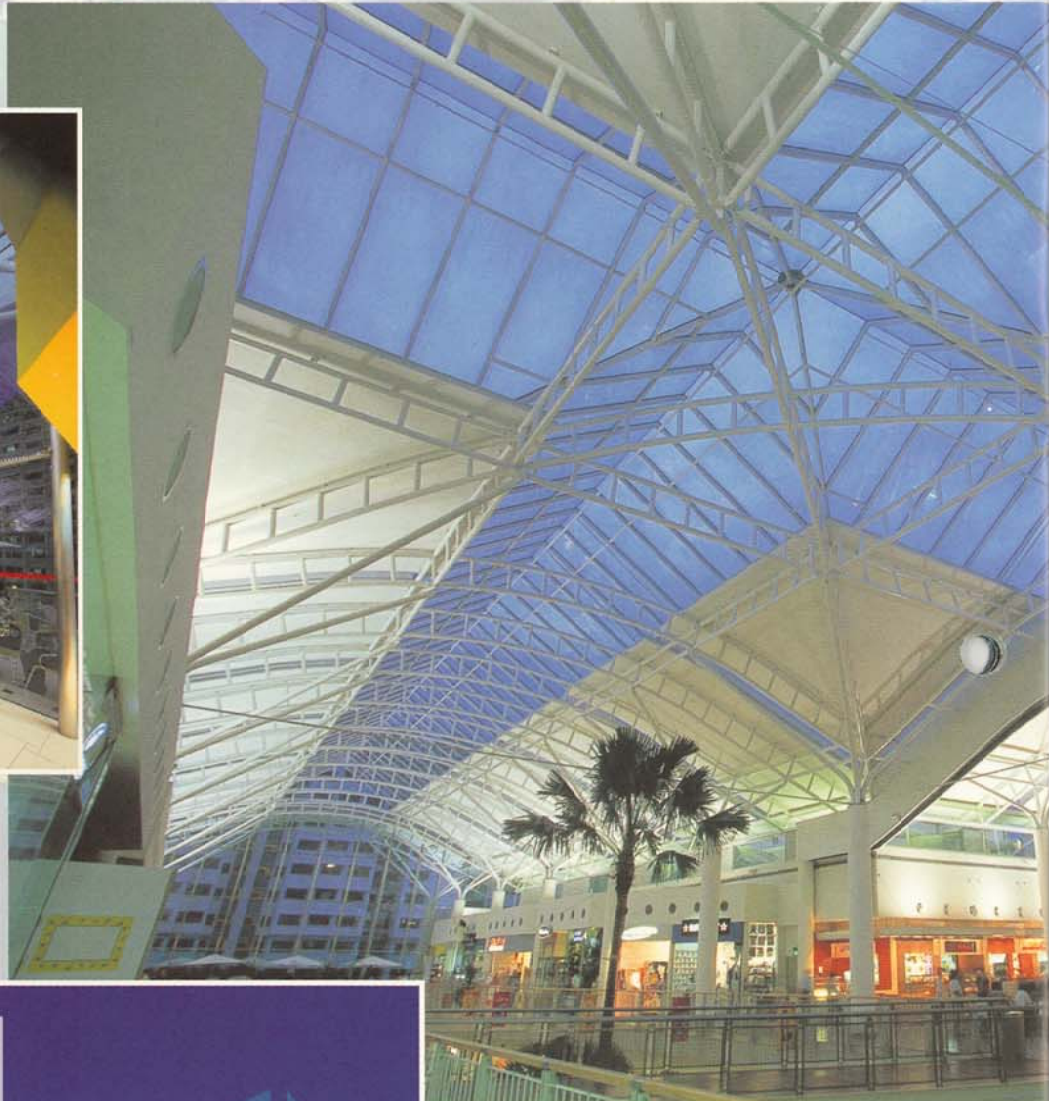
This can only be mastered with a sound basic knowledge of the possibilities and methods of geometrical design coupled with the application of flexible interactive CAD software. Direct transition to the next step, the structural calculation, however, is only made possible by the integrated dimensioning of structural elements, thus also providing interactive optimization of the design.







**Jurong Point Extension, Singapore**  
Arch.: PBMM, Singapore



**New York Stock Exchange,  
Palo Alto/USA**  
Arch.: RMW Architecture & Design,  
San Francisco



**Changi Airport Terminal, Singapore**  
Arch.: Public Works Department,  
Singapore





**GWIZ Science Museum, Sarasota/USA**  
Arch.: Cardinal, Carlson & Parks Architects,  
Sarasota



## Excellent Performance on all Levels



**Practice makes perfect:  
The new combined dock  
for EgyptAir surpasses all  
expectations.**



During the first aircraft maintenance in the new hangar 8000 of EgyptAir in Cairo it quickly became clear:

The new combined dock for long-distance aircraft types Airbus A300 and A340 as well as Boeing B747, B767 and B777 surpasses all expectations.

With extremely short docking times, easily adaptable working platforms with safe accessibility to all maintenance areas as well as integrated power and supply installations, our clients enjoy a cost effective solution to aircraft maintenance of the highest quality.

With this MERO docking equipment the above mentioned aircraft fleet can be maintained, overhauled and painted on either wheels or jacks.







## Continuous Development of MERO Stone Applications

Trying to square the circle has always been a challenge to the creative possibilities of MERO access floors. With new techniques and ongoing development of the production process, it is now possible to cut different natural or artificial stones to almost any requested shape and then apply onto access floor panels in our works. This enables the architects to make use of a variety of design features when using stone tiles, while the space beneath the access floor remains accessible.



*Creative cut at the transition from stone tile to carpet covering.*

Stadtsparkasse Geisingen/Germany  
Arch.: Thomas Kreuzer, Geisingen



*Natural stone combined with glass panel adds a special touch to every entrance hall.*



*Even the highest levels of difficulty are mastered with utmost precision.*

# International



## ***Cordoba Business Tower, Argentina***

Office area of 10,000 m<sup>2</sup> of MERO access floor type 5 and loosely laid carpet tiles.

*Execution: BAUCOR S.R.L.,  
Buenos Aires*

## ***A successful year for MERO Belgium***

In the year 2000 MERO Belgium N. V. sold and installed more than 100,000 m<sup>2</sup> of MERO access floors.



## ***Office Park te Mechelen, Belgium***

14,000 m<sup>2</sup> of MERO access floor

## ***Telecom Gardens te Vilvoorde, Belgium***

17,000 m<sup>2</sup> of MERO access floor



Unical®

T O R A N T E

### **Transparency on Fair Constructions**

For cladding of the exhibition stand, which was divided into a reception area and a food and service area, the customer wanted to have an open, light design which at the same time prevented a direct view of the activity on the stand. As an experienced fair stand construction company and longstanding MERO sales partner, the company Way Spa had no doubts about how to solve this apparent contradiction - with the M12 System. The stand was completely clad with frosted glass panels using Meroform fixing techniques. The transparent system components were deliberately chosen as a design element, giving the stand a particular visual appeal. To meet the requests of our customers, a second version of the spider fixing with bolted connections has been developed. Because of its larger dimensions, it is ideal to attach larger, heavier and thicker glass panels.

*Design and Execution:  
Way Spa, Milano/Italy*

# The „Connect Cyber Centre“



British Telecom planned a „room-in-room“ solution for the Internet Cafés in its newly designed training centers. The so-called „Cyber Centres“, which are located throughout Britain, are currently being completely redesigned using the same design concept. For the architects from The Exhibition Company in Edinburgh, designing the partitions and ceiling structure using the R8 System was obvious: The clear design of this aluminum profile system exactly fulfilled the requirements of the client to create a modern, communication-promoting environment corresponding to the corporate image of the company.

*Design and Execution:*  
The Exhibition Company, Edinburgh

Utilizing a huge glass front with a total height of 5 m, the company update.com presented itself at the Salestech fair 2000 in Wiesbaden/ Germany. The supporting structure of 4D was glass-cladded on both sides with the Meroform spider fixing technique. Lighting effects provided a special accentuation of the wall area.

*Design and Execution:*  
Manfred Mueller, Offenbach



Divisions:

**Construction Systems**

- Space Frames
- Glazed Structures
- Membrane Structures
- Aircraft Maintenance Docks

**Floor Systems**

- Access Floors
- Hollow Floors
- Floor Coverings
- Services

**Exhibit Systems**

- Meroform  
Modular Construction Systems
- Merolite  
Display Systems

Imprint:

MERO-Vision No. 36, 2000/2001

Cover: Eden Project, Cornwall/UK  
Arch.: Nicholas Grimshaw & Partners,  
London

Photographer: Cover, Pages 4/5:  
Charles Francis, Cornwall

Publisher:

MERO GmbH & Co. KG  
Max-Mengeringhausen-Str. 5  
97084 Wuerzburg  
Germany  
Tel.: +49 (0) 9 31/66 70-0  
Fax: +49 (0) 9 31/66 70-554  
Internet: <http://www.mero.de>  
e-mail: [mero.germany@mero.de](mailto:mero.germany@mero.de)