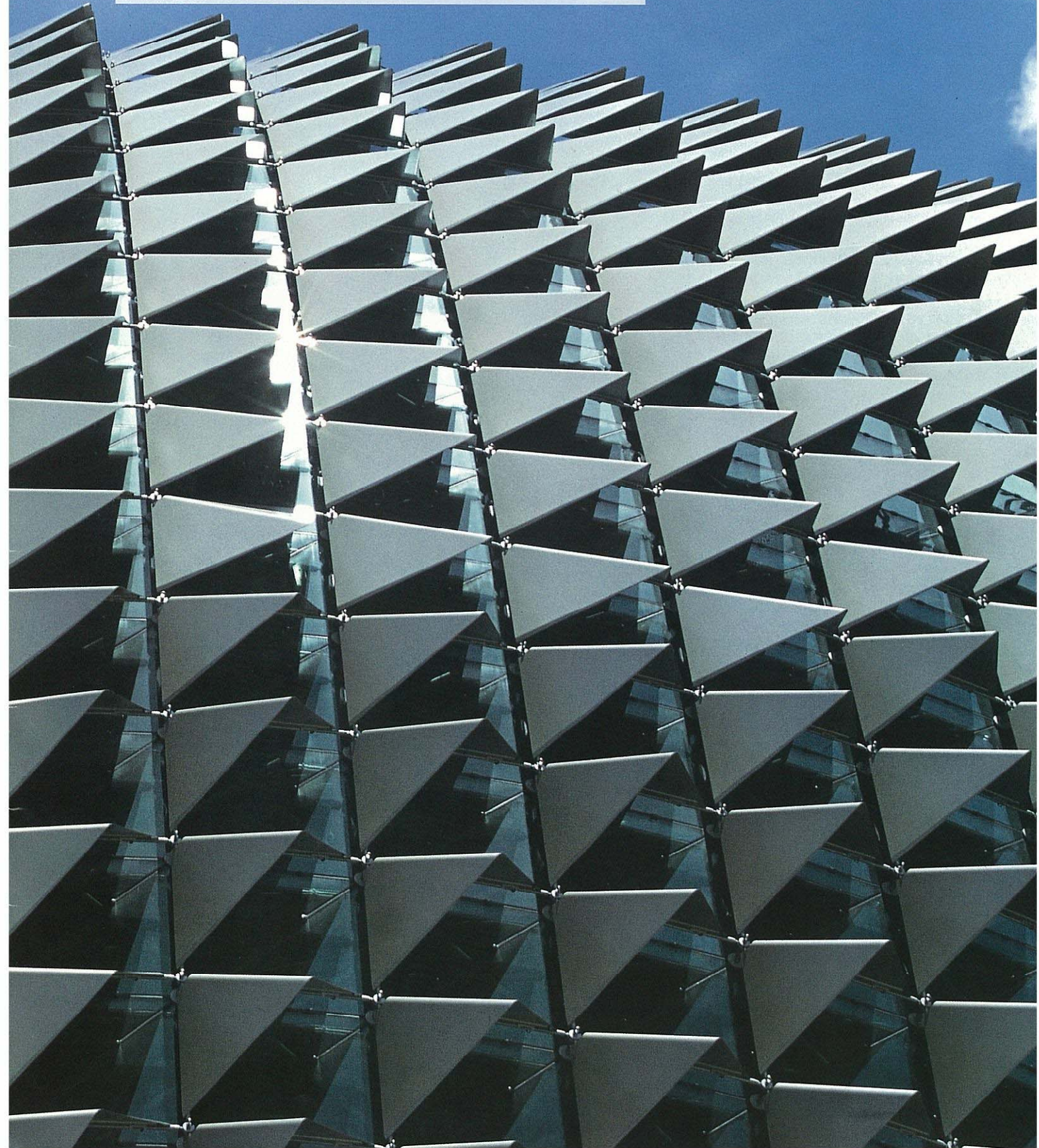


VISION

MERO 

MERO-VISION, Number 37, 2001/2002



Expansion of Global Presence

By strengthening our foreign subsidiaries we have expanded our global presence and local support for clients, architects and engineering consultants.

On August 10th, 2001 MERO Structures, Inc. in Wisconsin, USA officially opened their new 5,500 sqm office and production facility. Showcasing a wide range of MERO's products, the building lays the path for future growth in North America. After the successful completion of the Headquarter Offices for General Motors in Detroit we were awarded an additional prestigious order for the construction of the Corporate Offices of Goldman Sachs in Jersey City which guarantees a solid capacity utilization until the year 2003.

We also were able to strengthen our other foreign subsidiaries. The Esplanade Theater on the Bay of Singapore (pg. 4-5), executed by MERO Asia Pacific Pte. Ltd., is considered a „Landmark Building“ which supplements the number of MERO's reference projects in Asia by an additional architectural top performance in the field of glazed structures and high-tech engineering.

After its completion at the end of the year 2000, the Eden Project in Cornwall (MERO (UK) PLC) was officially opened in spring 2001. Due to its extraordinary worldwide publicity and the strong public interest, the number of visitors expected for 2001 was already achieved by August. Thanks to the international media response, the attention that any MERO project had attained in the past was exceeded by far. A number of television and science programs have already been devoted to this revolutionary project in lightweight architecture. Its technology is trendsetting for low-cost wide-span structures.



MERO Structures, Inc. in Wisconsin, USA

The company founder Dr.-Ing. Max Mengerhausen had already envisaged such structures in his publications in the early 1980's.

Extended Range of Services

The joint construction of complete building envelopes in cooperation with MERO Austria GmbH in Gleisdorf has proved its worth. The combination of our experience in the field of self-supporting glazed facades and roofs and the knowledge in the field of curtain-walling results in complete package solutions. This gives us the ability to offer our clients an

attractive and complete spectrum as a sole supplier. The integration of various types of cladding such as titanium sheets is steadily gaining significance.





Experience in the execution of membrane structures was further broadened through the Al Nahda Shopping Mall project in Dubai, performed by MERO Middle East LLC (pg. 17).

New fields of application reflect MERO's reputation for innovation and future orientation, such as the use of carbon fibre profiles in the construction of a telescope for the Max-Planck-Institute for Physics on the island of La Palma, Spain (pg. 19). Its lightweight structure guarantees a compensation of the Earth rotation with minimized vibrations.

Another example is MERO's participation in the development of solar power plants under the direction of Prof. Schlaich, Stuttgart, which offer an interesting alternative to cost-efficient energy through solar radiation (pg. 19).

Domestic Business: Continued Innovation in a Difficult Construction Environment

Besides the Glasshouse Manufacture for Volkswagen in Dresden and a variety of spectacular projects which are being introduced in this issue, the preparation work for the Lehrter Bahnhof in Berlin were of utmost importance for our

Structural Division. With a length of 416 m, a glazed area of approx. 30,000 m² 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.

The **Floor Systems Division** once more achieved its goals in 2001 and furthered their market position with clients and architects. This was facilitated by the success of our subsidiaries in Belgium and the Netherlands. This year's main innovation was a new type of magnetic tile with a wide diversity of applications and another step of innovation in our clean room floor panels.

Architectural trends prompted MERO's **Exhibit Systems Division** to the realization of biomorphic structures which characterize present trends in fair construction.

On the basis of our unique global standing in innovative solutions to our markets we see ourselves in a position to successfully accomplish the challenges arising through the present political and economic turbulence.

Dr. Roland Klose
Managing Director

Josef Rossmannith
Managing Director



MERO constructs the new theaters on the bay of Singapore from steel, glass and aluminium cladding.

„The Esplanade“ is a multi-activity performing arts center for the staging of a wide variety of art events and performances within a total ground floor area of 111,108 sqm. It consists of two major theater buildings and several outdoor performance spaces.

In addition, there will be a commercial mix of retail businesses, offices and apartments, as well as rehearsal, production and office spaces for resident companies.

The 1,800 seat „Concert Hall“ with adaptable reverberation chambers and an adjustable acoustic canopy is intended for musical performances. Its centerpiece is a Klais organ.



The 2,000 seat „Lyric Theater“ is designed to accommodate both Asian and Western performing arts. It has a main stage, two ancillary stages and rehearsal rooms.

„The Esplanade“ occupies a four hectare site between Marina Center and Marina Bay.



...Theaters on the Bay of Singapore

The unique harmony of structural forms and purpose-designed spaces combined in the center outwardly manifests the range of functions to which it is dedicated and its significance as a cultural symbol and an urban landmark.



The structure consists of a double layer space frame with a top chord executed in the MERO bowl node system and a bottom chord and diagonals executed in the MERO ball node system. Triangular panes of insulated glass with a thickness of 29 mm have been installed on a surface area of 10,731 sqm. The glass panels are fixed at the corners with aluminium discs and with additional suction discs at two equally spaced points along the edge of each pane. The joints are sealed with approx. 27 km of sealing profiles. The shading devices consist of approx. 6,200 aluminium panels fixed to the surface of the shells in different angles adapted to the changing slant and direction of sunrays during the day.

Arch.: DP Architects Pte. Ltd. (Singapore) and Michael Wilford & Partners, London (UK) won the competition and developed the concept design together.

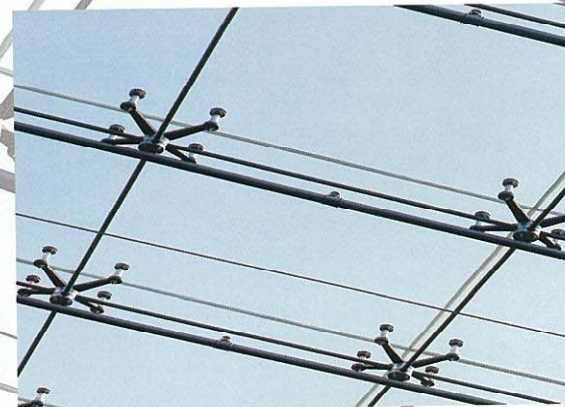
Petersbogen at Leipzig

The Petersbogen passage in Leipzig is a charming backdrop for your shopping spree.

The elegant shopping arcade is finally open for business. The glazed roof structure of the „Juridicum Passage“ consists of a steel substructure with tension cables. The elements of the grid range from 1.97 to 2.25 m. The complete roof is clad with panels of laminated safety glass which are point fixed on the pre-stressed cables.

The glazed roof over Schlossgasse and the one over the passage are connected by a rotunda which rises from 1.20 m to a maximum of 2.10 m higher than the glazed roofs.

The glazing of the rotunda is point fixed, with tensioning cables. The whole cable structure is tensioned within a continuous edge beam in the shape of a triangular girder.



Arch.: Hendrich-Petschnigg & Partner, Leipzig (Germany)



Bosch-Areal, Stuttgart

The area formerly occupied by the administration of Bosch Company in Stuttgart, a listed historical monument, had been vacant for a long time, before a new block of apartments, offices and a cinema infused it with new life.

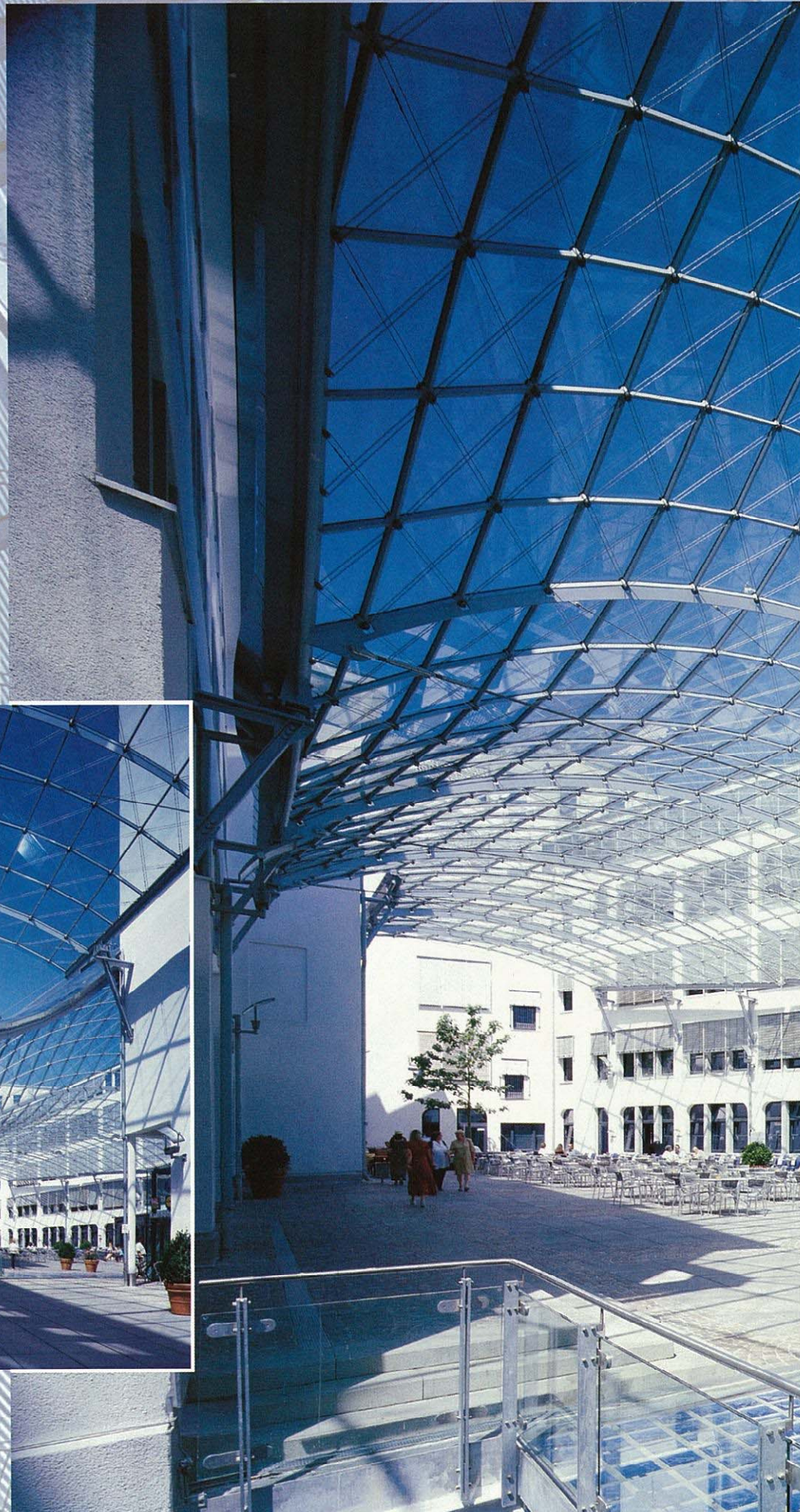
The 14,000 sqm area now houses a variety of small-scale businesses and housing units. A glazed grid structure constructed by MERO spans the whole central court. The division into individual plots, inherited from the former administrative complex, remains visible and lends the roofed-in passage a peculiar charm which not only preserves, but highlights the character of the original architectural monument.

Arch.: Ostertag und Vornholt, Stuttgart (Germany)

Structural Design: Schlaich, Bergermann + Partner, Stuttgart (Germany)



The former backyard of the building complex now lies under the sweeping curves of a glazed structure.



... in Sweeping Curves



Forum Neukoelln, Berlin

The glazed pyramid crowns the top of a stairwell in a new business complex containing cinemas and shopping arcades.

The complexity of the system lies in its geometry.

The rings of the oblique cone form ellipses as they enclose the supports made of hollow profiles.

Imitating the shape of horse-tail stems, the supports taper by steps toward the top.

The point supported insulated glass panels had to be cut into many varying shapes to fit the geometry.



Attached to this ellipsoid is the equally fully glazed cover over the lift. Each of these structural elements has a rotating cleaning device for maintenance purposes.

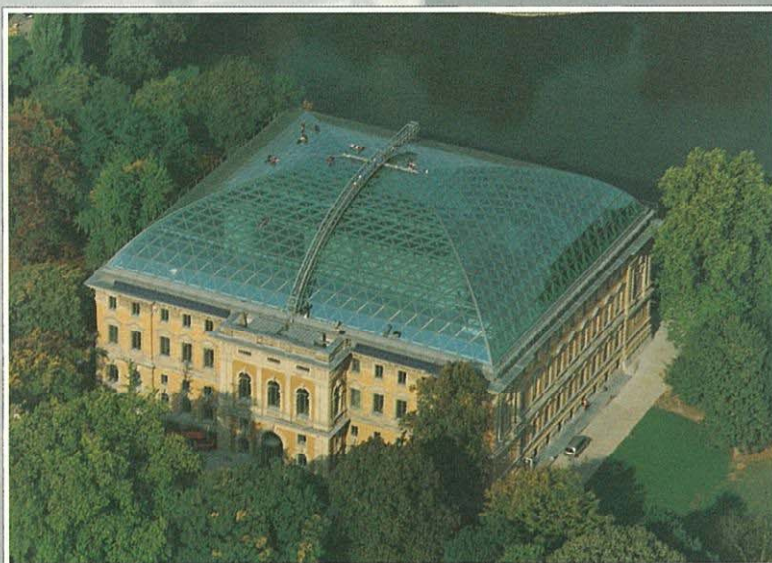
Arch.: Boge Johannsen, Hamburg (Germany)



Staendehaus Duesseldorf

A new attraction of glass draws the public to the shores of the Kaiserteich in Duesseldorf. Built in the 19th century to house the provincial parliament of the Rhineland, the Staendehaus is now an eye-catcher thanks to the glazed dome of its roof constructed by MERO. The clear-span roof covers an area of approx. 3,000 sqm. After the reopening ceremony, a branch of the Art Collection Nordrhein-Westfalen has moved in. With this purpose in mind, the whole building with the exception of the stairwells has been completely redesigned and modernized. The spacious main hall now lies in broad daylight under the impressive glass dome erected by MERO.

Arch.: Kissler + Partner Architekten GmbH, Munich (Germany)





Sparkasse Starnberg

The foyer of the savings bank building consists of a glazed facade with tension cables, point fixed glazing elements and spring elements on top. Steel girders running at right angles form the substructure of the glass roof featuring linear supported glazing and steel girders with tension cables.

Glass louvres on upstands provide the necessary shading of the roof.

Arch.: Rainer A. Koehler, Gauting (Germany)

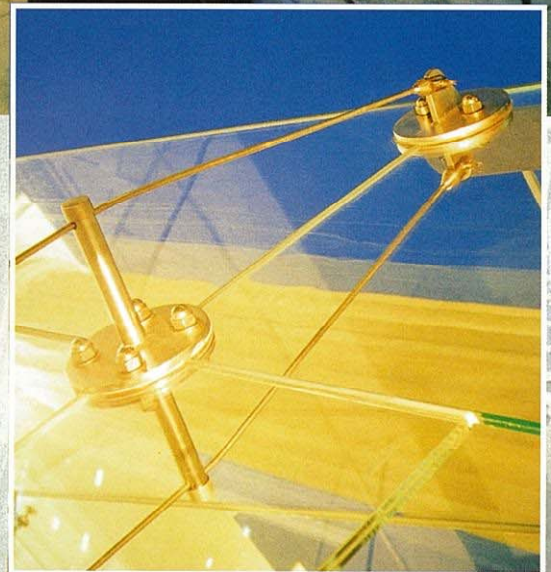
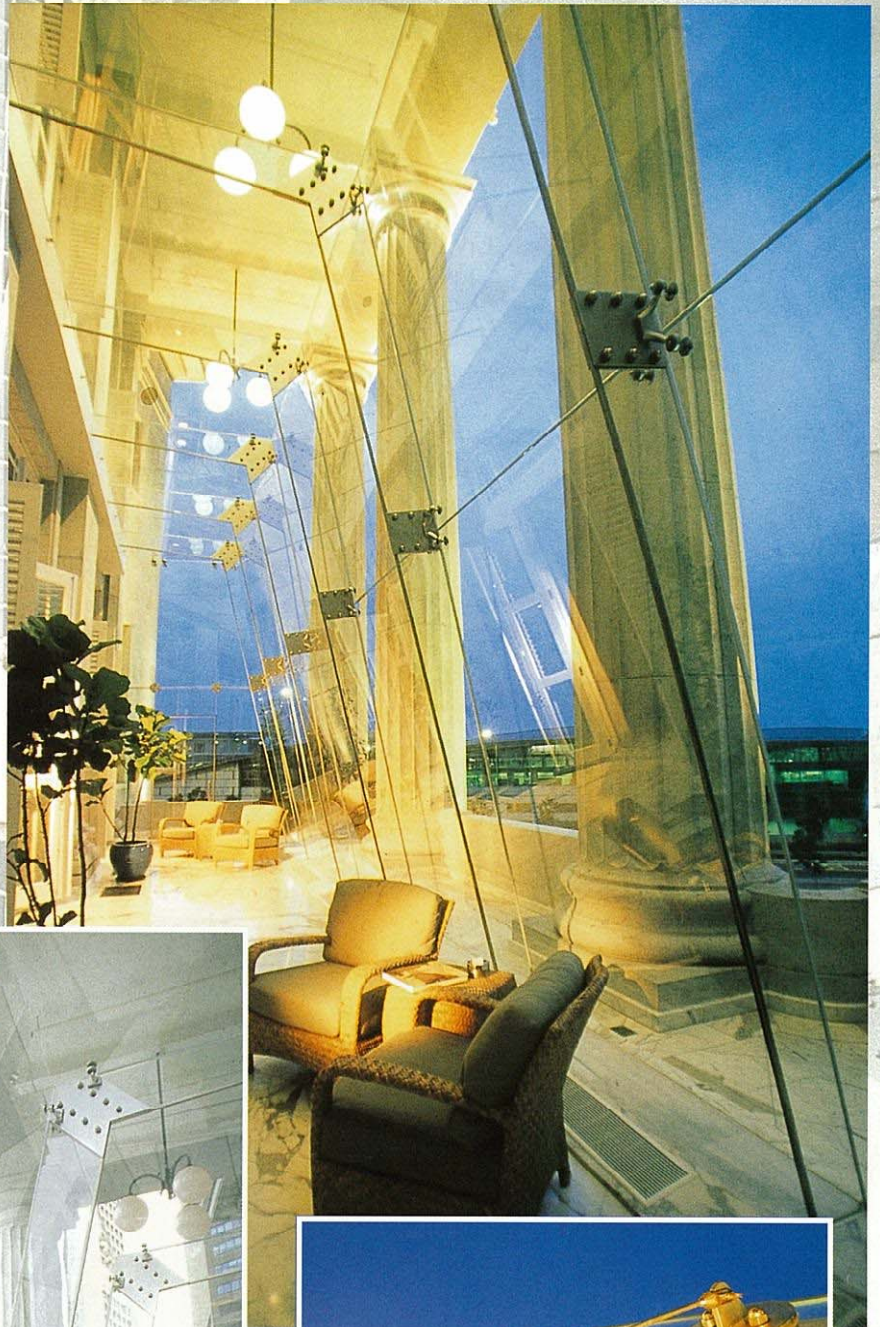
Glass Envelopes

Presidential Suite, Fullerton Hotel, Singapore

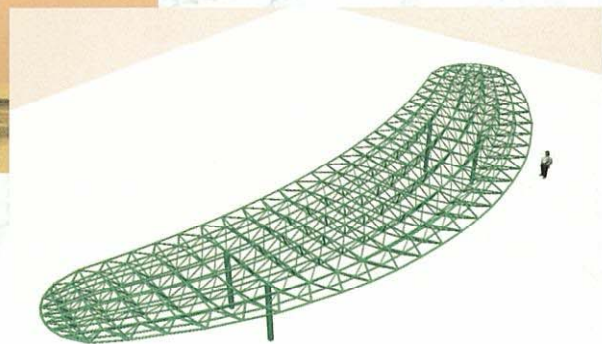
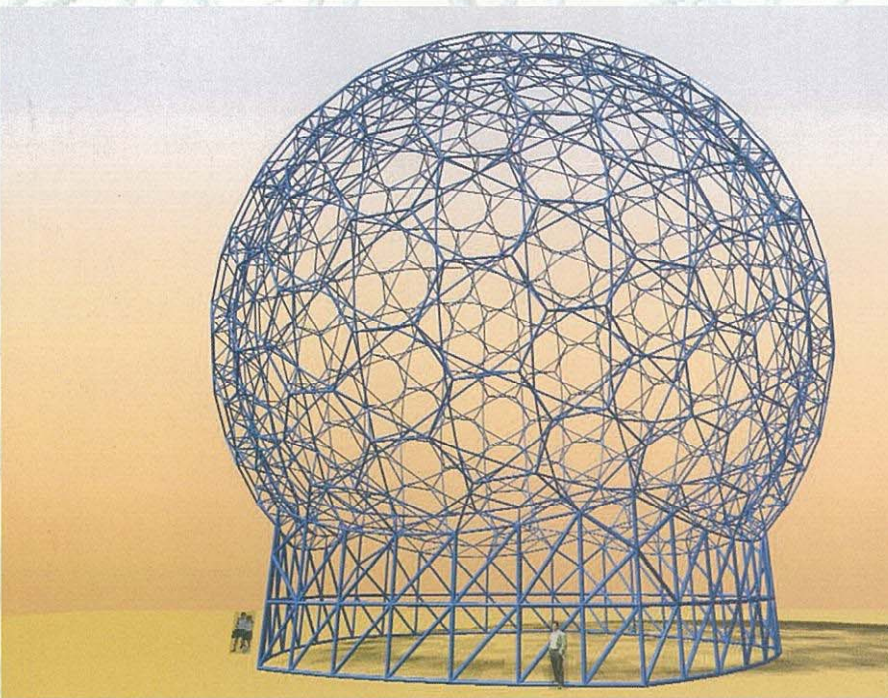
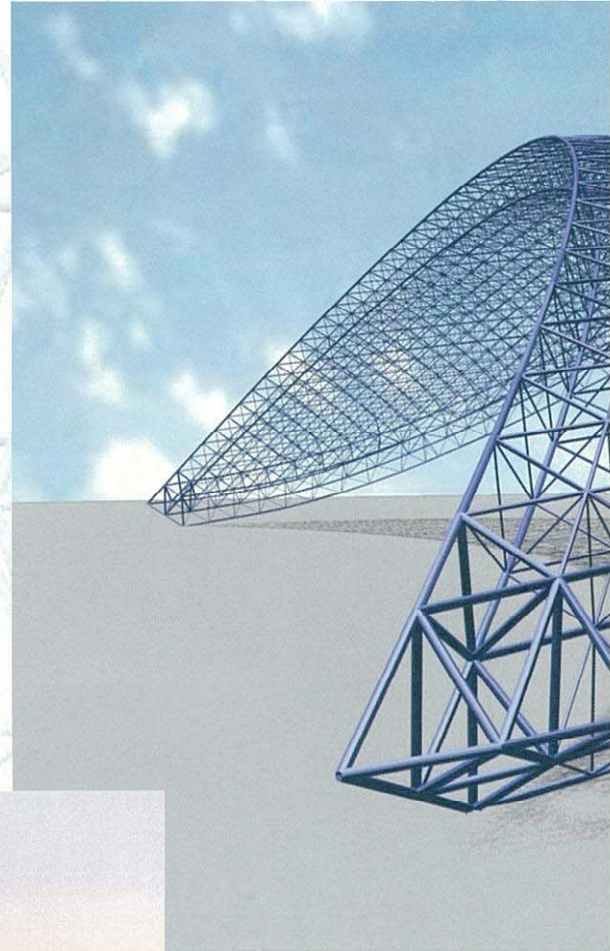
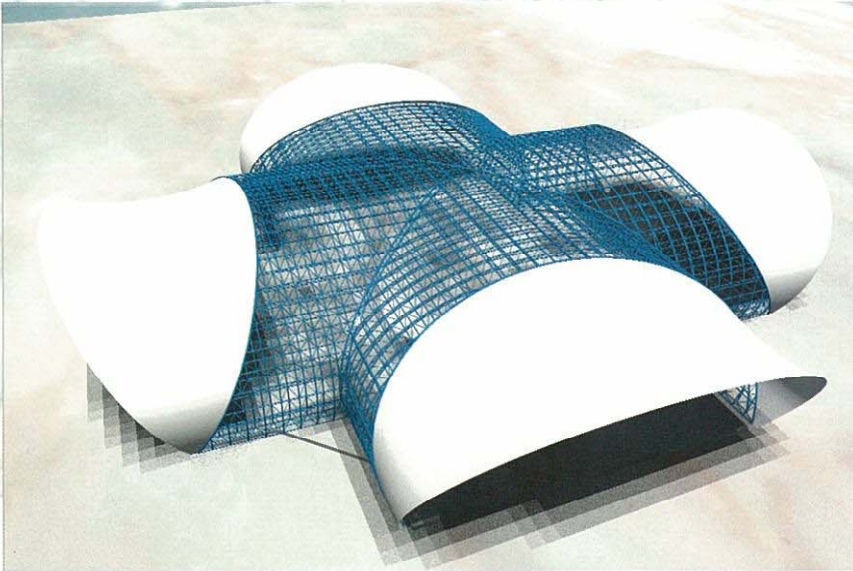
*Weightless and transparent like a
soap-bubble*

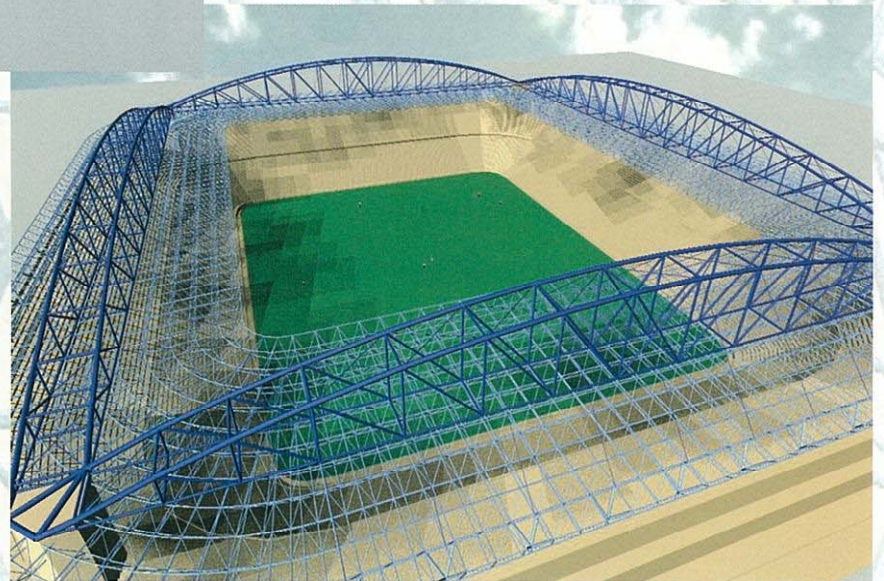
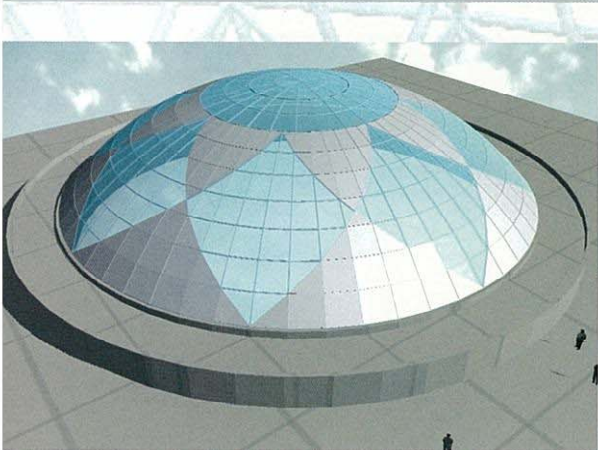
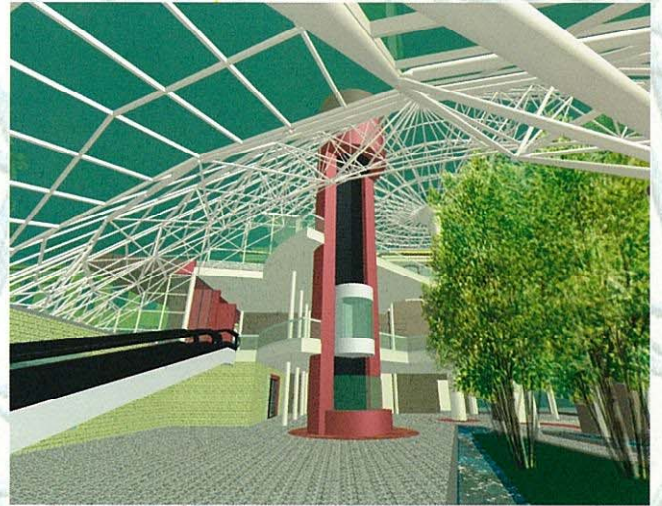
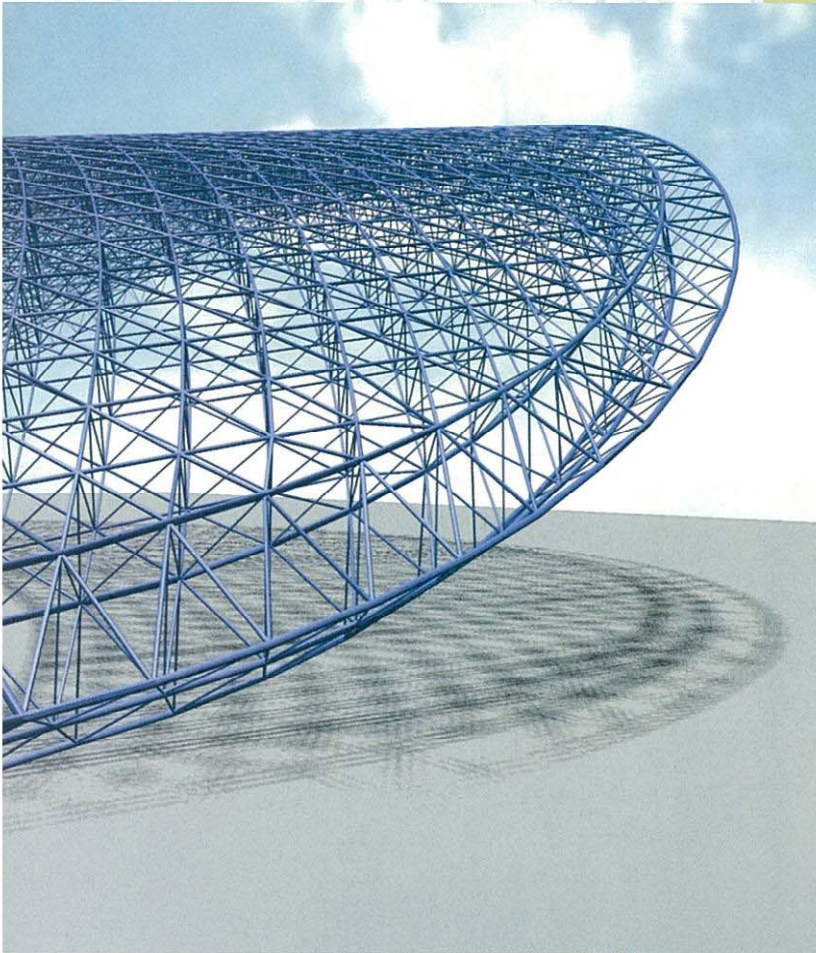
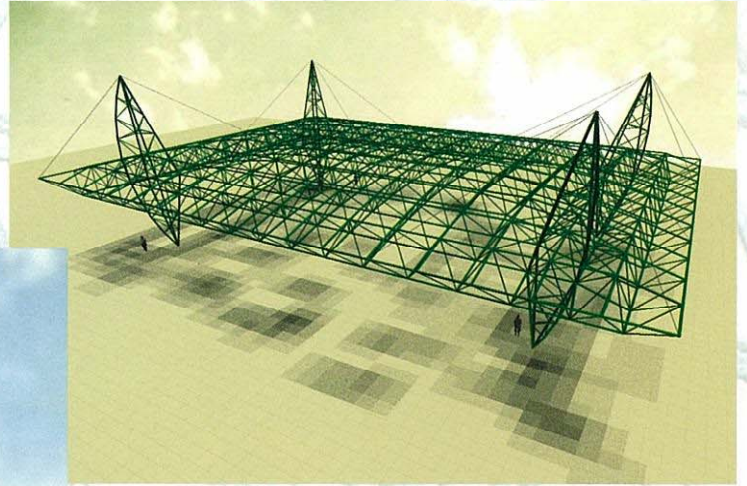
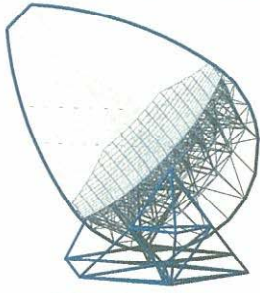
Located highly visible under the portico facing scenic Clifford Pier and Marina Bay, the structure needed to virtually disappear. This was achieved by eliminating all notions of structural support and devising a composite system in which the glass operates as a component of the working structure.

Arch.: Architects 61 Pte. Ltd., Singapore

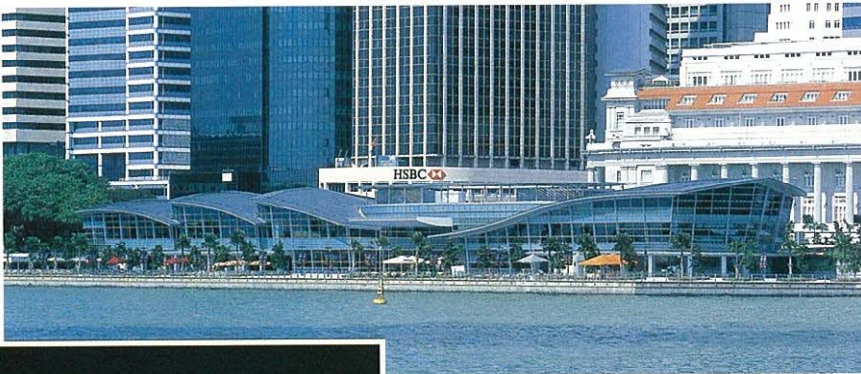


Detail of the filigree glass connections

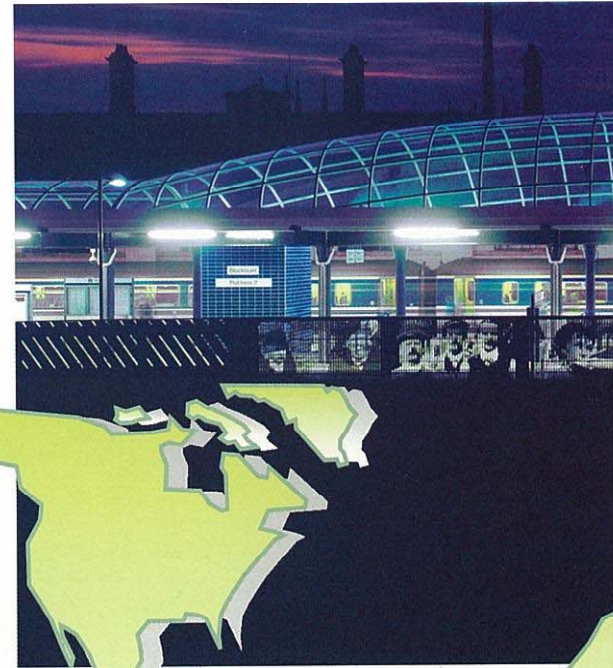




During the tender and design stages, CAD animation facilitates planning. It allows the simulation of even the most extravagant shapes and highly sophisticated constructions. The CAD models shown above will all be realized in the near future or have already been executed.



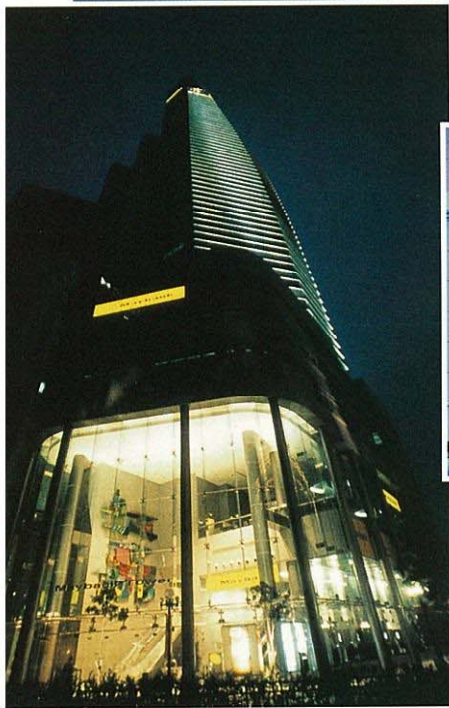
Fullerton Square, Singapore
Arch.: Architects 61 Pte. Ltd., Singapore



Blackburn Station (UK)
Arch.: Austin-Smith: Lord (UK)



Tampa Marriott Waterside, Florida (USA)
Arch.: Nichols, Brosch & Sandoval & Associates, Inc.



Maybank, Singapore
Arch.: SYL Architects 61 Pte. Ltd., Singapore



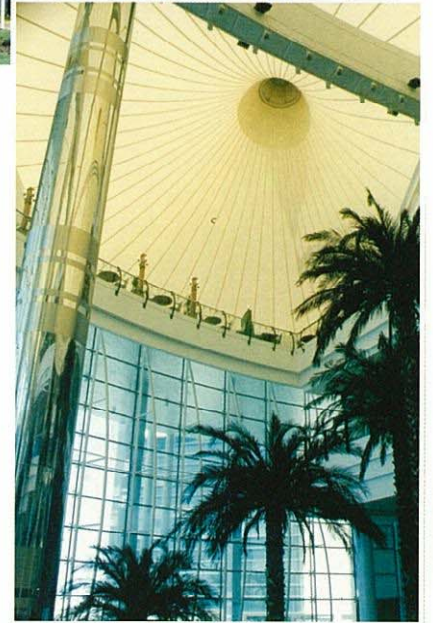
Cereser Marmi, Italy
Arch.: A. Marinesini, Verona (Italy)



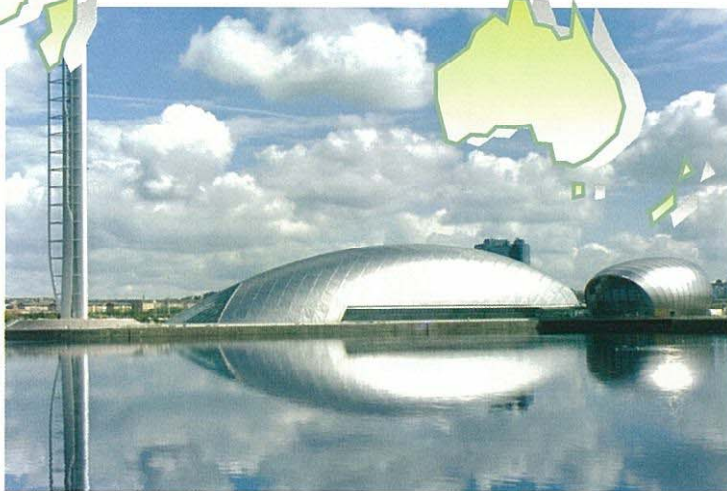
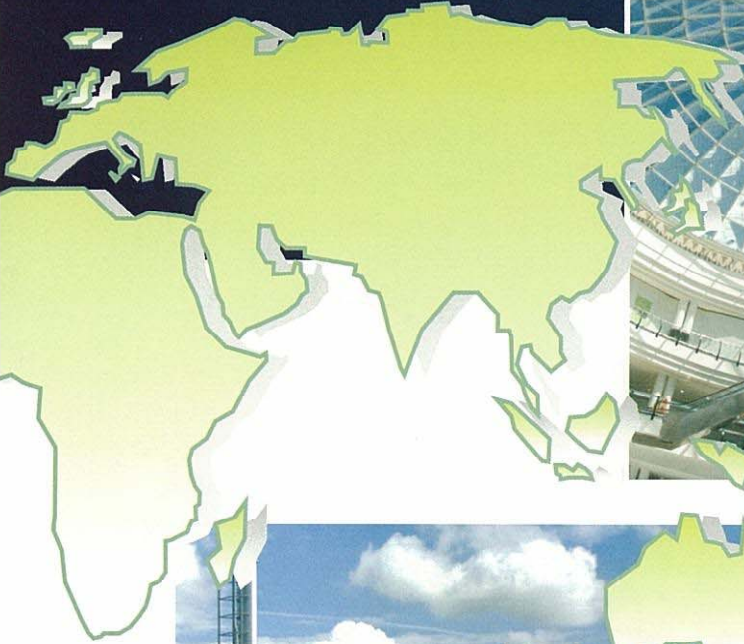
Sandyford, Industrial Estate Dublin, Ireland (UK)
Arch.: Horan Keogan Ryan (UK)

Gasometer B, Vienna (Austria)
Arch.: COOP HIMMELB(L)AU, Vienna (Austria)





*Doha City Center, Qatar
Arch.: Meinhardt Middle East, Qatar*



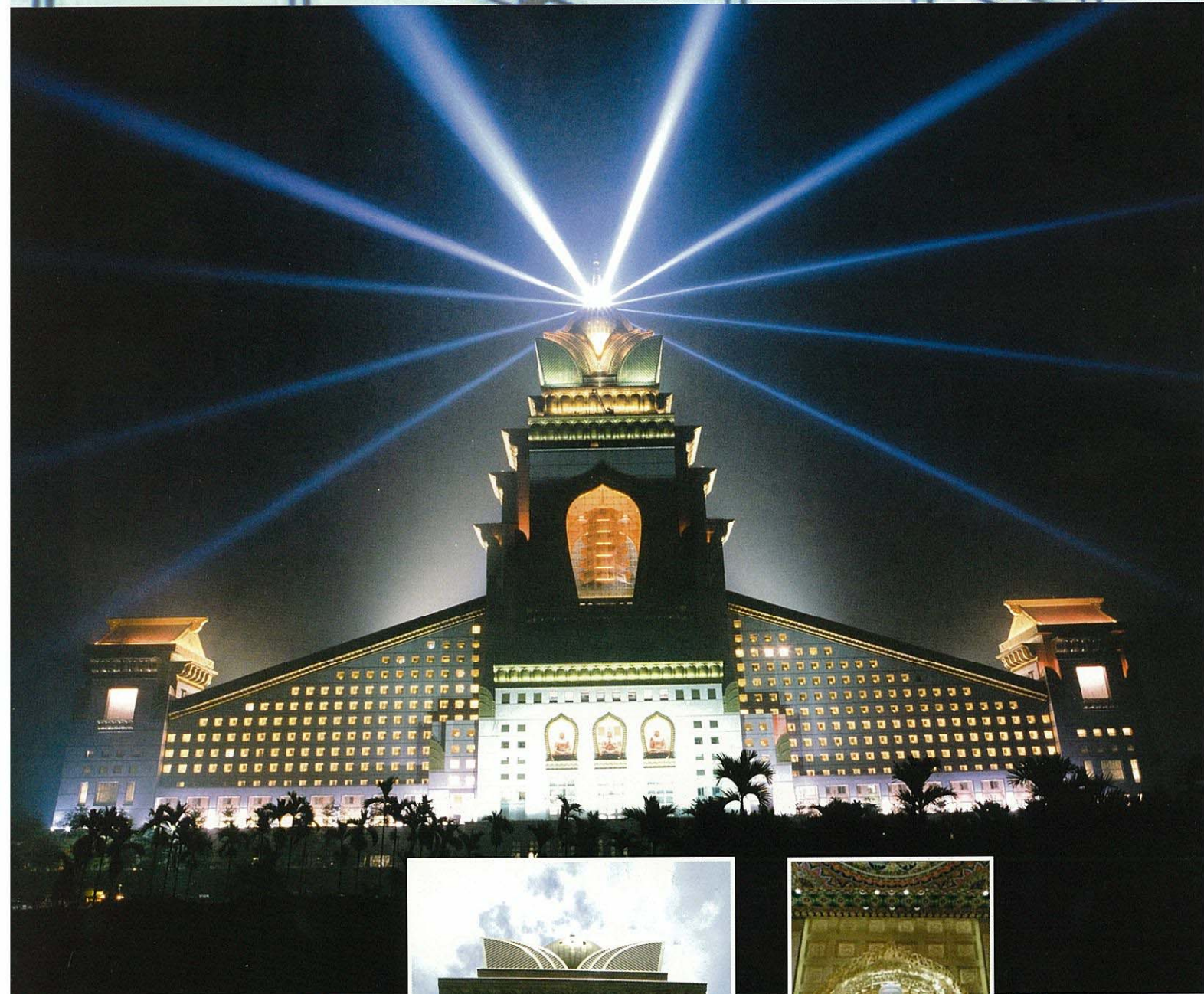
*Science Center, Glasgow (UK)
Arch.: Building Design Partnership, Glasgow (UK)*



*Fiumicino Airport, Rome (Italy)
Arch.: Studio Valle Progettazioni,
Rome (Italy)*



*The Deep, Hull (UK)
Arch.: Terry Farrel & Partners, UK*



Chung Tai Ch'an Temple, Taiwan

The Chung Tai Ch'an Temple in Taiwan is a new spiritual center with a huge pagoda. In contrast to the monumental design of the building two very filigree level cable structures with point supported glazing offer a nearly unobstructed view of the statue of the sitting Buddha inside. Each facade has a surface area of approx. 410 sqm. As a concession to the high local wind loads the pre-stressed cables are designed for 200 kN each.

Arch.: C. Y. Lee & Partners, Taipei (Taiwan)



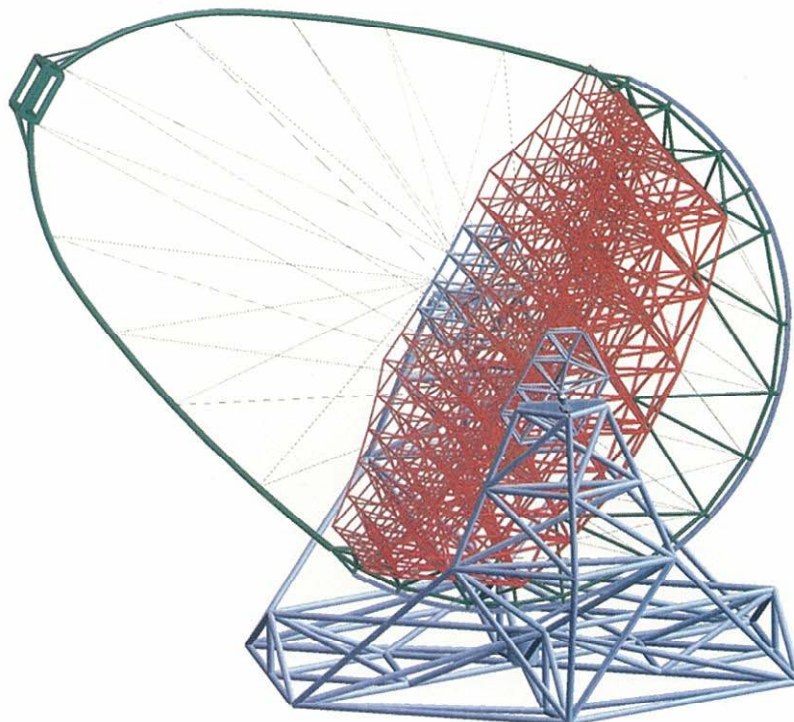
The Chung Tai Ch'an Temple (chin. „Ch'an“ = Jap. „Zen“) is part of the Chung Tai Ch'an Monastery founded by the Ch'an Master Wei Chueh near Puli (Taiwan). It is the spiritual center of a steadily growing community of 700 monks and more than 100,000 lay followers of the Master. After its final completion the building will house an institute for Buddhist studies and a center for the practice of meditation.

Carbon Telescope for Max-Planck-Institute

Carbon fibre profiles and MERO aluminium ball nodes are the modular elements of the Magic Telescope.

In 2001, closely cooperating with the Max-Planck-Institute for Physics, MERO developed an ultra-light space frame for the Magic Telescope on the island of La Palma, Spain.

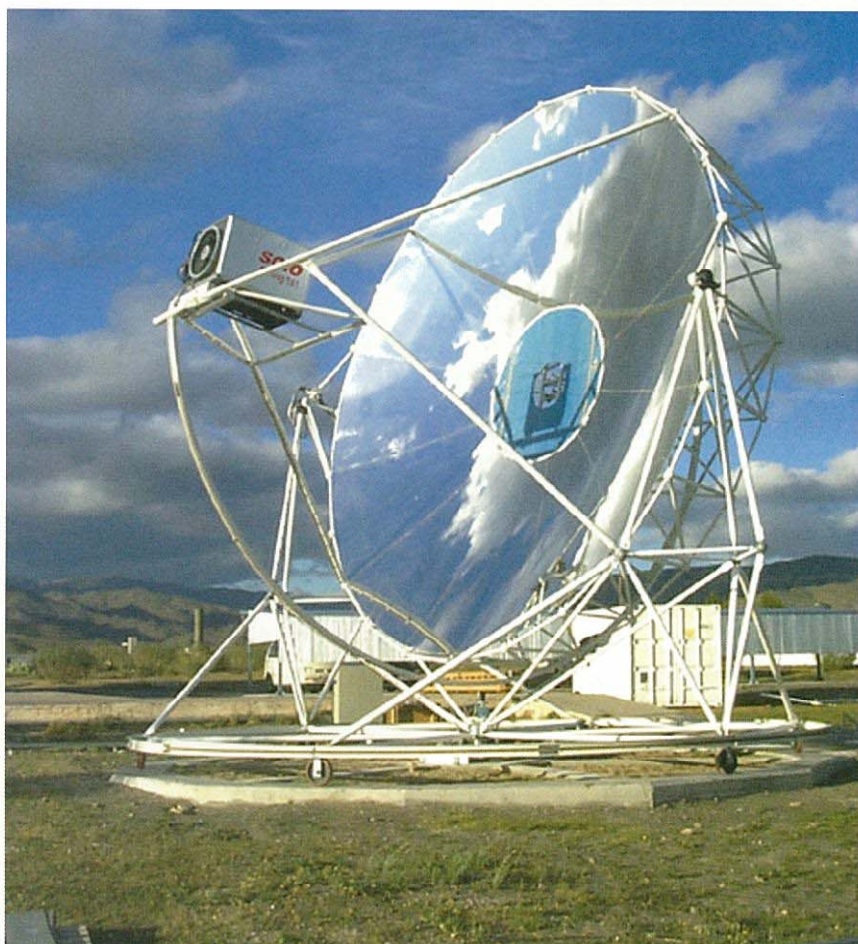
The reflector has a diameter of 17 m and consists of a four layer space frame structure with an overall height of 4.414 m. The grid of the top chord is 1.0 x 1.0 m and corresponds to the dimensions of the refractor facets. The ultra-light space frame is made of aluminium nodes F48 and carbon fibre profiles of different diameters. Scientists hope that this super telescope will open a window on the energy range between 20 and 200 giga-electronvolt which has so far not been accessible for research. This would allow humans a view into deep space of up to eight billion light years.



The telescope measures the extended atmospheric showers caused by particles of cosmic in the atmosphere.

The EuroDish transforms Solar Radiation into Electric Power

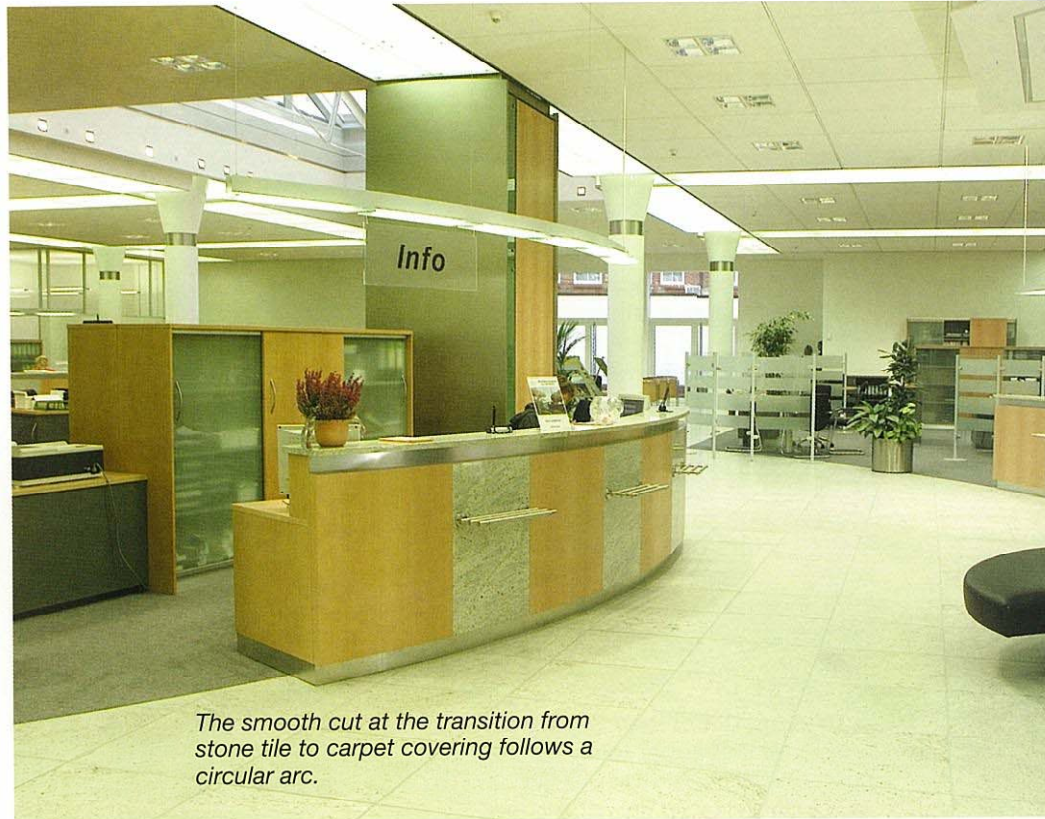
The Dish-Stirling System transforms concentrated solar radiation into electric power with a high efficiency factor. The parabolic concentrator which focuses incoming solar radiation must always be pointed exactly at the sun. This is made possible by a space frame made of MERO members and nodes. The turning support, adjustable in all directions, and the ring foundation are indispensable for the most efficient use of the thermal energy which the Stirling motor transforms into mechanical energy with the help of a thermal carrier medium (helium or hydrogen). Thanks to their high performance range, several of these systems can be hooked up to form a „farm“ for a power supply in the megawatt range.



Reconstruction, extension and development are challenges to architects best countered with flexible modular construction systems.

The management of the district savings bank in Stade, Germany, settled on the plans of architect Gerd Wichers of Manfred Kordt Architects, Stade. At the heart of his design is the new main hall with large glazed areas and MERO access floor type 4 made of non-combustible anhydrite. The panels included stone (type Granite Cashmir White), self-adhesive tiles and Noraplan stone. Underfloor heating was integrated below the access floor. One of the largest halls of its type in North Germany was built in Stade in record time.

*Kreissparkasse Stade (Germany)
Arch.: Architekturbuero Manfred Kordt,
Stade (Germany)*



The smooth cut at the transition from stone tile to carpet covering follows a circular arc.

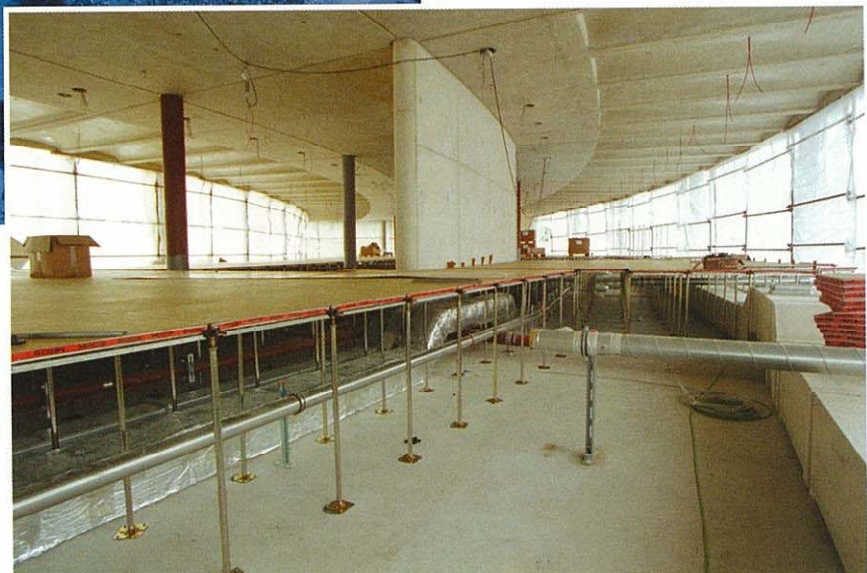
New Corporate Headquarters of Bayer, Leverkusen **Transparency on a Large Scale – Quality in Details**



does not pose any problems. Pedestals support the floor panels which consist of dished galvanized metal trays filled with Bayer anhydrite. The floor panels have superior sound insulating properties and with a fire rating of F30 easily meet the requirements of fire protection.

Arch.: Helmut Jahn, Chicago (USA)

In order to achieve maximum flexibility in the utilization of about 200 offices and meeting rooms, the designers decided on an access floor solution. On a total area of 12,000 sqm, the MERO access floor provides sufficient space for all installations of technical services and communications technology. Conversions to other uses or maintenance work



... for a Flexible Response to a Changing World



The Safety Package

Modular Docking Systems for every type of Aircraft

Modular Docking System for EADS Sogerma is suitable for all widebody Airbus types

The leading aircraft maintenance service companies for aircraft maintenance know the quality of MERO products and set increasing importance on our high quality maintenance docks.

All aircraft can be maintained and painted on wheels as well as on jacks.

Moreover there is a stand-alone advantage of such equipment: Not only can the individual dock modules be used as a complete system, but they also are adaptable for individual use on various aircraft.



With the recent installment of dock elements, EgyptAir gains efficiency in the performance of not only major aircraft overhauls but regular line maintenance as well.

The dock elements utilizing classic MERO space frame captivate high stability with the ease of lightweight handling.



Due to its modular system the new docking system installed at EADS Sogerma in Bordeaux, France, fits all widebody aircraft of Airbus type A300, A310, A330 and A340.



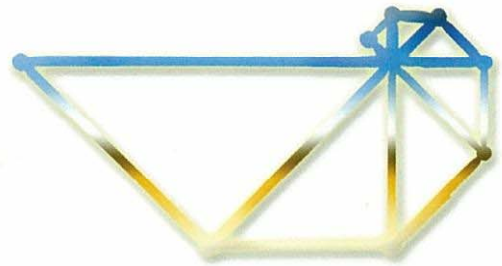
Biomorphic Visions for the World of Exhibitions

While conventional space frame structures were the main design in the past, recent years have seen added emphasis put on the use of more venturesome structures derived from nature, even going as far as completely free forms. The technological advancements of the computer age have enabled us to use relevant CAD programs to generate random spatial surface networks from a flat network structure.

Since these „biomorphic“ or amorphic structures are subject to the same elementary design principles, M12 tube/node technology is the ideal system for implementing them.

Numerous examples already implemented in the field of building architecture - think of the already legendary Eden Project in Cornwall (UK) - are proof of MERO's competence in the planning and design of biomorphic structures.

What is possible on a large scale is even easier on a small scale. On the basis of this idea, MERO Exhibit Systems has now started to adapt biomorphic structures to the decorative sector. In this way, the M12 tube/node system is also experiencing a kind of „Renaissance in a new spatial dimension“. Thanks to the enormous versatility of the system, even the most daring, imaginary structures can in



principle be implemented using only two components - tubes and nodes.

A special computer program makes it possible not only to carry out a static calculation of the newly generated body, but also to draw up a list of the materials required. In this way, the technical feasibility and economic profitability of the project can be determined in the shortest possible time.



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. 37, 2001/2002

Cover:

The Esplanade - Theaters on the Bay, Singapore

Arch.:

DP Architects Pte. Ltd. (Singapore)
and Michael Wilford & Partner,
London (UK)

Publisher:

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