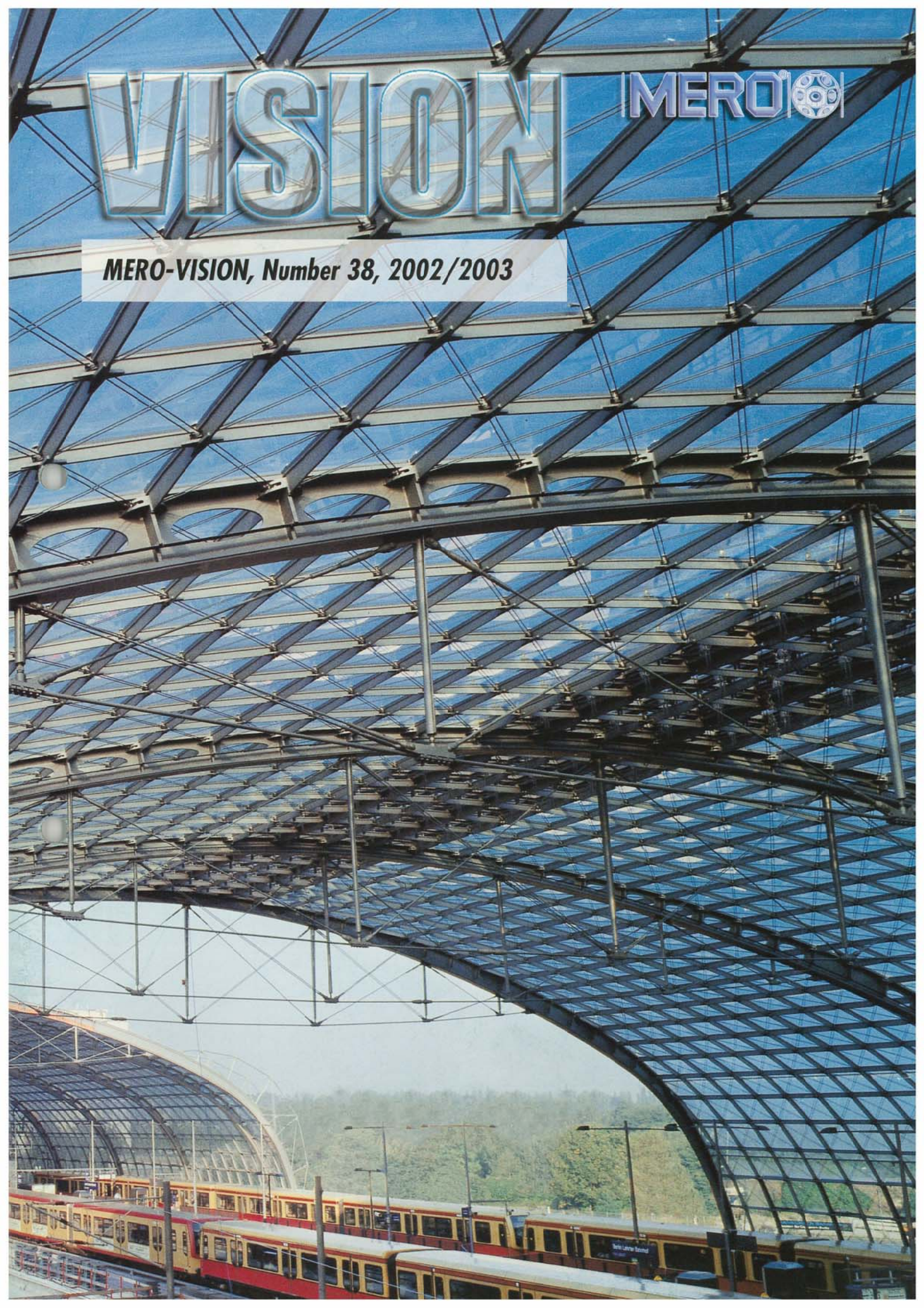


VISION

MERO 

MERO-VISION, Number 38, 2002/2003



International Projects in the Spirit of Dr.-Ing. Max Mengerlinghausen

The outstanding achievement of MERO in 2002 was the accelerated completion of the major project Lehrter Bahnhof railway station in Berlin.

The revised time schedule of our customer Deutsche Bahn AG made it necessary to complete the 18,000 sqm glass roof with a length of



A new large-scale project for MERO GmbH & Co. KG Germany

After constructing the largest greenhouses in the world, the 'Eden Project' in Cornwall, MERO GmbH & Co. KG Germany, through its subsidiary MERO UK, has once again been awarded the order for an impressive project in Great Britain,



approx. 105 m for the east roof and approx. 170 m for the west roof in only four months, in time for the first high-speed ICE trains to pass the railway station on June 16th as planned. The roof cladding is made up of 9,117 glass panels, of which 780 are solar modules, and what is even more significant, almost none of them are of identical shape. The panels were installed on a supporting structure of approx. 3,000 tons of steel. This remarkable accomplishment deserves to rank along with other spectacular projects MERO has executed in Berlin in the past.



*Arch.: gmp (von gerkan, Marg und Partner, Hamburg, Germany)
Structural Design: SBP (Schlaich, Bergemann und Partner, Stuttgart, Germany)*

with a total volume of € 22.5 million. In Holyrood, at the foot of the historical 'Royal Mile' in Edinburgh, a new parliamentary building is currently being built, which the media has hailed as the „most important building project in Scotland for more than 300 years“.

The building complex consists of the plenary assembly room, the offices of the representatives and several administrative buildings. It was designed and planned by the Spanish architects Enric Miralles and Benedetta Tagliabue.

The realization on site is undertaken by the Scottish architects RMJM.

A distinguishing mark of the overall design are the sophisticated geometrical leaf-shaped buildings, roofs and facade elements. To meet the high standards of the architects regarding design, as well as technical properties such as life expectancy, sound and thermal insulation and explosion protection of the building, is an exciting new challenge for the MERO engineers.

the international subsidiaries. The regional expansion of the international subsidiaries is further gaining importance.



nature was the basis of the M12 system of tubes and nodes. In collaboration with the specialists of 3e Werner Sobek in Stuttgart, Germany, MERO Exhibit Systems have worked on the adaptation of biomorphous structures with the result that the M12 system has undergone a kind of „renaissance in a new spatial dimension“. The echo amongst professionals was enthusiastic. As a special mark of distinction the „Nautilus“ received the award for innovation „Architektur und Präsentation“ (architecture and presentation) jointly sponsored by the magazines AIT and Intelligent Architecture. Also, in a widely different field, like the utilization of natural sources of energy for buildings,



For the financial year 2003 we expect a positive development in the international building market, and we are planning further growth of our business activities, especially fuelled by the major projects MERO is currently acquiring worldwide. Worth mentioning among the more than 3,000 projects of MERO Floor Systems is our contribution to the new corporate headquarters of Bayer (pg. 18). MERO will focus on a further expansion of the project and export segment in this field.



we still follow Mengerlinghausen's guiding vision. The photovoltaic panels on the glass roof of the Lehrter Bahnhof railway station and the solar power stations on which we collaborated with Prof. Schlaich (SBP) bear witness to our continuing commitment. In keeping with Mengerlinghausen's philosophy, MERO is in a constant process of

Other highlights among current and newly acquired projects include the Terminal 2 of Munich Airport and the Sahara Center in Sharjah (UAE).

MERO GmbH & Co. KG advances its Internationalization

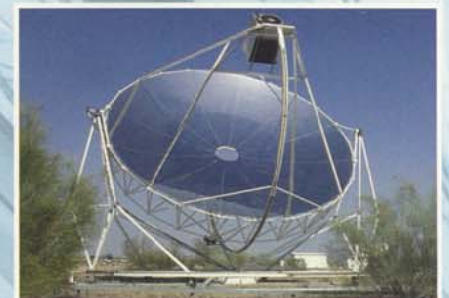
Backed by a solid international demand, MERO determinedly develops its orientation towards exploring its potential in the high-tech segment of international building construction.

Within the parameters of this overall strategy, three product divisions (Construction Systems, Floor Systems and Exhibit Systems) are being constituted. The MERO Headquarters at Wuerzburg are concentrating on supporting services for

100 Years Dr.-Ing. Dr. E.h. Max Mengerlinghausen

In 2003 we celebrate the 100th birthday of MERO's founder, Dr.-Ing. Max Mengerlinghausen, who laid the foundations of MERO's continuing success with his revolutionary work in the field of space frame structures, the standardization and serialized production in building construction and bionics.

With their biomorphous visions for the world of exhibitions, MERO Exhibit Systems presented the space sculpture „Nautilus“ at the EuroShop 2002 in Duesseldorf, Germany. Max Mengerlinghausen's idea to develop a simple yet versatile modular building system along the lines of principles manifested in



metamorphosis and flexible response to changing requirements of customers and markets. Our international reputation and the positive feedback from satisfied customers all over the world will remain both - our reward and our obligation to excel.

Dr. Roland Klose
Managing Director

Josef Rossmannith
Managing Director

Railway Station Lehrter Bahnhof under Glass

In the immediate vicinity of the Tiergarten the new east-west bridges were opened in June 2002 as the first partial complex of the Lehrter Bahnhof in Berlin. This new railway station is situated at the intersection of all railway lines leading through the metropolis. Until 2006 the north-south tunnel for long-distance trains will follow.

The new railway station Lehrter Bahnhof at the heart of Berlin will be the central transfer point in a network of regional and urban railway lines, the subway, trams and buses. The railway station lies halfway between the eastern and western centres of Berlin, just opposite to the Reichstag and the Chancellor's Office.

MERO built the steel substructure of the new roof in record time of just four months. This remarkable construction consists of 23 steel roof girders forming the framework with arches ranging between 15.5 and 17 m in height and between 59 and 68 m in width. Since the beginning of February 2002 over 2,800 tons of steel have been assembled and 93 km of steel cables have been installed.

Until all 10,000 welding seams had been finished and all cables had been tensioned, the heavy steel girders, each weighing between 40 to 50 tons, had to be supported on an erecting scaffold which in itself weighed 4,300 tons. At the beginning of May, the first of the 9,117 panes of the roof was installed. This was only one out of a number of logistic master strokes, since no two panes are of identical shape, due to the fact that the hall

forms a long-stretched bow and widens towards the center of the railway station.

With 780 solar modules on its south side, the east-west roof supplies the entire railway station. The original plan had been for a length of 454.6 m, but a reduction to 321.4 m had to be made due to time and cost factors. The 42 m wide opening in the middle of the roof is to be built over with two building complexes. Between June 16th and July 4th, the new rail tracks were opened for traffic in two steps. All work on the approx. 1 km long bridge structure, which accommodates the six tracks and three platforms of the city lines running in east-west direction had to be completed by June 16th. This included the installation of signals and safety devices, as well as the power lines and the load tests for the bridges.

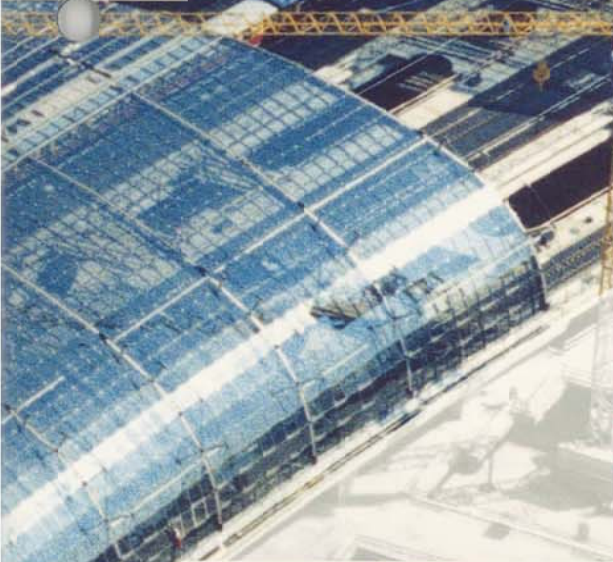
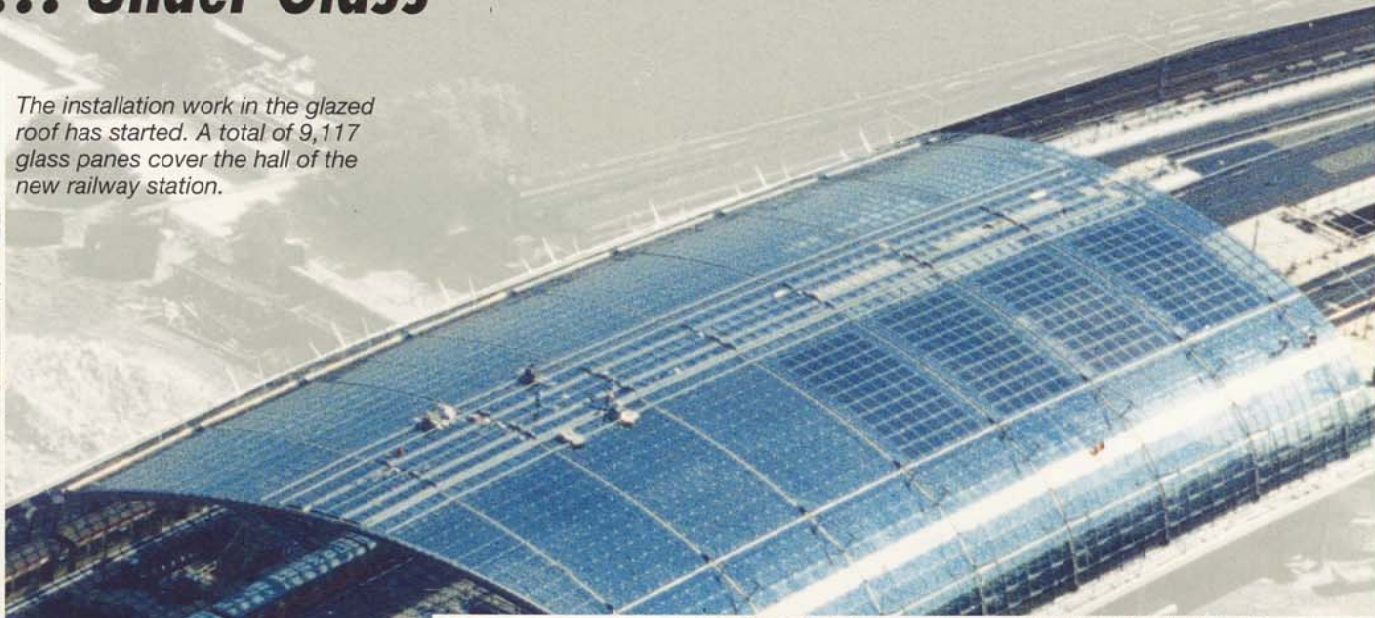
Finally, on June 21st the tracks for long-distance traffic were opened and the first trains rolled through the new railway station Lehrter Bahnhof.

*DB Projektverkehrsbau GmbH
Project Center Lehrter Bahnhof, Berlin
Arch.: gmp (von Gerkan, Marg und Partner,
Hamburg, Germany)
Structural Design: SBP (Schlaich
Bergemann und Partner, Stuttgart,
Germany)*



... Under Glass

The installation work in the glazed roof has started. A total of 9,117 glass panes cover the hall of the new railway station.



In June 2002, the first trains roll through the new railway station.



Intelligent cable structures carry the loads of roof girders, which are up to 68 m wide.



780 solar modules make up the energy source of the railway station Lehrter Bahnhof.

Customers Watch While Luxury Cars Are Assembled in Dresden

After nearly four years under construction, the Glasshouse Manufacture of Volkswagen in Dresden, Germany was opened in December 2001.

The term 'Glasshouse Manufacture' refers to a totally new concept in production. Individual components supplied by Volkswagen satellite plants and outside vendors are delivered to the logistical center Friedrichstadt by two 60 m long, so-called „CarGo Trams“.

These shuttles run between this delivery and storing terminal at the goods traffic center Dresden and the Glasshouse Manufacture. They were developed exclusively for Volkswagen and make their 18 minute runs using the public tram tracks of the city.

MERO constructed the glazed facades for the Glasshouse Manufacture complex. They consist of 27,500 glass panels fixed on a steel substructure and connected with specified sealing strips.

Arch.: Henn Architects,
Munich (Germany)



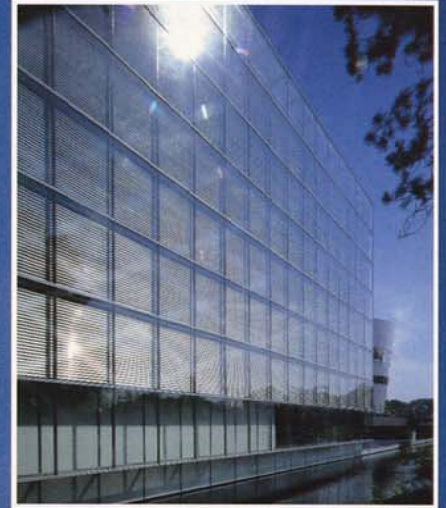
Event Area

Customers and visitors enter the event area through the 'Piazza'. A world of modern urbanity opens to them, in which technology and culture merge playfully and invitingly. Rest areas offer relaxation, and a first rate restaurant caters to the most exacting culinary tastes.

... Glasshouse Manufacture in Dresden

The Unique Multimedia Sphere

A salient feature of the spacious interior is the 'Multimedia Sphere'. It measures 12 m in diameter and is entered via a footbridge from the second story level of the lofty, well-lit hall. The sphere houses a multimedia platform. Large-scale projectors and interactive terminals give access to information on the latest trends in art, culture, economy and industry and to international news.



27,500 sqm glazed facades and 24,000 sqm floor add up to the Glasshouse Manufacture.



German Historical Museum, Berlin

The German Historical Museum is the oldest building on the boulevard 'Unter den Linden' in Berlin. From 1731 to 1876 it served the Prussian Army as an arsenal for arms and other paraphernalia and trophies of war. During the 18th century it was the largest arms depot in Brandenburg-Prussia.

Since the German Historical Museum has moved in, the old arsenal has taken a decided turn towards the civilian. After the reconstruction, visitors will move through the rooms dedicated to individual historical periods as if through history itself. The museum is an effort to help the inhabitants of a united Germany to find their identity as Germans and Europeans; members of local communities and of a global civilization. In the future, a permanent exhibition on approx. 10,000 sqm distributed



over three stories of the building will present relics of the past in all their multiple interrelationships, with a view of both - their common European context and their regional diversity.

MERO has constructed a transparent cover over the atrium of the arsenal, a modern, filigree single layer roof structure. Like the strings of a tennis racket, the structure of cables and steel profiles is suspended between the adjacent wings of the building, creating a



closed interior space of approx. 1,600 sqm where special events will take place in the future.

Arch.: Leoh Ming Pei, New York (USA)
Structural Design: SBP Schlaich
Bergemann und Partner, Stuttgart
(Germany)

... an Impressive Setting for the Relics of the Past



Changing temporary exhibitions will be presented in a new building of the German Historical Museum situated between the arsenal, the Neue Wache Central Memorial and the Maxim Gorki Theatre. This new building is closed off from the old arsenal by a three story transparent glass hall and a projecting fully glazed staircase tower.

Arch.: Leoh Ming Pei, New York (USA)
Struct. Design: SBP Schlaich Bergermann und Partner, Stuttgart (Germany)

Terminal 2, Munich ...

**New Terminal at
Munich Airport is
Nearing Completion**



After a construction time of more than two years, the second terminal of Munich Airport is nearly completed.

The new terminal, on schedule to open in spring 2003, will double the passenger capacity of Munich Airport to 25 million per year.

The double glazed facade constructed by MERO as a structure of ladders with connecting trusses has a total surface of approx. 12,000 sqm. The rectangular hollow sections of the facade substructure carry the glass panels and sealing profiles.



Arch.: Koch und Partner,
Munich (Germany)

... University Library, Leipzig

Glazed Roof over the Western Court of the University Library, Leipzig

Ten years of construction comes to a close with the opening of the completely reconstructed and expanded Bibliotheca Albertina. The work on the building concluded on October 5th with the restoration of the west wing. Newly created open access areas now offer comfort and pleasure to 700 readers.

The space frame in the shape of a gently sloping groined vault consists of a double layer space frame grid. The top chord layer was constructed using the MERO Plus system with bowl nodes, the bottom chord layer is tensioned with filigree cable trusses. The diagonals are made of MERO members and spherical nodes.

The outer pane of the glazing panels consists of 8 mm reflecting glass, the inner pane of 2 x 5 mm laminated safety glass. The joints are sealed with the MERO Vario Clip system.

The shading system is electronically controlled and automatically adjusted to wind and sun.

A movable maintenance bridge enables easy cleaning of the glazed roof.

*Arch.: HJW und Partner,
Hanover/Leipzig (Germany)*

General Motors Global Headquarters Detroit, MI (USA)

The "Wintergarden" is one of the main features SOM designed to transform the castellated concrete agglomerate of the old Renaissance Center in downtown Detroit into the

modern and transparent General Motors Global Headquarters office building. The 50.90 m long sloping barrel vault opens up southwards to the Detroit River and floods the interior of the existing complex with sunlight as a consequence.

Trapezoidal in plan, it yields in a slightly curved 44.50 m wide and 29.26 m high glass wall to the riverfront. The lightweight steel structure consists of: the glazed grid shell as a steel lattice grid with diagonal cables, nine cable stayed

... Global Headquarters, Detroit

arches with central "floating" hubs for the stabilizing cables, the side walls, and the curved front wall. The skin system is MERO's flush glazing system Vario Clip with approximately 1.52 x 1.52 m insulated glass panels using the 6.35 cm wide steel lattice

grid as mullions. The main door areas are set back from the wall and the glass soffit plus the door surrounds, feature MERO point supported glazing.

The project was awarded design-build with a very close cooperation

between MERO and SOM to preserve the design intent. This relationship brought high value to the client.

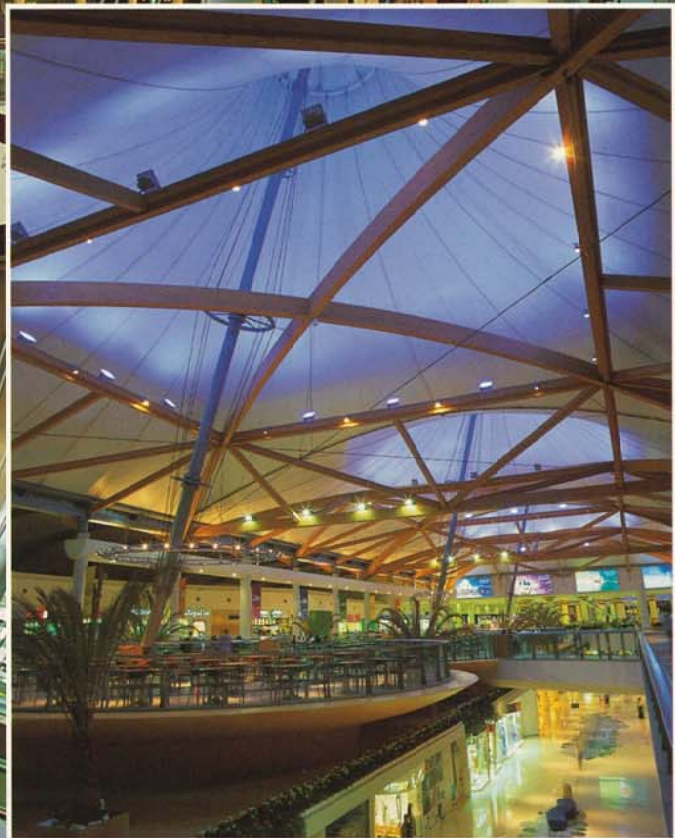
Arch.: Skidmore, Owings & Merrill LLP,
Chicago, IL (USA)

Sahara Center, Sharjah (UAE)

Thanks to its extraordinary experience in the use of traditional and modern building materials, such as high-tech membranes, MERO was awarded the contract to design and build the most spectacular parts of the Sahara Center.

The roof structure over the cinema lobby consists of seven saddle shaped membrane roof sections, each measuring 40 x 8 m, spanning freely between 40 m long timber trusses. The food court area is covered by three huge interconnected textile tent structures over a ground floor area of 100 x 40 m. Horizontal timber lattice trusses and three extremely slender steel masts with tension cables form the supporting structure, together with the high-tech membrane cladding, represents an exceptional combination of building materials without equal in this region.

The demands of a highly sophisticated architecture are met in full by the PTFE coated glass fibre fabric which excels in translucency, strength and a self-cleaning effect.



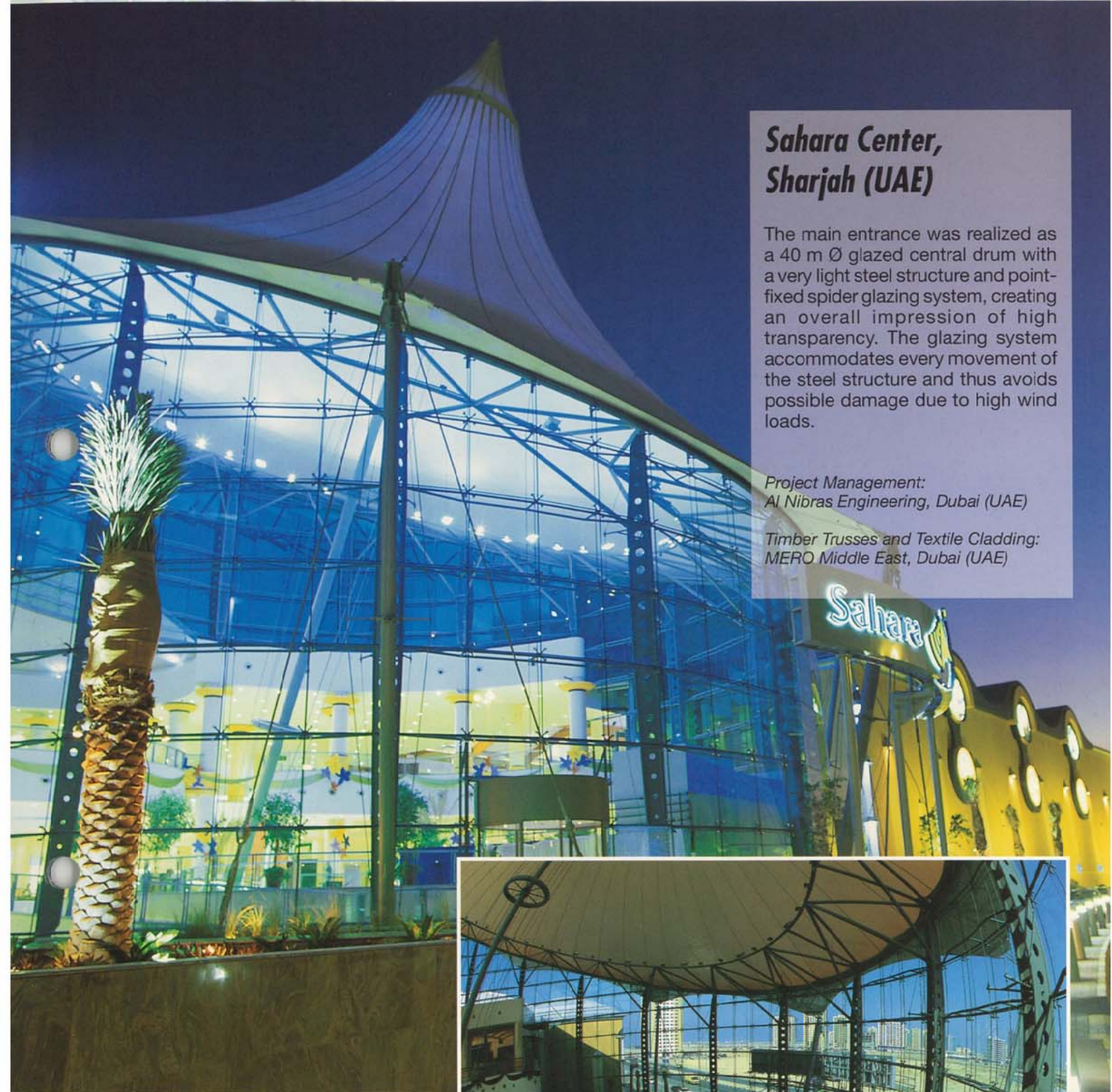
... like an Oasis from the Arabian Nights

Sahara Center, Sharjah (UAE)

The main entrance was realized as a 40 m Ø glazed central drum with a very light steel structure and point-fixed spider glazing system, creating an overall impression of high transparency. The glazing system accommodates every movement of the steel structure and thus avoids possible damage due to high wind loads.

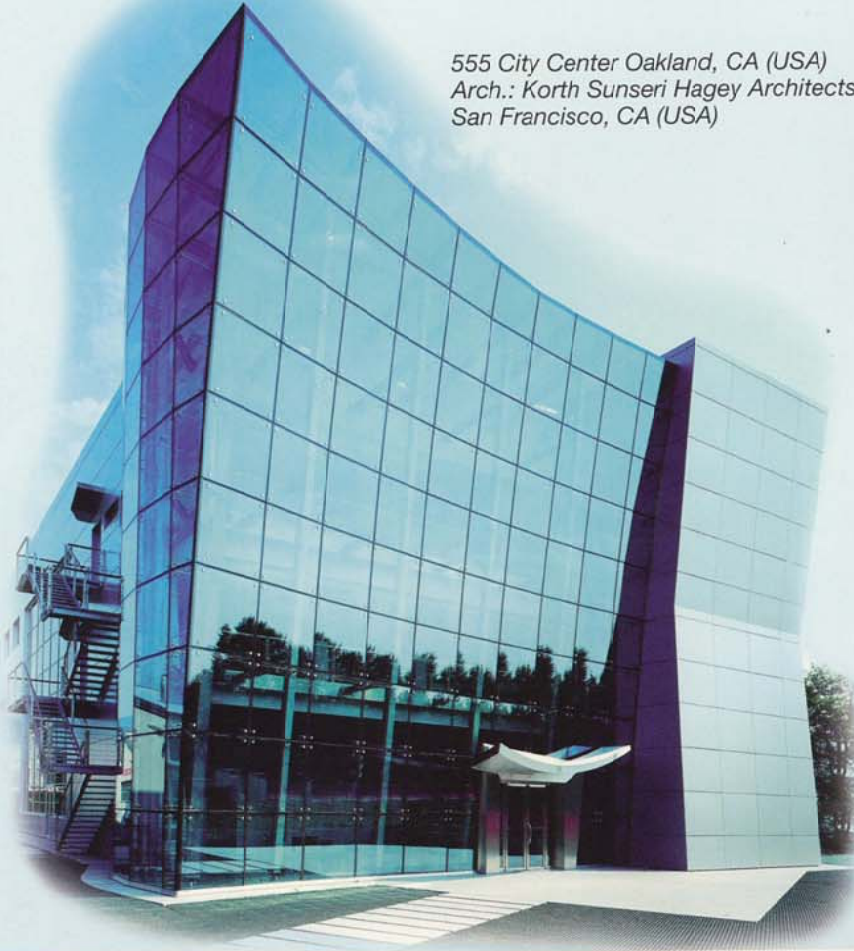
Project Management:
Al Nibras Engineering, Dubai (UAE)

Timber Trusses and Textile Cladding:
MERO Middle East, Dubai (UAE)





Lovato Electric S.p.A.
Arch.: Studio Arch. M. Zambelli,
Bergamo (I)



555 City Center Oakland, CA (USA)
Arch.: Korth Sunseri Hagey Architects,
San Francisco, CA (USA)



IDX Tower Madison Financial
Center Seattle, WA (USA)
Arch.: James Carpenter
Design Associates, Inc.,
New York (USA)

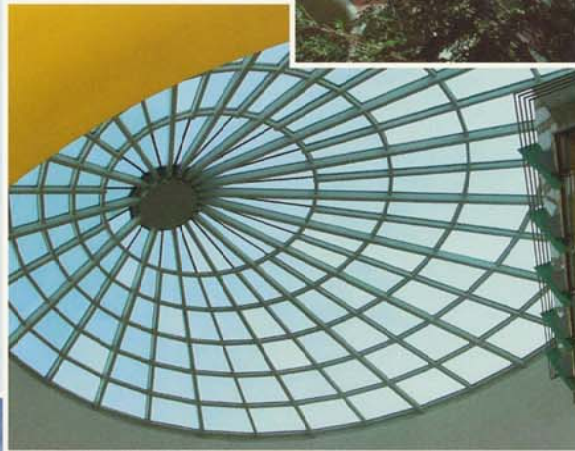


Kalamazoo Valley Community
College, Kalamazoo, MI (USA)
Arch.: Tower Pinkster Titus
Associates, Kalamazoo, MI (USA)

Stonebriar Mall, Frisco, TX (USA)
Arch.: Elbasani & Logan Architects,
Berkeley, CA (USA)



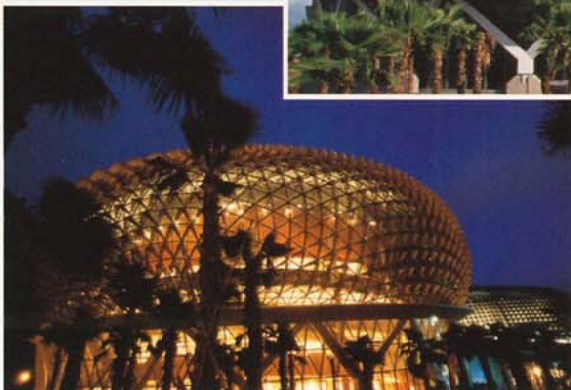
Sahara Center,
Sharjah (UAE)
Project Management: Al Nibras
Engineering,
Dubai (UAE)



Mercato Shopping Mall,
Dubai (UAE)
Transemirates Contracting,
Dubai (UAE)



Abu Dhabi Mall
(Trade Center)
Cansult, Abu Dhabi (UAE)



The Esplanade - Theater on the Bay, Singapore
Arch.: DP Architects Pte. Ltd. (Singapore)
and Michael Wilford & Partner, London (UK)

The New Corporate Headquarters of Bayer, Leverkusen

The new corporate headquarter building of Bayer is an open oval embracing the adjacent Carl Duisburg Park. The two lateral wings of the complex are connected by pedestrian walkways in the foyer equipped with MERO access floor with elegant black granite panels.



With 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 do not pose any problems. Pedestals support the floor panels consisting of die-formed steel pans filled with Bayer anhydrite.

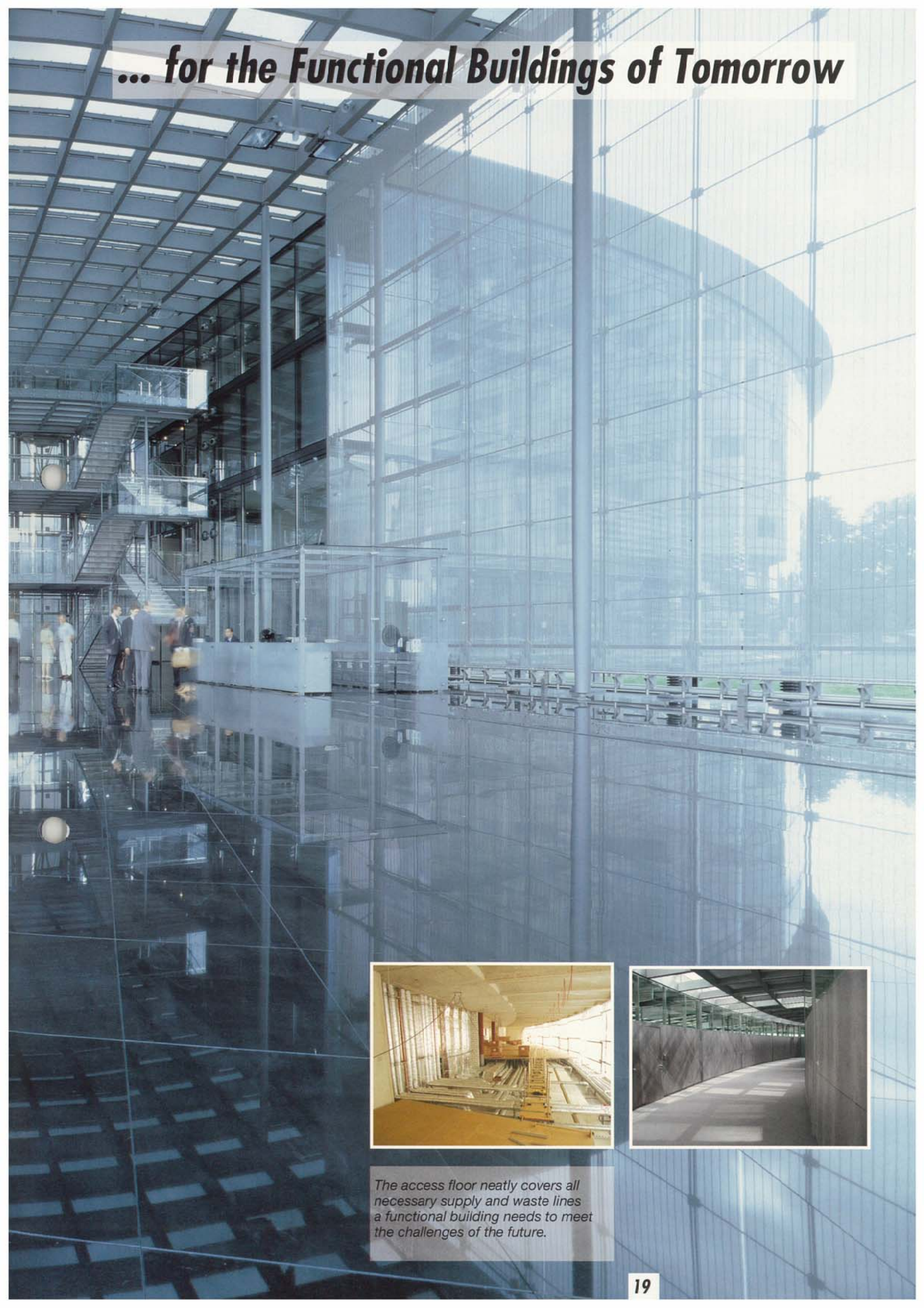
The floor panels have superior sound insulating properties and with a fire rating of F30 easily meet the requirements of fire protection.

Steel, aluminium, glass and Makrolon combine to create a transparent shell around a light-flooded interior.

Arch.: Helmut Jahn, Chicago, IL (USA)



... for the Functional Buildings of Tomorrow



The access floor neatly covers all necessary supply and waste lines a functional building needs to meet the challenges of the future.

MERO Exhibit Systems presents space sculpture „Nautilus“ at EuroShop 2002

The Nautilus received a special honor by being awarded the innovation prize „Architecture and Presentation“ by the German architecture magazines AIT and Intelligent Architecture. The jury, consisting of renowned architects and representatives of the supporting fair associations, acknowledged, apart from the originality of the construction, also its functional and design quality, genuineness of material and multiple reusability.

While standard space frame structures were mainly designed in the past, recently the emphasis has been on more venturesome structures, even as far as completely free forms.

Since free-form structures are subject to the same elementary design principles, M12 tube/node technology is the ideal system for implementing them.

Numerous examples in the field of building architecture such as 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 in collaboration with the architects of 3e Werner Sobek Engineers in Stuttgart, Germany, have now started to adapt biomorphic structures to the decorative sector. In this way, the M12 tube/node system is experiencing a kind of „renaissance in a new spatial dimension“.

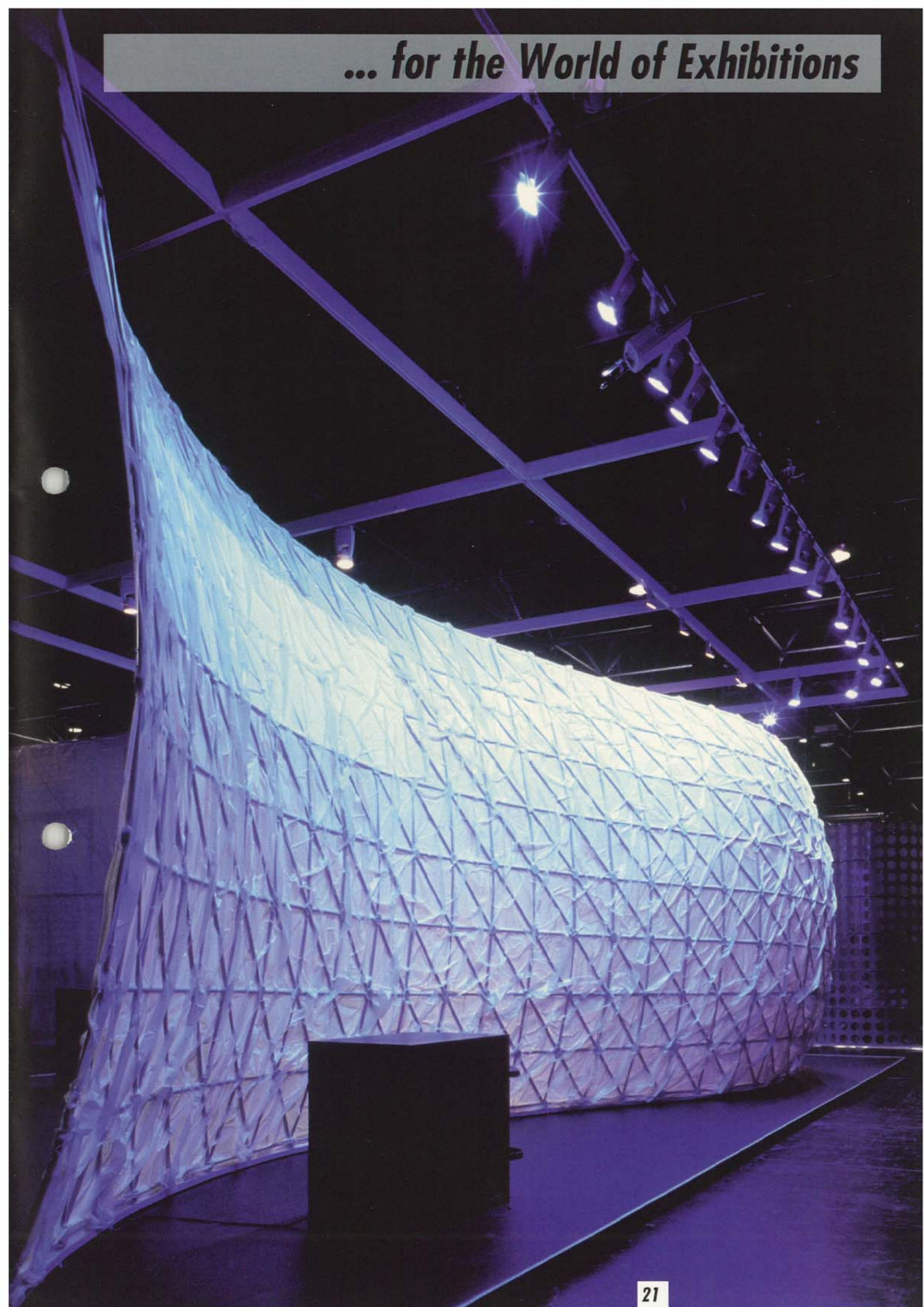
Thanks to the enormous versatility of the system, even the most daring, imaginary structures can, in principle, be implemented using only two component; the tube and node.

At EuroShop 2002 in Duesseldorf, Germany, MERO Exhibit Systems introduced a single-layer biomorphic structure in the shape of a Nautilus, which is covered by a translucent membrane.

With a total length of approx. 27 m and a height of almost 5 m, the Nautilus offers a very imposing appearance. It achieves additional attraction by being completely clad with a translucent PVC foil. The visual impact of the tube/node skeletal structure was dissolved by the contrast of lights and shadow on the covering membrane. The overall effect creates a tactile, organic appearance. A vacuum between the layers of the membrane and the resulting fall of folds further intensifies this impression.

The space sculpture „Nautilus“ is a predecessor for a series of free shape construction which in spite of all individualism and singularity, follows the fundamental modular principles of MERO.

... for the World of Exhibitions



**The new MERO dock generation:
Economical with high functionality
and „ease in mobility“**

An increased expectation in the return of investment is also reflected in the requirements of docking systems. Airlines and maintenance companies demand high functionality of maintenance docks.

Even before this trend became visible, MERO Airport Technik was already using these design parameters in maximizing the efficiency of their docking systems.



Docking systems and modules, as they were installed for Sogerma in Bordeaux are designed for a variety of aircraft types.

With the very modern tail dock used by IAI, the maintenance and overhaul of the Boeing B737 and Airbus A320 aircraft series can now be performed; while at Sogerma all Airbus long-distance types can be maintained.

With the supply of additional mobile work platforms and special storage devices, MERO Airport Technik supports the production of the Eurofighter at EADS in Manching, Germany.

These docking elements, for the first time made of lightweight aluminum profiles, guarantee the fast and exact handling of the aircraft, as well as ergonomic and safe working conditions at the assembly and test stations.

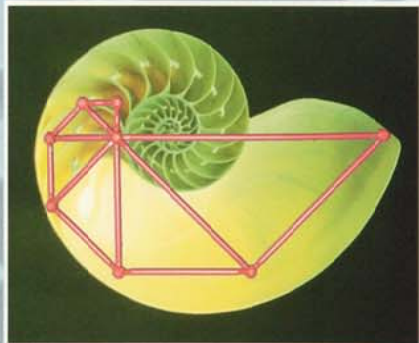
... One Century of Max Mengerlinghausen

**On October 3rd, 2003 he would celebrate his 100th birthday:
Dr.-Ing. Dr. E.h. Max Mengerlinghausen – the founder of our company
from whom MERO derives its name, an inventor, industrialist and
visionary, a patron of sciences and arts.**

The MERO Group of companies pays homage to the memory of Max Mengerlinghausen who died in 1988, a pioneer of industrialized building, a genius of engineering who opened new vistas for architecture with his legendary system of nodes and members combined in the characteristic space frame structures.

Even today the name of Max Mengerlinghausen and his concept of composition in space – the space frame technology – are synonymous with innovative building construction.

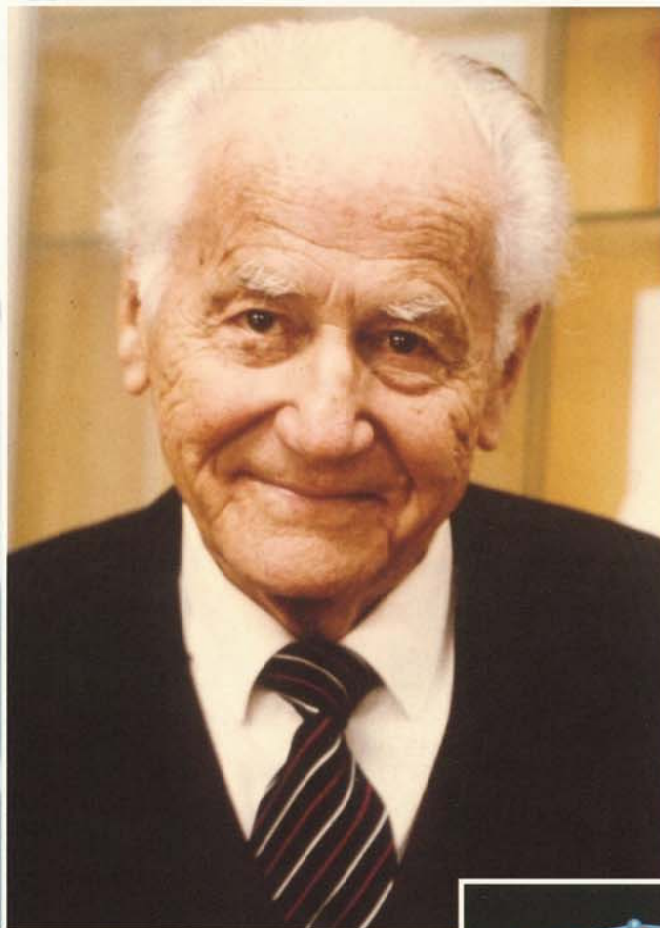
Max Mengerlinghausen was born in Brunswick, Germany in 1903 and studied mechanical engineering in Berlin and Munich. With his doctor's diploma in his pocket, but without any hope to find employment, he opened his first „Engineering Office for Domestic Engineering“ in 1928,



when he was only 25 years old, and – anticipating the modern disciplines of bionics and biogenetics – he started to apply the laws of nature to building construction.

The study of nature and the combination of biology and engineering were the basis of his work for the rest of his life. From his idea to offer industrially serialized constructive elements for economical, individual and at the same time innovative solutions in building construction developed the **M**engerlinghausen **R**ohrbauweise, the MERO system and **MERO** company as it stands today.

From Wuerzburg – Max Mengerlinghausen had moved his company to this town on the Main river in 1948 – the often spectacular MERO

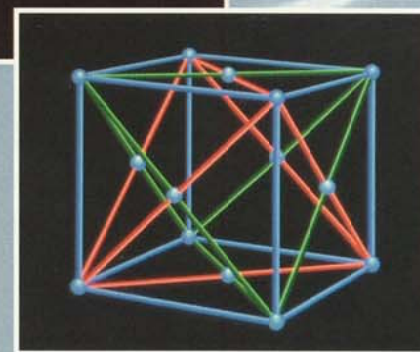


Dr.-Ing. Dr. E.h. Max Mengerlinghausen
* 1903 - † 1988



structures took the world of architecture by storm.

„All real constructions“, Max Mengerlinghausen wrote in his book „Composition in Space“ published in 1983, „first took shape in the human mind“. His genius lay in the way in which he applied this idea to engineering. His visions are still alive in our company and have inspired MERO in its consistent development



towards modern glass structures of a transparency which has become the epitome of MERO's building technology.

But the original nodes and members live on. Even after decades, space frame structures have not lost their functionality and architectural appeal.

Max Mengerlinghausen once hit on the formulation of a basic law of nature: „**What succeeds endures**“. There is no better way of summarizing his lifework.



Divisions:

Constuction 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

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Projektzentrum Lehrter Bahnhof

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