EUROPEAN STEEL DESIGN AWARDS 2015



ECCS EUROPEAN CONVENTION FOR CONSTRUCTIONAL STEELWORK **CECM** CONVENTION EUROPÉENNE DE LA CONSTRUCTION MÉTALLIQUE **EKS** EUROPÄISCHE KONVENTION FÜR STAHLBAU ISBN: 978-978-975-92461-3-6

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Printed by Fark Dijital Ofset Baskı Merkezi, Ankara, Turkey 11 September 2015 European Convention for Constructional Steelwork (ECCS) gives European Steel Design Awards in odd years since 1997 in order to encourage the creative and outstanding use of steel in architecture and construction. Outstanding design in steel construction emphasizes the many advantages of steel in construction, production, architecture and sustainability on economy, social and environmental fields.

ECCS has modified the evaluation procedure this year to award the best three projects with Award of Excellence, and other selected ten projects with Awards of Merit, and 13 ECCS Full Members nominated one project from each country. This brochure highlights each of the winning projects evaluated by National and International Juries at three phases accordingly. Whatever the size, origin of classification, the winning structures are something to take pride in and should all be acknowledged for their contribution to the ever growing accolade of 'design and build in steel'.

At the first step of evaluations, each National Jury has selected the best entry for its country to nominate to the European Steel Design Awards, in accordance to the criteria declared by ECCS.

At the second phase, ECCS Awards and Architecture Advisory Committee only approved the entries by their accordance to the ECCS Steel Design Awards Procedure. All 13 entries have been approved. As the submitted projects indicate, steel offers new solutions and opportunities, allowing architects and engineers to stretch their imagination and actually create some of the

> Prof. Dr. Nesrin YARDIMCI President of ECCS

challenging structures. Structural steel is low cost, strong, durable, and offers design flexibility, adaptability, recyclability and sustainability making it the material of choice in building construction.

At the final phase, ECCS International Jury which was established first time, met in Istanbul on the 9th of June 2015, with the participation of Prof. Dr. Harun BATIRBAYGIL, (Architect -Turkey), Kari Nissen BRODTKORB (Architect - Norway), Véronique DEHAN (Secretary General of ECCS), Architect Lasse KILVAER (Chairman of Awards and Architecture Committee), Prof. Dr. Nuran PILEHVARIAN (Architect - Turkey), Prof. Dr. Nesrin YARDIMCI (President of ECCS). The ECCS International Jury evaluated the approved entries, according to the criteria mentioned above, and selected three projects to be awarded by the **European Steel Design Award of Excellence 2015**. The other ten selected projects would be awarded with the **European Steel Design Award of Merit 2015** during the Steel Design Award Ceremony to be held in Istanbul on 15th September 2015.

The Steel Design Award Ceremony is the highlight of the 60th Anniversary of ECCS. The projects are a celebration of steel in architecture designed by some of the world's leading practitioners and constructed by steelwork contractors who are able to show steel in its many functional forms. We are pleased to invite you to celebrate these projects saluting the works of the National and International Juries whose task was not always an easy one and to congratulate all the winners very warmly thanking them for the superb team work which has been achieved by all.

> Erny HENDRICKX Chairman of ECCS Executive Board

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MEMBERS OF 2015 INTERNATIONAL JURY

Nesrin YARDIMCI	President of ECCS
Veronique DEHAN	Secretary General of ECCS
Lasse KILVAER	Chairman of Awards and Architecture Committee
Harun BATIRBAYGIL	Architect from Hosting Nation
Nuran Kara Pilehvarian	Architect from Hosting Nation
Kari Nissen Brodtkorb	Architect, International Representative

EUROPEAN STEEL DESIGN AWARDS 2015 JURY CITATION

9 June 2015 - Istanbul, Turkey

International Jury Meeting for Europe Steel Design Awards organised by ECCS met on the 9th of June, 2015 in Istanbul to evaluate the 13 entries submitted by NAMs, with the participation of the six members listed below except for Prof. Dr. Paulo J. S. Cruz. Paulo J. S. Cruz could not take part in the Jury Meeting due to other commitments.

Jury Reporter is Berna AYDÖNER.

H. Yener GÜR'EŞ, PMB Chairman, participated in the meeting as observer.

1. List of Entries Evaluated.

- 1. AUSTRIA- Central Railway Station Diamond-shaped Roof, Vienna, Austria
- 2. CZECH REPUBLIC- Troja Bridge in Prague
- 3. DENMARK Odense Foot and Cycle Bridge Odense, Denmark
- 4. FRANCE -The Canopy La Canopee Des Halles, Paris France
- 5. GERMANY Sundsvall Bridge, Sweden
- 6. HUNGARY Renewal of Szolnok Railway Bridge Szolnok, Hungary, over Tisza river
- 7. ITALY Aquae Exposition Pavilion, Mestre (Italy), Venice Waterfront Project, Porto Marghera Venice, Italy
- 8. LUXEMBOURG Office Building KPMG, Luxembourg

- 9. NETHERLANDS Rotterdam Central Station Stationsplein 1, Rotterdam, Netherlands
- 10. NORWAY DNB House A Oslo, Norway
- 11. PORTUGAL Arena Amaz Manaus, Estado do Amazonas, Brazil
- 12. SWEDEN Aula Medica: Solna, Stockholm
- 13. TURKEY Kayalar Kimya Administration and R&D Building Tuzla Istanbul, Turkey

2. Evaluation Criteria

- To have an international recognised standard,
- To be of outstanding quality in its architecture, structure and construction,
- To interest clients, architects and engineers in using more steel within the entire building sector, thereby making the steel industry competitive,
- To emphasise the advantages of steel in construction, production, economy and architecture,
- To adhere to the principles of sustainability,
- To disseminate the knowledge of steel and its many-sides uses and to draw attention to its development,
- To improve the image of steel.

3. Evaluation Procedure

Jury members have judged 13 entries listed under the paragraph 2 above evaluated according to the criteria given at paragraph 3 above. Evaluation was achieved in two rounds. At the first round, drawings, photographs and project definitions of each entry was evaluated one by one. At the second round, each Jury member explained his/her preferences on projects to nominate for the Award of Excellence. All Jury members unanimously agreed to select three projects to be awarded with **European Steel Design Award of Excellence 2015** in three categories.

4. Awards

4.1. **Awards of Excellence**. Jury decided to award the following projects with Awards of Excellence with the stated rationales

CZECH REPUBLIC - Troja Bridge, Prague, Czech Republic (Award of Excellence, Bridge category) Jury Citations

Prague's Troja Bridge is an impressive achievement that blurs the boundary between architecture and engineering. The arch bridge hangs from a dense network of staves, a known basic concept, excellently executed in design and detail. The structure shows steel's versatility in the truss-bearing arch, combined with the spinweb type hangers in four planes, which enables the low hanging, slim arch. The beautiful design is developed to suit the construction process, and it carries the heavy loads of tramways, cars, and pedestrians in the heart of Prague. The bridge promotes the qualities of steel by its visible slender structure and elegance. The effectual lighting accentuates the expressive form. The jury was especially pleased with the integration of expressive design and modern industrial artisanship. Troja Bridge is like a sculpture, and a beautiful addition to the city of Prague.

FRANCE - The Canopy, Paris, France (Award of Excellence, Commercial category) Jury Citations

The Canopy in Paris is an impressive example of new design and the reuse of existing structures. The area of Des Halles, which had fallen to disrepair and become a dead area in the middle of the city, has been resurrected by stripping the old buildings and uniting them with a brand new double curved, drooping roofing structure. The ground level is also opened up and stabilized by massive steel trusses. The move is economically and ecologically sustainable, in the in-situ reuse of load bearing steel structures, and socially sustainable, upgrading neighborhood. The jury found the structure interesting and innovative, and the concept interesting. The precise, exposed structure works as an instrument of learning about steel construction. A special study into fire engineering was made to prevent the chance of collapse. The design is both classical and modern, with a nice game of transparency, and the elegant forms suits the city of Paris perfectly.

PORTUGAL - Arena Amazon, Manaus, Brazil (Award of Excellence, Public and Cultural category Jury Citations

The Arena Amazon in Manaus, Brazil, is a distinctive and recognizable design. The Arena was built for the 2014 World Cup and accommodates 44 500 people. The structure combines the façade and roof in a gesture that recalls the design of an Amazonian basket. Although deep in the Brazilian Amazon, the Arena has a strong European connection. Two German companies developed the project, and the steelwork contractor is

Portuguese Martifer. The diagonally arranged, cantilevering steel box girders, creates a pattern of immediate recognition. It is obvious that the structure is an answer to, and thus supports and strengthen, the architectural idea. The form and construction is self-supporting and stable after the short erection stage. The Incorporated secondary steel structure carries a translucent membrane cladding. The load bearing steel lattice structure is expressed beautifully and accentuated by the night-time illumination of the membranes, creating a certain atmosphere. The Arena Amazon is a perfect example of the malleability and cantilevering abilities of steel, and a local monument. 4.2. Awards of Merit. According to the ECCS Awards Procedure,

the following projects are to be awarded with Awards of Merit:

- AUSTRIA Central Railway Station Diamond-shaped Roof, Vienna, Austria
- DENMARK Odense Foot and Cycle Bridge Odense, Denmark
- GERMANY Sundsvall Bridge, Sweden
- HUNGARY- Renewal of Szolnok Railway Bridge Szolnok, Hungary, over Tisza River
- ITALY Aquae Exposition Pavilion, Mestre (Italy), Venice Waterfront Project, Porto Marghera Venice, Italy
- LUXEMBOURG Office Building KPMG, Luxembourg
- NETHERLANDS Rotterdam Central Station Stationsplein 1, Rotterdam, Netherlands
- NORWAY DNB House A Oslo, Norway
- SWEDEN Aula Medica: Solna, Stockholm
- TURKEY Kayalar Kimya Administration and R&D Building Tuzla Istanbul, Turkey

International Jury Members

Fari Vissen Bed Harun Batirbaygil Kari Nissen Brodtkorb Veronique Dehan Nuran Pilehvarian Nesrin Yardimci Lasse Kilvaer

AWARD OF EXCELLENCE WINNERS

CZECH REPUBLIC Troja Bridge, Prague, Czech Republic
 FRANCE The Canopy, La Canopée des Halles, Paris
 PORTUGAL Arena Amazonia, Manaus, Brazil

CZECH REPUBLIC Troja Bridge, Prague

Owner	The City of Prague (CZ)
Architects	Roman Koucky
	Architektonicka
	Kancelar s.r.o. (CZ)
Engineers	EXCON a.s (CZ)
Steelwork	Metrostav a.s.(CZ)
Completion Date	06.10.2014
Total Tonnage	3.020 Tons

The new Troja Bridge, with the main span 200,4m across the river Vltava in Prague, in the Czech Republic, is serving for tramway, car and pedestrian/bicycle traffic. The bridge is a part of the Prague urban area thus its architectural face, which is very attractive, is essential in comparison to highway bridges outside the city.

The main load bearing structure is simply supported steel bowstring-arch with two networks of inclined hangers.



The arch is extremely flat (rise over span is 1/10) with very flat pentagonal cross-section. Extremely low rise of the arch was achieved thanks to four dense networks of hangers. The width of the arch section in the midspan is approx. 7m. The width of the concrete deck, including steel walkways, is 35m.

Steel material used for the arch is S420ML and S355ML. Hangers are Macalloy 520 system bars with diameters 72 - 102mm.

The night lighting even underlines the bridge uniqueness within the Prague historical architectural context whereas the bridge as itself doesn't tend to overgrow the surroundings to expose itself as a solitaire monument.

CZECH REPUBLIC - Troja Bridge, Prague, Czech Republic (Award of Excellence, Bridge category) Jury Citations



Prague's Troja Bridge is an impressive achievement that blurs the boundary between architecture and engineering. The arch bridge hangs from a dense network of staves, a known basic concept, excellently executed in design and detail. The structure shows steel's versatility in the truss-bearing arch, combined with the spin-web type hangers in four planes, which enables the low hanging, slim arch. The beautiful design is developed to suit the construction process, and it carries the heavy loads of tramways, cars, and pedestrians in the heart of Prague. The bridge promotes the qualities of steel by its visible slender structure and elegance. The effectual lighting accentuates the expressive form. The jury was especially pleased with the integration of expressive design and modern industrial artisanship. Troja Bridge is like a sculpture, and a beautiful addition to the city of Prague.



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FRANCE

The Canopy, La Canopée des Halles, Paris

OwnerSEMPARISEINE (F)ArchitectsPatrick Berger et
Jacques Anziutti (F)EngineersINGEROP (F)ContractorVinci Construction (F)SteelworkCastel et Fromaget (F)Completion Date30.12.2014Total Tonnage7.000 Tons

The Halls de Paris's redevelopment project mainly involves the rebuilding of all the structures located above and around the patio of the Forum des Halles, all over the Châtelet-les-Halles metro station, 4 levels lower.

The whole steel framework of the project is divided in 3 main structures: the gateways, delimiting the northern and southern sides of the patio, the buildings and the crossing work, covering the patio: The Canopy.



The construction and restructuring of the Canopy's project weighs 7200 tons. It's elaborated in aluminium frame & based on steel structure.

The Canopy's des Halles is now an inviting new public garden, a larger pedestrian district, a new building inspired by nature (The Canopy is the upper layer of forest, in direct contact with the air and sunlight), a greater number of easier-to-use pathways and roads, a more functional metro station, a refurbished shopping centre and various cultural centres.

FRANCE - The Canopy, Paris, France (Award of Excellence, Commercial category) Jury Citations



The Canopy in Paris is an impressive example of new design and the reuse of existing structures. The area of Des Halles, which had fallen to disrepair and become a dead area in the middle of the city, has been resurrected by stripping the old buildings and uniting them with a brand new double curved, drooping roofing structure. The ground level is also opened up and stabilized by massive steel trusses. The move is economically and ecologically sustainable, in the in-situ reuse of load bearing steel structures. and socially sustainable, in the upgrade of the neighborhood. The jury found the structure interesting and innovative, and the concept interesting. The

precise, exposed structure works as instrument of learning about steel construction. A special study into fire engineering was made to prevent the chance of collapse. The design is both classical and modern, with a nice game of transparency, and the elegant forms suits the city of Paris perfectly.







PORTUGAL

Arena Amazonia, Manaus, Brazil

Owner	Governo do Estado do
	Amazonas
Architects	GMP Design e Projectos
	do Brasil Ltda
Engineers	Schlaich Bergermann
	und Partner (D)
Contractor	Andrade Gutierrez
Steelwork	Martifer Construções
	Metálicas, Lda
Completion Date	30.01.2014
Total Tonnage	7.220 Tons

This Stadium was developed for the 2014 World Cup, in Brazil, and has the capacity for about 44500 spectators. Its conception is very modern and daring, with the steel structure totally involving the seats, creating a specific and unique visual identity, integrating facade and roof and forming a harmonic assembly



that looks like a typical Amazonian straw basket. In a spatial and aesthetic level, this resemblance introduces extra value to the functional component which the project intends to respond to.

To cover the spectator areas, a steel roof structure was developed. This consists of a diagonally arranged, cantilevering steel box girders, incorporated with a secondary steel structure carrying the membrane cladding. The selection of this structural system, especially the diagonal arrangement of roof girders, was made to visualize the architectural concept and to generate a distinctive characteristic structural design. The steel structure in X, with the spaces filled in with the membranes in PTFE, simultaneously create the perception of a restricted and robust atmosphere and at the same time seem to challenge the gravity forces.

The formalization achieved, with an unusual aesthetic beauty, was only possible due to the potential that steel structures have in obtaining huge spans without any extra support and giving slenderness to the structure.

PORTUGAL - Arena Amazon, Manaus, Brazil (Award of Excellence, Public and Cultural category Jury Citations

The Arena Amazon in Manaus, Brazil, is a distinctive and recognizable design. The Arena was built for the 2014 World Cup and 44.500 accommodates The structure people. combines the facade and roof in a gesture that recalls the design of an Amazonian basket. Although deep in the Brazilian Amazon, the Arena has a strong European connection. Two German companies developed the project, and the steelwork contractor is Portuguese Martifer. The diagonally arranged, cantilevering steel box girders, creates a pattern of immediate recognition. It is obvious that the structure is an answer to, and thus supports and strengthen. the architectural idea. The form and construction is self-



supporting and stable after the short erection stage. The Incorporated secondary steel structure carries a translucent membrane cladding. The load bearing steel lattice structure is expressed beautifully and accentuated by the night-time illumination of the membranes, creating a certain atmosphere. The Arena Amazon is a perfect example of the malleability and cantilevering abilities of steel, and a local monument.









AWARD OF MERIT WINNERS

- AUSTRIA Central Railway Station Diamond-shaped Roof, Vienna, Austria
- **DENMARK** Odense Foot and Cycle Bridge Odense, Denmark
- **GERMANY** Sundsvall Bridge, Sweden
- HUNGARY Renewal of Szolnok Railway Bridge Szolnok, Hungary, over Tisza river
 - **ITALY** Aquae Exposition Pavilion, Mestre (Italy), Venice Waterfront Project, Porto Marghera Venice, Italy
- LUXEMBOURG Office Building KPMG, Luxembourg
- **NETHERLANDS** Rotterdam Central Station Stationsplein 1, Rotterdam, Netherlands
 - **NORWAY** DNB House A Oslo, Norway
 - SWEDEN Aula Medica: Solna, Stockholm
 - **TURKEY** Kayalar Kimya Administration and R&D Building Tuzla Istanbul, Turkey

AUSTRIA

Central Railway Station - Diamond Shaped Roof, Vienna

Owner	ÖBB Infrastruktur AG
	Vienna (A)
Architects	ARGE (A)
Engineers	ARGE (A)
Steelwork	Unger Stahlbau
	Ges.m.b.H. (A)
Completion Date	03.03.2014
Total Tonnage	7.000 Tons

The 37,000 m² diamond-shaped roof thus plays a significant role in delivering the first stunning impression of Vienna for visitors arriving by train. Unger is responsible for the complete spectacular roof construction of steel: steel and metal work, as well as the detailed structural calculation, glass and detail works.

A folded diamond-shaped roof hovers above the platform. 14 distinctive diamond frameworks comprising a total surface area



of 22,500 m². Adjoining the diamond-shaped roof are five individual platform roofs with a total surface area of 12,870 m². The piazza roof welcomes visitors entering the station from the road with a total surface area of nearly 1,600 m².

Each diamond roof is individual and different in its geometry due to the curve of the ground plan. This means that each diamond is a challenge in itself and unique









DENMARK

Odense Foot and Cycle Bridge, Odense

Owner	Odense Municipality (DK)
Architects	Gottlieb Paludan
	Architects (DK)
Engineers	Niras, ES Consult
	(DK)
Steelwork	Bladt Industries (DK)
Completion Date	29.05.2015
Total Tonnage	435 Tons

Odense Foot and Cycle Bridge strives to give shape to Odense Municipality's vision of a transport link for cyclists and pedestrians across the railway, establishing a connection between the central city and new urban developments by the harbour.

The functional requirements and the challenging conditions that prevail in connection with construction projects across railway lines together with the striking bridge design have made it obvious — if not inevitable — to build the 130m long bridge in steel.

The construction-related challenges have been turned into advantages: outside the



track areas, stairs and ramps are produced from in-situ concrete, while the spans above the tracks are made from slender steel box girders. The longest free span is supported by a 40-metre steel pylon which has become a landmark not only for the bridge but for Odense, Denmark's third-largest city.





GERMANY Sundsvall E4 Bridge, Sundsvall, Sweden

OwnerTrafikverket (SE)ArchitectsRundquist Arkitekter AB (SE)EngineersMax Bögl Stahl- und Anlagenbau GmbH & Co. KG (DE), ISC Consulting Engineers A/S (DK)ContractorMax Bögl Stahl- und Anlagenbau GmbH & Co. KG (DE)SteelworkMax Bögl Stahl – und Anlagenbau GmbH &Co. KG (DE), Strabag Wasserbau GmbH (DE)Completion Date2013Total Tonnage23.000
Tons

The new highway bridge gently curves across the bay along Sweden's eastern coast at the port town of Sundsvall, roughly 400 km north of Stockholm. It belongs to the expansion project of the European route E3 and closes a gap between Stockholm and the border to Finland.

Besides the stunning



architecture, the construction of the 23,000 ton steel bridge has set new international standards. Starting with a semi-automatic steel production line in Southern Germany, the prefabricated steel components made their way through Europe. After a further line production in Poland, finalized bridge sections with length of up to 160 meters and single component weights of up to 2,500 tons were transported across the Baltic Sea to their final destination in Sweden. The award winning innovative fabrication, erection and logistic concept of the Sundsvall Bridge is a milestone of the European engineering.



HUNGARY

Renewal of Szolnok Railway Bridge, Tisza River, Szolnok

OwnerNIF ZRt. (H)ArchitectsFA'mterv ZRt. (H)EngineersECO-TEC Műszaki-Gazdasági Tanácsadó Kft. (Utiber Kft, Oviber Kft.) (H)ContractorTisza 2013 Consortium (Közgép Zrt., Swietelsky
Vasúttechnika Kft., Strabag Vasútépítő Kft.)SteelworkKözgép Zrt. (H)Completion Date08.01.2015Total Tonnage2.200 Tons (Old bridge)
2.600 Tons (New bridge)

The Szolnok-Szajol interstation section is one of most frequented railway line sections in Hungary and also a part of the Pan-European transport corridor IV. The 'old' Tisza bridge in Szolnok, that was one of the largest double track railway bridges of Hungary, has now been replaced with two newly built bridges with single track riverbed structure. Due to heavy traffic, merely 7 days were available for total track closure.

Using a unique technology in railway development, 3200 tons of steel structure had been moved over 46 hours: first the old bridge was pushed out onto yokes, then one of the new bridges, the north/left river bridge structure was pushed in. By the end of the week, this new track was opened to traffic.



Replacing a railway bridge within such a short time and with a technology of this kind has been unparalleled so far.



ITALY Aquae Exposition Pavillion, Mestre Italy

Owner	Finanziaria Int. Investments Società di Gestione del Rispiarmo S.p.A
Architects	Architetto Michele De Lucchi Srl (I)
Engineers	F&M Ingegneria SpA (I)
Steelwork	OMBA Impianti & Engineering S.p.A. (I)
Completion Date	03.05.2015
Total Tonnage	1.200 Tons

The multipurpose AQUAE EXPOSITION PAVILION covers an area 14,000 m² with a roof supported by 12 pillars arranged on a 32x32m mesh. The building undisputed star is the steel: both in the interior part, characterized by imposing columns and the elegant truss roofing. The metallic carpentry was pre-assembled in the factory and completed on site.In less than one year, the entire work has been conceived, designed and built. The roof structure of the Aguae Exhibition Pavilion is a fine example of how to achieve interesting architectural results in the distribution of the internal spaces of multipurpose buildings, by fully exploiting the essential design potential offered by industrial steel construction systems. The simplicity of the structural design and careful repetition of



the industrial steel elements enhance the potential of the standardised steel construction systems in building, production, economical and architectural terms by comparison with other, equally widespread materials



LUXEMBOURG Office Building KPMG, Kirchberg, Luxembourg

Owner	
Architects	
Engineers	

Steelwork

Total Tonnage

Office Building KPMG (L) Valentiny Architects (L) InCA Ingénieurs Conseils Associés SARL (L) Jean Schmit Engineering (L) Victor Buyck Steel Construction NV (B) 01.12.2014 **Completion Date** 540 Tons (Weathering Steel)

The urban design of this project is based on the "isle planning" principle that largely defines the constructive mode of Kirchberg, but also on the impression that motorists and pedestrians moving around the buildings are getting. This building is clearly distinguished by the composition of its facade. The first skin is



composed by a steel curtain wall formed with prefabricated X-shaped elements in "weathering steel".

The second skin is a curtain wall composed of chassis and spandrel gold anodized aluminium, with 50 cm distance to the outer weathering steel wall.

The air handling the office units is operated on a DEC (Desiccant Evaporative Cooling) which is a system of dehumidification and air cooling using water and district heating for air treatment without taking course to a refrigerating machine. A photovoltaic system on the roof produces an average of 28,500 kWh / renewable energy. The building was awarded "Very Good" by the BREEAM certification.



NETHERLANDS New Rotterdam Central Station, Rotterdam

OwnerCity RotterdamArchitectsBenthel Crouwel Architekten (NL)EngineersARCADIS (NL)ContractorBallast Nedam (NL)SteelworkIemants N.V. (B)Completion Date01.07.2014Total Tonnage1.600 Tons (Platform roof)3.500 Tons (Stationhal)

The Rotterdam Central Station project was characterised by its complexity, the environment in which it had to be built and the number of parties involved in its realisation.

The main structural support for the station concourse is hidden behind the roof and ceiling finishes. The concourse is not visibly supported aside from the two main supports on the south side. The main structure supporting the roof is made up of a system of unbraced longitudinal steel trusses. The columns supporting these are Y-shaped and a special detail at the bottom of the columns at the staircases is that the column bases are also Y-shaped to span the stairs, but at 90 degrees to those above.



There were numerous special construction aspects, such as a higher than normal wind loading, sliding bearings, a second load path, as well as temporary auxiliary structures during construction and reducing inconvenience.



NORWAY DNB HOUSE A, Oslo, Norway

OwnerOslo S UtviklingArchitectsMVRDV with DARKEngineersFinnmap & MulticonsultSteelworkRUUKKI ConstructionCompletion Date06.11.2014Total Tonnage1.600 Tons

With its 37 000 m² and 17 floors, DNB A building is a "big brother" in the Barcode row and also represent the center of a larger building complex of architectural firm MVRDV. The building is a modern office building with unique qualities made possible partly through an advanced steel construction. The seemingly massive brick building stands out on closer inspection as playful and open.

The steel construction allows intrepid cantilevering, "floating bricks ", while providing spatial flexibility and a variety of architectural options. This, both in terms of variety of internal organization, generous communal terraces in all floors and wonderful light and views. Use of materials and detailing are of consistently high quality.











SWEDEN

Aula Medica, Solna, Stockholm Sweden

Akademiska Hus (S)
Wingardh arkitektkontor (S)
COWI (S)
Normek (S)
01.10.2013

Aula Medica would have been impossible without steel. A building with one of the largest auditoriums in Sweden, the steel construction enables a great spatial experience without any disturbing columns and without apparent structure. The corner that extends out over Solnavägen creates, with help from the steel, the necessary space that the location itself could not offer. This corner is an innovative and unexpected solution that challenges the laws of gravity and gives the building tension and nerve. Structure and form come together, just as the interplay between the materials steel, glass and wood. Aula Medica is using steel in an innovative way to push the limits of what is possible. Aula Medica is a candidate for the perfect balance between functionality, economy, beauty and technology.





TURKEY

Kayalar Kimya Administration and R&D Building, Tuzla Istanbul, Turkey

Owner	Kayalar Kimya Industry and Trade Co.Inc.
Architects	UMO Architecture Engineering Contracting and Consulting Co.
Engineers	Celik Yapi Design Fabrication Erection Industry & Trade Co.Inc.
Contractor	Celik Yapi Design Fab. Erection Ind.& Tr.Co.Inc.
Steelwork	TABOSAN Engineering Fabrication Erection Co.Inc.
Completion Date	01.06.2014
Total Tonnage	430 Tons

The building was set by taking account of the plant layout and environment so that the R&D Center and the canteen positioned near to production buildings, while the offices positioned to a garden in front with a form of curved and sloped down façade.

The total area of the building is 5.211 m². The building includes an office part with an area of 2.750 m², R&D part with an area of 2.196 m² and canteen with an area of 265 m².

Throughout design of the building, earthquake, functionality, sustainability and fire engineering were primarily considered as well as aesthetics. The most advantageous solution was to use steel in the structure due to the design criteria.

Structure of the building consists of a concrete basement



and multi-storey steel superstructure with composite slab for the office and R&D laboratory while a single storey steel structure was used for the canteen. All steel structural elements were prefabricated in the factory and assembled at the site by using bolts.













STEEL DESIGN STUDENTS AWARDS 2015 WINNERS

- **GERMANY** Turmtänzer [Climbing at the Harbour of Münster] Münster, Germany
 - **ITALY** Una nuova passerella ciclo-pedonale sui Lungarni pisani: dalla storia al progetto (A new cycle track and footpath along the banks of the Arno in Pisa: from history to design) Pisa, Italy
- **NETHERLANDS** High Strength steel, a slimming product? Research Project, The Netherlands
 - **NORWAY** Through the Forest of Columns, Bergen, Norway
 - TURKEY Modular Disaster Dwells, Erciş, Van, Turkey

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The Student Awards for Steel Design are a subcategory of European Steel Design Awards. The objective is to give European recognition to outstanding student projects in architectural design using structural steel as a prominent architectural feature. The rules are similar to the Steel Design Awards. Within the context of Steel Design Students Awards 2015, five student projects selected and nominated by their ECCS National Association Members (NAMs) will be presented to international audiences during the European Steel Design Awards Ceremony to be performed on the 15th of September 2015 in Istanbul.

Outstanding design in steel construction emphasizes the many advantages of steel in construction, production, economy and architecture. Steel offers new solutions and opportunities, allowing architects and engineers to stretch their imagination and actually create some of the challenging structures. Structural steel is low cost. strength. durability. design flexibility. adaptability, recyclability and sustainability making it the material of choice in building construction.

GERMANY

Turmtänzer [Climbing at the Harbour of Münster], Münster, Germany

Students: Lea-Anna Zora, Anne-Sophie Weißhuhn Professor: Prof. Dipl. Ing. Johannes Schilling, Address: MSA, Münster School of Architecture,

Münster Germany



The project with its strong associative strength and focus on the urban planning context is a true landmark in the old harbour of Münster. Besides the strong sign as an object, the unorthodox use as

public climbing tower of the steel sculpture is regarded positively.

Steel is used in its "pure" form for the space framework and for the folded vertical surface which forms directly the climbing structure. As it is used in the right way according to its characteristics, the building appears extremely sophisticated and elegant. It has what it takes to be the initiative for the future urban planning in this area. The building stands in the centre of everyday life and makes a major contribution to the perception of modern architecture in the public.

ITALY

A new cycle track and footpath along the banks of the Arno in Pisa: from history to design, Pisa, Italy

Engineering:	Dr. Ing. Filippo Ulivieri
Professor:	Prof. Dr. Pietro Croce, Prof.
	Dr. Pietro Ruschi, Dr. Daniele
	Pellegrini
Address:	Via degli Scalini, 9, 50050
	Capraia e Limite (FI) Italy



The project takes into account environmental setting, the integrated architectural and engineering design and the structural checks in accordance with the relevant Standards.

The replacement of the dissipation areas with friction dissipaters in the beam to column nodes and column-foundation nodes is highly effective and original. The work carried out is undoubtedly wide ranging and very demanding in both experimental and numerical terms, and has been carried out using refined instruments and specialist techniques. The project is of great interest not only from a scientific viewpoint, but also in practical and application terms. The comprehensive nature of the work, lucidity of the explanations and design tables are particularly appreciated.

NETHERLANDS

High Strength steel, a slimming product? Research project, The Netherlands

Project owner: Gerwin Schut Adress: Balthasar van der Polweg 718B 2628 ZH Delft



The final-year-student has researched the economic and environmental effects of replacing conventional steels such as S235, S275, and S355 with high strength steel. The recently completed platform roofing at Groningen Europapark station – constructed with S235 – was compared to the same design in S460, the only high strength steel included in the Eurocodes. The design potential was also explored using a new design that made optimum use of the properties of S460.

In the first instance the design was converted to S460 rather than modified. The section thicknesses were decreased where possible.

This optimisation resulted in a weight reduction of 15% and cost reduction of 7% compared to S235.

NORWAY Through the Forest of Columns Bergen, Norway

Student Architecture: Gudrun Jona Arinbjarnardottir



Through the Forest of Columns is an intervention under and around the existing Puddefjord Bridge in the city centre of Bergen, Norway. The Puddefjord Bridge connects the old industrial neighbourhood of Mpris on the city side to Gyldenpris and Laksevåg on the other. It crosses the strait of Damsgårdssundet thirty metres above the surface of the water. The existing bridge structure dwarfs its immediate urban surroundings and creates dead space on both sides and below.

The intervention consists of a web of new pedestrian and cycle routes that intertwine with the forest of columns below the existing bridge. The intention is to revitalize the area by increasing connectivity and allowing for new kinds of activities and experiences to take place. Functionally, the new routes separate pedestrians and cyclists from traffic and provide shelter under the existing bridge.

TURKEY Modular Disaster Dwells Ercis, Van, Turkey

Students: Engineering: Senol Keskin Adress: Boğaziçi University Istanbul Architecture: Burçak Sönmez, Oğuzhan Aydın, Sinan Tuncer, Yücel Demir Address: Yıldız Technical University Istanbul



Sheltering requirement after natural disasters is met through immediate aid supply, rehabilitation and reconstruction processes. In all phases of this process, problems such as resource consumption, economic and environmental challenges and inability to fulfil consumer's needs emerge. To meet the requirements, this project offers sustainable, premeditated, after-naturaldisaster long lasting sheltering options.

The project provides high sophistication in the system design from component level to the system integrity, the variety of housing units comprised from suggested structure components, adaptation to environmental conditions and relative life scenarios at the settlement measure, creation of an environment where solar energy is provided as the main energy source.

WINNERS OF STEEL DESIGN AWARDS SINCE 1997

1997

- AUSTRIA District Plant Vienna south
- BELGIUM Reconstruction of the "Kronprinzenbrücke", Berlin
- DENMARK "Rotunden", Tuborg nord, Copenhagen
- FINLAND Landscape 2000 cybernetics, Karkkila
- FRANCE Bridge Charles de Gaulle, Paris
- GERMANY Cycling hall, Berlin
 - ITALY Elevated Heliport Structures of the new Lingotto, Torino
- NETHERLANDS Centre for Human Drug Research in Leiden
 - NORWAY Trondheim Airport Vaenes, Terminal A
 - ROMANIA Hybrid tensioned membrane for a market in Timisoara
 - SWEDEN Gothenburg central Nils Ericsson Terminal, Göteborg
- SWITZERLAND Three Countries' corner, Basel
 - TURKEY Bati tourism centre project, Istanbul
- UNITED KINGDOM "White rose" shoping centre, Leeds

- AUSTRIA Reichstag, new German parliament, Berlin, Germany
- BELGIUM La Garde-Adhémar bridge, Spanning the Donzére-Mondragon Canal, Pierrelatte, France
- CZECH REPUBLIC Mariánský Bridge, Usti nad Labem
 - DENMARK The East bridge, Storebælt
 - FRANCE Terminal 2F, Roissy
 - GERMANY Shipyard Building Volkswerft, Stralsund
 - ITALY New exhibition center Hall 19-20 in the Bologna exhibition centre
 - LUXEMBOURG City centre of Kirchberg, Luxembourg
 - NETHERLANDS Storm Surge barrier on the waterweg, located between the towns of Hoek van Holland and Maassluis
 - NORWAY Protective structure for Hamar Cathedral ruins
 - SLOVENIA Bridge for Pedestrians and cyclists across the river Drava, Ptuj
 - SWEDEN Aula Magna, Stockholm
 - SWITZERLAND Lucerne culture and convention centre
 - TURKEY The Sabanci Convention and Exhibition Centre, Antalya
- UNITED KINGDOM New Millennium Experience, London

AUSTRIA UFA cinema centre, Dresden, Germany BELGIUM Pont de l'Europe • Orléans, France CZECH REPUBLIC Administration centre of the South Moravian Gasworks. Brno DENMARK The Øresund Bridge • Øresund FINLAND Itamerentori Office Building (Baltic Sea Tower), Helsinki FRANCE Middle School "André Maurois", Limoges GERMANY CargoLifter Shipyard, Brand (Berlin) ITALY World Distribution and managing Center Safilo Group S.p.A. NETHERLANDS The British Airways London Eye • London, UK NORWAY Airport train terminal at Oslo S, Oslo SLOVENIA Home of Economy. Office Building of the Chamber of Commerce and Industry of Slovenia (CCIS) SWEDEN Infra City Business Center, Upplands Väsby SWITZERLAND Messe Basel, Halle 1 TURKEY Istanbul-Sabiha Gökçen Airport - International Terminal. Istanbul UNITED KINGDOM Central park - block E, Dublin

AUSTRIA	Atrium Roof of the Great Court, British Museum, London, UK
BELGIUM	Swiss Re London Headquarters Building, London, UK
DENMARK	Covering of Parken, Copenhagen
FINLAND	High Tech Center Helsinki, Helsinki
FRANCE	Gare TGV d'Aix-en-Provence
GERMANY	Hot Dip Galvanizing Line, Dortmund
HUNGARY	Covering of the UTE Stadium's Grandstand, Budapest
ITALY	Chavanon Viaduct, Motorway A89, France
LUXEMBOURG	Chambre du commerce de Luxembourg
NETHERLANDS	ING-House, Amsterdam
NORWAY	Mortensrud Church, Oslo
ROMANIA	Bank Post Timisoara
SLOVENIA	Shopping Center Mercator, Nova Gorica
SWEDEN	Bridge Apatê, Stockholm
SWITZERLAND	Roof of the University of Zurich
TURKEY	Automatic Carpark Building (Milli Reasurans Tas Multistorey), Istanbul
UNITED KINGDOM	The Boxworks, Manchester

AUSTRIA	Air traffic control tower, Vienna Airport	
BELGIUM	Three bridges over the Hoofdvaart Haarlemmermeer	C
CZECH REPUBLIC	Sazka Arena, Prague	-
DENMARK	Flintholm Station, Vanløse	
FINLAND	TKP Finnmap Offices, Helsinki	
FRANCE	Millau Viaduct	
GERMANY	Munich International Airport Terminal 2	
ITALY	Olympic Stadium "OAKA", Athens	
LUXEMBOURG	Grande-Duchesse Joséphine-Charlotte Concert Hall, Luxembourg	
NETHERLANDS	Hoge Bridge, Maastricht	
NORWAY	V-House, Nesya	
PORTUGAL	Estadio do Dragao - Rooftop, Porto	
ROMANIA	Charles De Gaulle Plaza Building, Bucharest	
SLOVAKIA	Kosicka Bridge, Bratislava	
SLOVENIA	TZC Portoval - Amusement, Commercial and Business Centre, Novo Mesto	
SPAIN	Campis Elisis - Footbridge on the Segre River, Lleida	
SWEDEN	Mjärdevi Center, Linköping	
SWITZERLAND	"La Ferriera" building, Locarno	U
TURKEY	Dolapdere campus second building of Istanbul Bilgi University, Istanbul	
UNITED KINGDOM	The Wales Millennium Centre, Cardiff	

AUSTRIA	Zlote Tarasy atriumroof, Warsaw (Poland)
BELGIUM	Gustave-Flaubert bridge , Rouen (France)
ZECH REPUBLIC	Pedestrian bridge across D8 highway
DENMARK	Fiberline Composites factory, Fuen
FINLAND	Kamppi Centre, Helsinki
FRANCE	Simone-de-Beauvoir footbridge, Paris
GERMANY	Multi-storey car park across A8 motorway, Stuttgart
ITALY	Oval" Olympic speed ice skating arena, Turin
LUXEMBOURG	Centennial Pavilion, Esch-sur-Alzette
NETHERLANDS	WKK energy plant, de Uithof-Utrecht
NORWAY	Papirbredden, Drammen
PORTUGAL	Francisco Sa Carneiro Airport
ROMANIA	Tower Center International, Bucharest
SLOVENIA	TRIP or Trimo Research
SPAIN	New terminal area of Madrid-Barajas airport
SWEDEN	Floating roof, Vällingby Centre, Stockholm
SWITZERLAND	Center Paul Klee, Bern
TURKEY	Izmir Adnan Menderes Airport International Terminal and car park
NITED KINGDOM	Royal Air Force Museum, Cosford

AUSTRIA	Neue Mitte Lehen, Salzburg
BELGIUM	Leuven Railway Station, Leuven
CZECH REPUBLIC	Strizkov Subway station, Prague
DENMARK	Concerthuset, Copenhagen
FRANCE	Terminal 2E, Charles-de-Gaulle Airport • Roissy (Paris)
GERMANY	Klimahaus® Bremerhaven 8° Ost
ITALY	Three bridges in Reggio Emilia
LUXEMBOURG	European Court of Justice, Luxembourg
NETHERLANDS	Kraanspoor Office Building, Amsterdam
NORWAY	Ypsilon Footbridge, Drammen
PORTUGAL	Bascule Bridge, Leixões
ROMANIA	Business Park, Brasov
SLOVENIA	Football stadium, Maribor
SPAIN	Media-TIC Building, Barcelona
SWEDEN	Swedbank Stadion, Malmö
SWITZERLAND	Letzigrund Stadium, Zürich
TURKEY	Greengrocers and fishmongers market, Bursa
UNITED KINGDOM	Wimbledon Centre Court, Wimbledon

AUSTRIA	Baku Tollgate, Baku, Azerbaijan
CZECH REPUBLIC	Arena Chomutov, Chomutov
DENMARK	The Crystal, Copenhagen
FRANCE	Basalte Building, Paris La Défense
GERMANY	Formula I Race Track, Yas Marina Circuit, Abu Dhabi, United Arab Emirates
HUNGARY	Terminal Sky Court of Ferenc Liszt International Airport, Budapest
ITALY	Aviva Stadion, Dublin, Ireland
LUXEMBOURG	Les Rives de Clausen Office Building, Luxembourg
NORWAY	Holmenkollen K120 ski jump arena, Oslo
PORTUGAL	Dolce Vita Tejo, Amadora
ROMANIA	Otopeni International Airport Development, Bucharest
SPAIN	Sant Josep Building Refurbishement, Vall de Nuria (Girona)
SWEDEN	Discfilter Building, Gothenburg
SWITZERLAND	School in Leutschenbach, Zürich
TURKEY	Sabiha Gökcen International Airport-The New Terminal Building, Istanbul

AUSTRIA Central Railway Station Salzburg
CZECH REPUBLIC Bridge accross the Lochkov Valley, Prague
FRANCE Stade de Lille, Lille France
GERMANY Bharati, New Indian Research Station, Larsemann Hills, Antarctica
ITALY New High Speed Railway Station, Turin Porta Susa, Turin, Italy
LUXEMBOURG CCK Centre de Conférence Kirchberg, Luxembourg Kirchberg
NETHERLANDS Platform canopies and Pedestrian bridge, Arnhem Central Station, Arnhem The Netherlands
NORWAY Trollstigen National Tourist Route, Trollstigen – Tourist Route
PORTUGAL Arena Fonte Nova Stadium, Salvador da Baia, Brazil
SWEDEN The Tullhus Bridge, Norrköping, Sweden
SWITZERLAND Bridge Hans Wilsdorf, Geneva
TURKEY Steel Radar Towers, Izmit Turkey

Details of above projects can be seen at the webpage of http://www.steelconstruct.com/old/awards/2011/

ECCS

The European Convention for Constructional Steelwork (ECCS) is the representative organisation for the European constructional steelwork industry. Its aims are to coordinate worldwide research and development, to support promotion and education and to encourage the dialogue between the industry, the government, academics and clients.

The organisations of twenty-one nations are member of the ECCS.

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