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To register as a founding member, please fill out the attached form (last page of this document) and return it to the COBRAE office.

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COBRAE Conference: Benefits of Composites in Civil Engineering - Final Program

Below you will find the final conference program for the COBRAE Conference of 2007. The Conference will be held on March 28-29-30 at the University of Stuttgart, Germany. For information on the Conference, please visit the COBRAE website (www.cobrae.org). Here you will find all the abstracts and further information on Stuttgart, the University and hotels. Via the COBRAE website you can also download the Final Announcement brochure and a Registration & Hotel Booking Form.

Wednesday March 28th

- 12.00 Site visit (see page 7)
- 18.00 Welcome reception in Maritim Hotel

AM Thursday March 29th, 2007

- 09.00 **Opening of the Conference, introduction to the theme**
Jan Knippers, Institute of Building and Structural Design (ITKE), University of Stuttgart, Germany
- 09.40 **Carbon fibre stress-ribbon bridge**
Mike Schlaich, Achim Bleicher
Institute of Conceptual and Structural Design, Technical University of Berlin, Germany
- 10.00 **Development of New Hybrid Composite Girders Consisting of Carbon and Glass Fibers**
* Hiroshi Mutsuyoshi, * Thiru Aravinthan, * Shingo Asamoto, ** Kenji Suzukawa
*: Saitama University, Japan, **: Toray Industries, Inc., Japan
- 10.20 Coffee break at Trade Show
- 10.50 **Integrative Design Approach for Using Advanced Composite Materials in Bridge Deck Applications**
Hwai-Chung Wu
Wayne State University, USA
- 11.10 **An Innovative Hybrid Concrete-FRP System for Short- and Medium-Span Bridges**
Mamdouh El-Badry, Mohamed Sorour, Kyle Schonknecht
The University of Calgary, Alberta, Canada
- 11.30 **Deterioration Science Based Consideration of Durability in Design of FRP Rehabilitation**
V. Karbhari, P. Wilcox, R. Walker, Q. Yang, G. Xian
University of California, San Diego, USA
- 11.50 **Experiments on deviated CFRP Strips for external prestressing**
Mohamed Hwash*, Jan Knippers*, Fathy Saad**
*: Institute of Building and Structural Design (ITKE), University of Stuttgart, Germany, **: Ain Shams University, Cairo, Egypt
- 12.10 Lunch University Mensa

PM Thursday March 29th, 2007

Parallel sessions, moderator Jaap Ketel

- 14.00 **Partial Connection of Beams made of High Performance Materials**
Jakub Dolejs, Ivan Tunega
CTU Prague, Czech Republic

- 14.20 **Application of composite materials in bridge building in the megapolis Moscow**
A.B. Kushinov, B.L. Sherstnyov, A.Ye. Ushakov, J.G. Klenin
ApATeCh Co., Zhukovsky, Russia
- 14.40 **Bond Behavior of Glass Fiber Reinforced Polymer Bars with various Deformations**
J.S. Park, Y.C. You, Y.H. Park, Y.J. You, K.H. Kim
Korea Institute of Construction Technology, Gyeonggi-Do, Republic of Korea
- 15.00 **Influence of Internal Percentage Steel Rebar Variation on Load-Deformation Characteristics of FRP Strengthened Concrete Beams**
D.B. Tann, R. Delpak, P. Davies
University of Glamorgan, United Kingdom
- 15.20 Tea break at Trade Show
- 15.50 **Composite action in GFRP-Composite bridges**
Herbert W. Guertler
Krebs und Kiefer, Karlsruhe, Germany
- 16.10 **Wedge Anchorage for FRP**
Stefan L. Burtscher
Vienna University of Technology, Vienna, Austria
- 16.30 **Optimal Shapes for Composite Bridges**
Ryszard A. Daniel
Ministry of Transport & Water Management, Utrecht, The Netherlands
- PM **Thursday March 29th, 2007**
Parallel sessions, Moderator, Jan Knippers
- 14.00 **Composites for Highway Bridges Applications: A State-of-Art Review**
Ayman S. Mosallam, M. Shinozuka and M. Feng
University of California, Irvine, USA
- 14.20 **Hybrid FRP Bridges: Design, Analysis and Material Tests**
Markus Gabler, Jan Knippers
Institute of Building and Structural Design (ITKE), University of Stuttgart, Germany
- 14.40 **Design of an emergency truck GFRP truss bridge**
M. Dolores G. Pulido
PEDELTA, Barcelona, Spain
- 15.00 **Experiencing more Composite-Deck Bridges and Developing Innovative Profile of Snap-Fit Connections**
Sung Woo Lee, Kee Jeung Hong
Kookmin University, Seoul, Korea
- 15.20 Tea break at Trade Show
- 15.50 **FRP Structural Formwork for Rapid Renewal of Bridge Decks Without Steel**
* Vistasp M. Karbhari, * Joanne Mitchell, * Anna Pridmore, ** Charles Sikorsky
*: University of California, San Diego, USA
**: California Department of Transportation, USA
- 16.10 **Experiences on Carbonfibre Tendons for Strengthening of Bridge structures**
Markus Maier
Leonhardt, Andrä und Partner Beratende Ingenieure VBI, GmbH, Stuttgart, Germany

- 16.30 **Environmental Design with GFRP-Rebars**
André Weber
Schöck Bauteile GmbH, Baden-Baden, Germany
- AM **Friday March 30th, 2007**
Parallel sessions, moderator Jaap Ketel
- 09.30 **Structural Health Monitoring and Nondestructive Evaluation of Composites in Construction applications**
Ayman S. Mosallam, M. Shinozuka and M. Feng
University of California, Irvine, USA
- 09.50 **Experiments and Numerical Investigation of Perfobond Connector**
Peter Chromiak, Jiri Studnicka
CTU Prague, Czech Republic
- 10.10 **Development of Calculation Resistance Definition Model for Bridge Designs Elements from Composite Materials**
Andrey Ye. Ushakov, Yury G. Klenin, Andrey V. Pankov, Sergey N. Ozerov
ApATeCh Co., Zhukovsky, Russia
- 10.30 **Delamination of FRP reinforced steel girders and their fiber Bragg grating sensing**
* Seishi Yamada, ** Satoshi Yamada, *** Iwao Komiya
*: Toyohashi University of Technology, Japan, **: Topy Industries, Ltd., Toyohashi, Japan
***: Fukui Fibrtech Co., Toyohashi, Japan
- 10.50 Coffee break at Trade Show
- 11.20 **Carbon reinforcement and strengthening of glassfiber pultruded structures**
A.E. Ushakov, S.V. Dubinsky, T.G. Sorina, A.Kh. Khairetdinov
ApATeCh Co., Zhukovsky, Russia
- 11.40 **Fifteen years of FRP Applications in Italy: Case Studies**
Paolo Casadei, Emo Agneloni
TEC.INN S.R.L., Milano, Italy
- 12.00 **Thin thermoplastic CFRP tapes support wooden structures**
Urs Meier (Chairman of COBRAE)
EMPA, Dübendorf, Switzerland
- AM **Friday March 30th, 2007**
Parallel sessions, Moderator, Jan Knippers
- 09.30 **Availability of Antiseismic Inverted Suspension Bridge**
Robert Azoyan, Grigor Sargsyan
Yerevan State University of Architecture and Construction, Yerevan, Republic of Armenia
- 09.50 **Elastic Systems for Dynamic Retrofitting (ESDR) of Structures**
Paolo Casadei, Emo Agneloni
TEC.INN S.R.L., Milano, Italy
- 10.10 **Glass Fibres Reinforced Polymer for mitre gates used for lock EU class 1 as experiment**
Brahim Benaissa
French Ministry of Transport, Compiègne, France

- 10.30 **Aerospace Grade Composite Technology for Infrastructure**
Laurence Walker
Wave Engineering, Perth, Australia
- 10.50 Coffee break at Trade Show
- 11.20 **CFRP in Germany - Development of Strengthening of Engineering Structures**
Horst Peters
SIKA Deutschland GmbH, Stuttgart, Germany
- 11.40 **Advances in Underwater Pile Repair using FRP**
Rajan Sen, Gray Mullins
University of South Florida, Tampa, USA
- 12.00 **Open paper**
To be announced
- 12.30 **Closing Remarks**
Urs Meier, Chairman of COBRAE

On Wednesday March 28th a site visit is planned to the Heilbronn and Körschtal Bridges in the Stuttgart area. Registration for the site visit starts at 12.00 hrs in the lobby of the Maritim Hotel.



Körschtal Bridge



Heilbronn Bridge

On Thursday March 29th a lab visit will take place at the University Campus Vaihingen. The buses will depart at 17.00hrs. Here some test set-ups will be viewed with some demo's and short presentations. After the lab visit we will go to Restaurant Amadeus in Stuttgart.

For more information on the site visits and the program please go to our website: www.cobrae.org
Here you can also download the brochure and a registration form.

Report of COBRAE Annual Members Meeting in Lerida, Spain, 30th November 2006 by Richard Daniël, Rijkswaterstaat Bouwdienst (NL)

On November 30th, 2006, I took part in the Annual Members Meeting of COBRAE. The meeting was held in Lerida (Lleida in Catalan) in the Spanish inland around 180 km north of Barcelona. My activities within COBRAE date back to the construction of the composite bridge Noordland in Zeeland (NL). In particular the ecological assessment for the bridge drew a lot of international interest.

The choice of Lerida as meeting place was not by coincidence. A special composite bridge was built in this city recently, on which more information later. Visiting this bridge was part of the Meeting.

The application of composites, especially fiber-reinforced composites, in bridge construction have increased over the last years. It is safe to say that it is an up-and-coming technology. In The Netherlands we have besides the footbridge Noordland, which I "pulled" with Gerland Nagtegaal, also the footbridge of Rijk Noordzij in the harbor of Harlingen. We have not succeeded as yet in constructing a traffic bridge with this technology, but there are studies conducted researching the possibilities, by for instance Johan den Toom for the drawbridge project in Den Dungen. In other countries (USA, Germany) such bridges do exist. We will most definitely see more of this technology in The Netherlands because of their maintenance benefits (no corrosion), low weight and high strength and it is beneficial for the environment.

COBRAE has set a goal to help exchange the knowledge in using composites in bridge construction and to increase the awareness of the technology.



Fig.1. Composite footbridge over a number of railroad tracks in Lerida, span 38 m

Arrival and University of Barcelona

After arriving at the airport of Barcelona in the morning of November 29th, all delegates gathered around Jaap Ketel, secretary of COBRAE, and Dolores Pulido, our host of the University of Barcelona. The group consisted of only 6 delegates coming from Spain, The Netherlands, France, Germany and Russia, not including the Spanish hosts. Our first destination was the University of Barcelona, where we traveled to by mini-bus.

During the lunch offered by the organisers, the occasion arose for everybody to introduce himself, which immediately led to a lively discussion about the chances of composites in construction (not only bridges) and the latest projects around the world. I found it of utmost interest to exchange opinions and ideas with colleagues from other countries.

After the lunch we visited the faculty of Dr. Pulido and the laboratory of the faculty. Two presentations were given about the theory of laminates, illustrated with impressive non-linear FEM calculations. This led to an interesting discussion with the employees of the faculty, authors of the presentations. We then had the opportunity to view the machines and the test set-up in the lab. In the afternoon we took the same mini-bus (with behind the wheel Jaap Ketel, by now an "insider" in the Spanish traffic) and drove to Lerida.

Trip to Lerida and dinner

The landscape changed almost equal to leaving the Spanish coastline. In the high inland of Catalunya you don't see a lot of palm trees or the green of the coastline anymore. The climate even appeared to be continental with dry, hot summers and relative cold winters. Lerida, where we would spend the night, is centered in that area, about halfway from Barcelona to Zaragoza.

The nightlife in Spain begins around 21.00 hrs. After arrival we sat down to eat relatively late, even though everybody was up early in the morning because of strict checks at airports. The discussion at the table was once again lively and also included aspects of composite applications other than just the technology itself. Interesting were for instance the experiences of the Russians, whose knowledge in this area stems mostly from the Soviet space- and defense technology. After a long day everybody went to bed immediately after arrival in the hotel.

COBRAE Meeting

The next day (Nov. 30th) after breakfast the COBRAE Meeting took place under the direction of Jaap Ketel. Following are some topics addressed during the meeting:

- Several members of COBRAE offered their apologies for their absence. Next Jaap presented the agenda of the coming events concerning composite technology, like the COBRAE Conference held in Stuttgart, March 2007 and the Global Pultrusion Conference in Baltimore, June 2007.
- Jaap gave a short overview of important projects and developments in and around composites, especially in the USA where he has a lot of contacts.
- I gave a short summary of applications using composites in Dutch infrastructure.
- Dr. Pulido gave a presentation of the composite footbridge in Lerida, in preparation of our visit of the bridge later that day.
- Ing. Werner Venter of Schöck GmbH gave an overview of developments in Germany in the area of reinforcing constructions. Schöck is a well-known supplier of re-bar.
- Mr. Jacques Seignan of Ashland Composite Polymers from France told about Ashland's strategy in winning the composite market. He gave the following statement that I support for 100%: "Think global, act local".
- Mr. Andrey Antonov of the Russian company Kamenny Vek gave a presentation on application of fiber reinforced composites with basalt fibers. This type of composites, for which the Russians developed a successful technology, perform better than composites with glass fibers and they are a lot cheaper than CFRP's.

Fig. 2:
Andrey Antonov speaking



Fig. 3: Delegates on the composite footbridge in Lerida

Visit of all composite footbridge in Lerida

After the meeting ended we took the mini-bus and went to the all composite footbridge in Lerida. I will not give a technical description of this bridge. You can view 2 photos of the bridge. After the visit to the bridge everybody went to the airport and took a flight back home.

Richard Daniël, Rijkswaterstaat Bouwdienst (NL)



Bridge News Flashes

Snoline DR 46 impact attenuator



The DR 46 impact attenuator has been developed by Snoline - an Italian company specialising in the production of long-lasting horizontal road markings and road safety products for protecting motorcyclists from impact against guard rails in the event of accident. The shape adopted, a hollow body, and the material used, polyethylene, in addition to a specially computed corrugated cross section, were all chosen because they allow for "plastic" deformation and compression of the air that is able to "re-

direct" and partially absorb the direct impact against the supporting structure of the guardrail (steel C- or I-posts), which is the principal source of danger to a motorcyclist during a fall resulting from an accident. The modular system can be installed by means of simple clamps underneath the strips of metal guardrails, making it possible to increase the level of safety irrespective of the barrier type, and without interfering with its necessary function of vehicle containment. The structure of the impact attenuator also enables it to follow even the small radius curves of metal guardrails. Computer calculations show that the accidental fall of a motorcyclist and the resultant slide against the guardrail are attenuated by the plastic protection, thereby avoiding serious injury.

<http://www.snoline.com>

Source: *Macplas 283*

White Young Green Develop Composite Motorway Gantries

The Specialist Structures Group of White Young Green (WYG) has been working for the last 2 years with Atkins and the UK Highways Agency to develop FRP composite structures for motorway sign and signal gantries. The composite gantries have been developed as an alternative to conventional steel or concrete structures providing significant benefits in ease of transportation, durability and through-life costing. With spans of up to 50m using a one-piece all-FRP beam, this project will certainly be breaking new ground within the construction industry.

Steve Sexton, Atkins' project manager commented, "The use of FRP has enabled an aesthetic low maintenance lightweight gantry design to be developed. The design is significantly lighter than an equivalent steel or concrete gantry and provides advantages in the design, ergonomics, transportation, installation and maintenance, which coupled with the vastly superior durability and whole-life cost benefits, makes the use of FRP a viable option."



The whole of the primary load-bearing structure of the main beam is to be produced in FRP. WYG Specialist Structures, who specialise in the design of composite structures, are responsible for the engineering and analysis of the FRP structure.

This has been a very challenging project, not just because of the technical issues to be addressed, but to achieve the tight budgets necessary to compete with conventional materials, WYG's Project Manager for the FRP Gantry project, Dr Mark Leaity added. The potentially large number of gantries to be built has enabled lower cost, automated manufacturing processes, such as Resin Transfer Moulding (RTM) to be selected for certain components and resin infusion to be used for others to achieve very high-quality laminates. We hope that this project will come to fruition and it should lead to other significant applications of FRP Composites in the construction industry, such as major bridges and complete building structures.

Source: *Net Composites*
<http://www.wyg.com>

Call for candidates for the AVK innovation award 2007

The Federation of Reinforced Plastics e.V. (AVK) is now requesting nominations for this year's annual AVK innovation awards in the categories "industrial applications", "environment" and "university research". The objective of the innovation awards is to provide solutions to state-of-the-art technological issues by means of composites and thermosets, to highlight the achievements of our industry in the field of environmental protection and to encourage university research into composites and thermosets. Not least, it is hoped that these innovation awards will serve as a source of motivation for specialists active in these fields. The prizes will be awarded at the **10th International AVK Conference on November 5-6, 2007 to be held in Stuttgart.**

Applications for the 2007 innovation awards may be submitted in the following categories:

- **Industrial applications**
- **Environment**
- **University research**

The deadline for the submission of the application papers is **May 4, 2007.**
Further details and objectives may be obtained from:

AVK e.V.,
Am Hauptbahnhof 10, D- 60329
Frankfurt, Germany
Tel: +49 (0) 69 / 27 10 77-60
Fax: +49 (0) 69 / 27 10 77-61
E-mail: info@avk-tv.de
Web: www.avk-tv.de

Footbridge 2008

Third International Conference
July 2-4, 2008, Porto, Portugal

Following the success of the two first International Footbridge Conferences, in Paris 2002 and in Venice 2005, the Faculty of Engineering of the University of Porto (FEUP) in association with the Technical Advisory Bureau for Steel Users (OTUA) are pleased to announce the Third International Conference Footbridge 2008, which will be held in Porto, Portugal, from 2 to 4 July 2008.

Under the theme Footbridges for Urban Renewal, FOOTBRIDGE 2008 intends to bring together urban and landscape planners, designers, civil engineers, architects, researchers, contractors and operators, providing the opportunity to review and discuss the various topics associated with the development, design, analysis, construction and maintenance of footbridges.

On behalf of the Organizing and Scientific Committees of the Congress, we invite you to the hospitable and World Heritage city of Porto and to the Footbridge 2008 Conference.

Abstract submission (Deadline: 1 August 2007)
Website: <http://www.footbridge2008.com>

Half of Bos en Lommerplein opened

While the occupants return today after almost a six-month period in their flats, employees of Hillen & Roosen are busy gluing carbonfibre reinforcements on the beams of the car park under the Bos en Lommerplein. The garage will be closed for at least one more month. At the beginning of February the tradesmen can also return, half of the Bos en Lommerplein is opened now. The market on the roof of the garage can then be held again. The complete garage is expected to re-open earliest in June.



Besides the gluing of the carbonfibre reinforcements, some parts are also reinforced with steel profiles and a bracing construction which will lead forces lower in the existing columns. How it all came to this, is still being examined by a research commission under the chairmanship of former minister Margreet de Boer. The research commission will examine the complete construction process from the application for the first license up to the moment that the Bos en Lommerplein was evacuated on July 11th 2006. The commission presents its findings in the middle of January 2007.

Source: Teijin, Arnhem, The Netherlands

Composites Industry Leader To Receive Dr. Frank A. Cassis Award

Joseph M. Plecnik, whose many accomplishments include the analysis and design of the world's first and largest free standing composite stacks, will be awarded the third Dr. Frank A. Cassis Award for Exceptional Achievement in the Corrosion and Composites Industry by the Western Chapter of the American Composites Manufacturers Association on April 25. The award is presented every other year at the Technical Conference on Construction, Corrosion and Infrastructure at Harras, Las Vegas, Nevada, USA.

The Dr. Frank A. Cassis Award was created to recognize exceptional achievement in the invention, promotion and growth of the industry. In addition to the world's first free standing composite smoke stacks, Plecnik's accomplishments include over thirty years teaching, design and consulting experience; the design of the first fiberglass down lead pipes; and the design of the first composite tanker truck to obtain USDOT approval. He has conducted countless research projects in the composites field and authored more than one hundred journal articles, government and industrial reports.

"I am extremely honored to receive the Cassis award," said Plecnik. "Not only has Dr. Cassis made very significant contributions to the composites industry, but he is also an individual I deeply respect for both his knowledge and character."

Plecnik is currently a professor at the Structural Composites Laboratory at California State University in Long Beach, California.

The Dr. Frank A. Cassis Award for Exceptional Achievement in the Corrosion and Composites Industry was first awarded to its namesake, Dr. Frank A. Cassis, on April 24, 2003, at the 2003 Technical Conference on Construction, Corrosion and Infrastructure, which Cassis founded nearly 30 years ago. The next award will be given in 2009.

Source: American Composites Manufacturers Association ACMA

Composite Road Ducts

Thanks to the very high tensile strength, small own weight and other favorable properties, composites can carry large loads on small sectional areas (i.e. large stresses). This allows constructing quite unique forms. It should, e.g., be possible to construct bridges that not only provide the traffic passage from A to B, but also isolate that traffic from the living areas. Such a step is, of course, neither cheap nor free of far reaching consequences in many areas. But it might be necessary – today for the Netherlands and tomorrow for more countries.



Imagine the composite 'traffic ducts' as drawn here – and compare them to the impact of a conventional highway. What instantly strikes is an enormous reclamation of the living space for people. Further – perhaps still more important – the air pollution problem receives an owner. It is no longer the problem of *everybody*, which practically means of *nobody*. It is a problem of those who cause it, the entire car and fuel industry and the supporting lobbies. They will now do everything to provide proper ventilation (with soot filters) of such traffic ducts and to develop both cleaner cars and fuels. In the future, this idea can also offer the possibility to recover CO₂ and other so-called 'greenhouse gasses', which shall contribute to the global environment protection.

R.A. Daniël
 Netherlands Ministry of Transport, Public Works & Water Management
 Civil Engineering Division

Stedelijk Museum Amsterdam gets a unique smooth composite porch construction

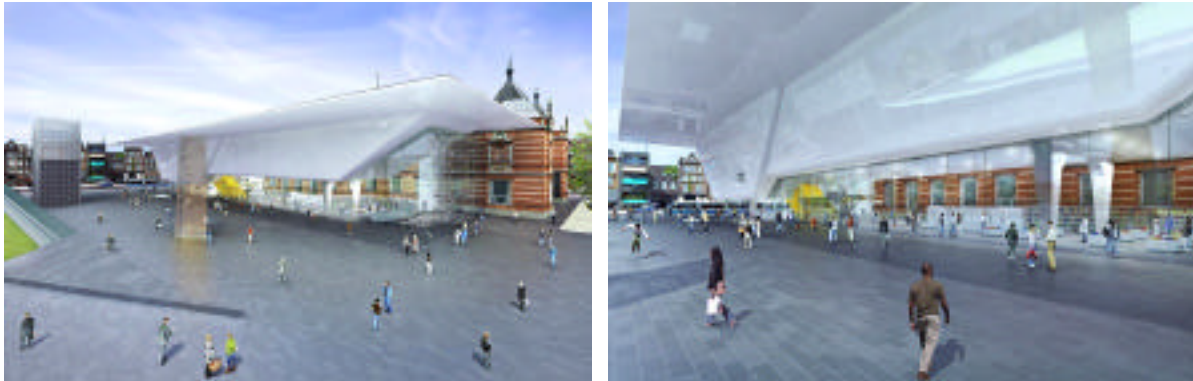
Architect Benthem Crouwel designed a facade and porch construction for the new extension of the Amsterdam Stedelijk Museum, which needs to be seamless white and smooth. It appears that this is possible with a revolutionary composite material. By use of both Aramide and carbon fibres the coefficient expansion is nearly zero. For this reason construction seams are not necessary.

The composite material used is a sandwich construction of four layers Twaron/carbon hybrid fibres both sides on a core of foam. It has been designed for this application by Solico BV, a specialized Composite Engineering office in Oosterhout, Netherlands.

Mr. Crouwel wanted no seams, which is usually the case in similar constructions. Aluminium was not an option.

"We have found a solution to construct the 100 meter long seamless building with a total of 3000 square meters", says Hans Muller of Solico. "The solution lies in a composite material which has a coefficient of expansion of almost zero in a range minus 20 and plus 60 degrees Celsius. Such a material has already been applied in housings of precision measuring equipment. It is known that both the aramide fibre Twaron and the carbon fibre shrinks at elevated temperatures. On the other hand thermoset resin expands if it becomes warmer. By selecting the correct combination of both fibres in a thermoset resin a reinforcing skin for sandwich material was found with the special property that expands or shrinks with a change of temperature".

By laminating panels of this material on site a smooth and flat surface is achieved. Whole assembly is then fixed to the existing construction of the Stedelijk Museum. The panels are manufactured by Holland Composites in Lelystad. The flatness of test panels laminated to each other is promising, says Hans Muller of Solico. The mother company of Teijin Twaron, the Japanese Teijin Ltd, is sponsor of the new building. Teijin has invested over one billion Euros in Aramide production facilities in the Netherlands. The sponsoring of Teijin for the new extension to the Stedelijk Museum is not only making the Twaron/Carbon hybrid material available, but also making a substantial contribution in the realizing of the extension itself.



Source: *Bentham Crowel* - <http://www.benthamcrowel.nl>
Solico - <http://www.solico.nl>

Interesting Website: www.coolingtowerdepot.com/content/new_tower_product_line

An interesting website for structural applications is the Cooling Tower DEPOT Site, by Cooling Tower Depot, 651 Corporate Circle, US- CO 80401 Golden, USA.

On this site one can find all sorts of structural application of different materials in the Cooling Tower industry. A whole section is devoted to pultruded structures and cooling tower parts. It is clear that composites are replacing wood in the Cooling Tower Industry. The higher initial cost of composites is offset by lower long-term maintenance. Actually with rising prices of hardwood today, composites can now compete on installed cost and therefore we will see more and more of these structures made in pultrusion and molded parts.

A typical example of an all pultruded structure located in the harsh environment of a cooling tower. Continuously sprayed with warm water and loaded with chemicals.



GPEC 2007

March 6 - 7, 2007, Orlando, USA

<http://www.4spe.org>

conferences@4spe.org

5. GFK-Tagung

March 7 - 8, 2007, Munich, Germany

<http://www.tuev-sued.de/akademie>

<http://www.composite-meeting.de>

Koolstoflijmwapening Cursus (Dutch)

March 7, 2007, Utrecht, The Netherlands

<http://www.betonvereniging.nl>

info@betonvereniging.nl

Polymer Composites Conference IV

March 20 - 22, 2007, Morgantown WV, USA

CFC@mail.wvu.edu

<http://www.cemr.wvu.edu/cfc/conference>

Tel: +1.304.293.7608 ext 2651 or 2634 or 3711

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COBRAE Conference 2007 - Benefits of Composites in Civil Engineering

Stuttgart, Germany, March 28-29-30, 2007

University of Stuttgart

<http://www.cobrae.org>

info@cobrae.org

JEC Composites

April 3 - 5, 2007, Paris, France

<http://www.jeccomposites.com>

Forum V.I.E.R. - 2007

May 21 - 22, 2007, Krefeld, Germany

Info@forum-vier.com

<http://www.forum-vier.com>

3 rd International Conference on Durability & Field Applications of FRP Composites for Construction (CDCC 2007)

May 23 - 25, 2007, Quebec City, Canada

<http://www.civil.usherbrooke.ca/cdcc2007/>

Global Pultrusion Technology Conference

June 7 - 8, 2007, Baltimore USA

<http://www.briskevents.nl>

A new Pultrusion conference is launched on the initiative of Brisk Events Technology Conference Organizers of the Netherlands. The conference to be held on Thursday/Friday June 7-8, 2007, by and for the worldwide Pultrusion Industry is supported by SAMPE and coincides with the SAMPE 2007 Conference and Exhibition, Baltimore, USA – June 3-7, 2007.

The 2-day conference aims to gather the Worldwide Pultrusion Industry, one of the fastest growing Composites Industry sectors. About 300 companies worldwide are producing 0.5 million ton of composite profiles, representing US\$ 1.2 billion value. The average annual growth of the industry ranges between 5% and

10% depending on market sector, world region and application area. Globally there is a growing interest in pultrusion technology. Composite profiles offer on many occasions an economic and technical superior alternative to metal profiles, both in low- and in high-tech applications.

The delegates to the Global Pultrusion Conference are offered a free ticket to the SAMPE Exhibition and a reduced fee to the SAMPE Conference.

A Pre-Announcement Brochure and a Pre-Registration Form can be found on the Brisk Events web-site:

<http://www.briskevents.nl>

More information please contact:

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Techtextil / Avantex

June 12 - 14, 2007, Frankfurt, Germany

<http://www.techtextil.messefrankfurt.com>

2007 New York City Bridge Conference

August 27-28, 2007, New York, USA

<http://www.bridgeengineer.org>

info@bridgeengineer.org

K 2007

October 24 - 31, 2007, Düsseldorf, Germany

<http://www.k-online.de>

FRPRCS - 8th International Symposium on Fiber Reinforced Polymer Reinforcement for Concrete Structures

July 16-18, 2007, Patras, Greece

Correspondence and Inquiries *FRPRCS-8 Secretariat* c/o Prof. Thanasis Triantafillou

Department of Civil Engineering, University of Patras, Patras GR-26500 GREECE

Telephone: +30 2610 997764 Facsimile: +30 2610 996155

<http://www.frprcs8.upatras.gr>

Email: frprcs8@upatras.gr

EVACES '07 - Experimental Vibration Analysis of Civil Engineering Structures

October 24-26, 2007, Porto, Portugal

www.fe.up.pt/evaces07

Footbridge 2008

Third International Conference

July 2-4, 2008, Porto, Portugal

<http://www.footbridge2008.com>

COBRAE AGENDA

COBRAE Conference 2007 - Benefits of Composites in Civil Engineering
Stuttgart, Germany, March 28-29-30, 2007
University of Stuttgart
<http://www.cobrae.org>
info@cobrae.org

N.B. COBRAE TAKES NO RESPONSIBILITY FOR THE CORRECTNESS OF THE ABOVE LISTED INFORMATION

If you would like to be removed from this mailing list, please reply to info@cobrae.org and type in the subject line "remove: 'e-mail address'" (please type e-mail address you received this e-mail at). If you would like to add people or companies to this e-mail list, please give us their contact details/ e-mail. To become a Founding Member of the COBRAE Alliance, please fill out the enclosed form.



COmposite BRidge Alliance Europe

REGISTRATION FORM FOR FOUNDING MEMBERS

We wish to participate in the COBRAE group as one of the founding members.

We pay Euro 950, - for the year 2007. COBRAE will be an unincorporated association, which will be run by Ketel Consulting Agents B.V. in the Netherlands. The Euro 950, - is made up out of Euro 450, - for annual membership and Euro 500, - for a one time joining fee. Payment can be made after receipt of invoice. Members will receive 20% discount on all COBRAE activities.

COBRAE's mission is to promote the research, development and application of fibre reinforced polymer composites in rehabilitation, upgrade and new build bridge constructions and infrastructure.

Organisation : (Please write clearly)

Department : VAT No.:

Address :

Town :

Postal code : Country:

Phone : Fax :

E-mail :

Website :

This website to be linked from the COBRAE website: yes / no

Contact person :

Payment can only be made by:

(Inter) National Bank (Euro) Transfer, after receipt of invoice

Credit Card:

MasterCard Amex Visa Diners Card

Credit card number : Expiry date:

Credit card holder :

CVC (Card Validation Code): (VISA only, last 3 numbers on rear side, next to signature)

Date : City :

Signature :

Please return this registration form by fax to the COBRAE office.

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 3830 AA LEUSDEN Fax: (31) 33-4343501
 The Netherlands E-mail: info@cobrae.org - www.cobrae.org