

## Case study

'TENSILE SURFACES STRUCTURES'  
DESIGN PROCESS

### RESEARCH

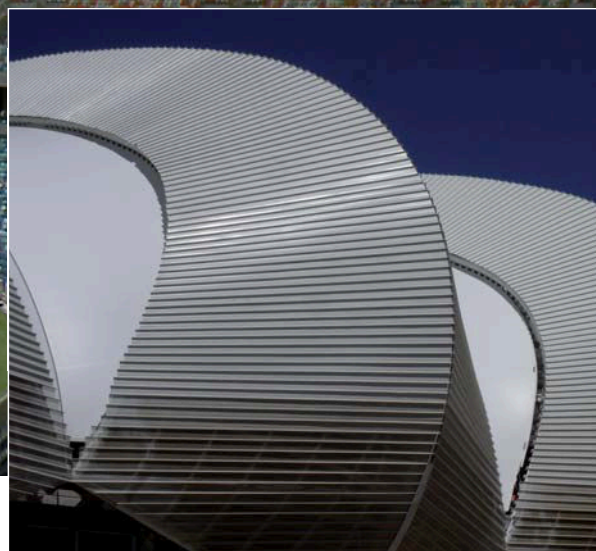
A SIMPLE NON-LINEAR MATERIAL MODEL  
FOR PVC-COATED POLYESTER FABRICS

### "Batsail"

IMS RESEARCH PROJECT

### PROJECT

STADIA  
South Africa



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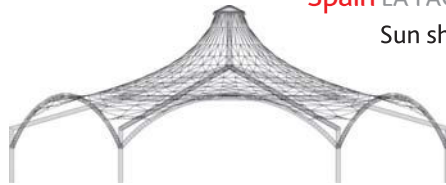


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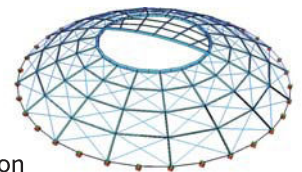


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## Symposium 2010

16-18<sup>th</sup> September 2010  
UACG, Sofia, Bulgaria



**E**very third year Tensinet organizes a Symposium. The field of Tensile Surface Structures is evolving: new materials and new realizations prove that the field of applications is steadily growing. The last two Symposia took place in Brussels (VUB) and in Milan (Politecnico di Milano) with increasing numbers of participants and speakers. These Symposia provide an opportunity for information transfer on the state of the art and new technologies, enabling delegates to share knowledge with a wider audience. On the other hand they advertise tensile surface structures and make them better known to potential clients as well as other professionals in the building industry.

As members of the Scientific Committee, Marijke Mollaert and myself, together with Evi Corne, have visited the UACG in Sofia. We had a warm welcome from the Principal and the Faculty who had given us the opportunity to visit the university facilities in preparation for the Symposium. The Organizing Committee in Bulgaria has already prepared the website for registration. You can access all necessary information about our Symposium on the 16th-18th September at <http://tensinet2010.uacg.bg>.

The theme of the symposium "Tensile Architecture: connecting past and future" is well suited for the market situation in Bulgaria, since several archaeological sites could benefit from translucent, lightweight temporary covers. The Symposium will feature a number of stimulating (keynote) lectures by prominent experts such as Martin Glass (gmp architecten, DE), Françoise Fournier (FERRARI SA, FR), Jan Laperre (Centexbel, BE), Peter Gosling (Newcastle University, UK), Bernd Stimpfle and Gerd Schmid (form TL, DE), Markus Balz (schlaich bergemann und partner, DE) and many others.

A number of TensiNet meetings will also take place during the Symposium.

We invite you to attend our Symposium and ask you to inform colleagues about this event.

Currently TensiNet has more than 200 members from over 40 countries and 15 partners. We are happy to welcome a new partner within TensiNet: the German engineering and manufacturing company with a long history in the field of tensile fabric architecture: Hightex GmbH, Rimsting.

I hope you enjoy this current issue of TensiNews and I'm looking forward to seeing you in Sofia in September,

Dr. Balz

## Forthcoming Meetings

**TensiNet Meetings**  
Verseidag, Krefeld, Germany  
20/04/2010

Partner meeting 1 ☉ 11:00 - 12:30  
Working Group ETFE ☉ 13:30 - 15:30  
Working Group Analysis & Materials ☉ 13:30 - 15:30

**Location:** VERSEIDAG-INDUTEX GmbH  
Industriestraße 56 - D-47803 Krefeld

**TensiNet Meetings, UACG, Bulgaria**  
**TensiNet Symposium 2010**  
15/09/2010

Partner Meeting 2  
Annual General Meeting  
Working Group ETFE  
Working Group Analysis & Materials  
Working Group Standardisation & Eurocode

## Forthcoming Events

International exhibition **ROOF INDIA 2010** Chennai Trade Centre, Chennai, India 23-25/04/2010 [www.roofindia.com](http://www.roofindia.com) ● Workshop **Textile Roofs 2010** TUB, Berlin, Germany 03-05/06/2010 [www.textile-roofs.com](http://www.textile-roofs.com) ●

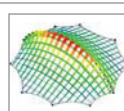
1<sup>st</sup> International Conference on **Structures and Architecture (ICSA 2010)** University of Minho, Guimarães, Portugal 21- 23/07/2010 [www.icsa2010.com](http://www.icsa2010.com)

● Symposium 2010 **Tensile Architecture: Connection Past and Future** University of Architecture, Civil Engineering and Geodesy 16 - 18/09/2010 <http://tensinet2010.uacg.bg/> ● International Symposium on **Spatial structures - Temporary and Permanent IASS 2010**

Shanghai, China 08-12/11/2010 [www.iass2010.cn](http://www.iass2010.cn) ● International trade Fair & Symposium **Techtexitil 2011** Frankfurt, Germany 24 -26/05/2011

<http://techtexitil.messefrankfurt.com> ● International conference on **Structural Membranes 2011** Barcelona, Spain 05 -07/10/2011

<http://congress.cimne.com/membranes2011/frontal/Dates.asp>





# Toll Plaza canopies

at Rawat & I.J. Principal Road  
Islamabad, Pakistan

Tollink Pakistan, a subsidiary of Tollink South Africa, needed BOT-Toll (Build, Operate and Transfer) collection facilities in Islamabad and chose for their project a canopy that stood out different in its form and architectural apparition. The preliminary design from Isbah Hassan & Associates was much appreciated. The structural engineering was done by Amjad Niazi Associates whereas the membrane engineering was done in China by Covertex. Mehatop FR 1000 was used as membrane: a PVC coated polyester fabric with a PVDF top coating on both sides. It has a weight of 1050g/m<sup>2</sup> and a tensile strength of 120KN/m – 110KN/m in warp and weft direction.

The most challenging part of the project was giving the required shape to the 200mm diameter pipe, with 6mm wall thickness. For this project a pipe bending machine and the allied heat process had to be made. Once the pipes were bent they were welded on the ground and the whole frame was lifted up to be placed on the vertical structural elements. The very first project of tensile fabric structure in Pakistan got instant attention of the architects and was much appreciated.

 Kashif Ahmed, South Asia, Mehler Technologies GmbH

 [www.mehler-technologies.com](http://www.mehler-technologies.com)

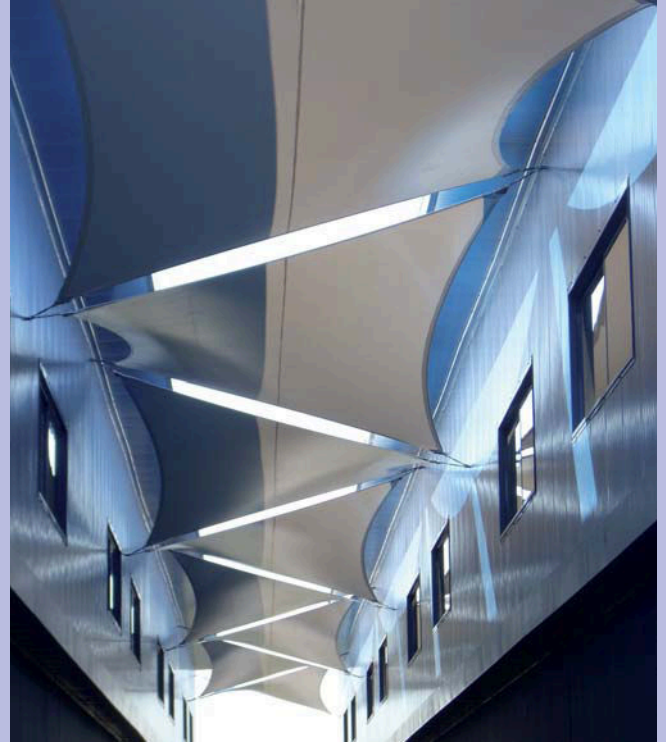


Name of the project:	Toll Plaza Canopies
Location address:	Rawat & I.J. Principal Road, Islamabad, Pakistan
Client (investor):	Tollink Pakistan
Function of building:	Toll collection facility
Type of application of the membrane:	Canopy Cover
Year of construction:	2009
Architects:	Isbah Hassan & Associates
Multi disciplinary engineering, Main contractor, manufacture and installation:	Ramcon
Structural engineers:	Amjad Niazi & Associates
Consulting engineer for the membrane:	Jason Wang, Covertex China
Tensile membrane contractor:	Covertex China
Supplier of the membrane material:	Mehler Technologies Germany
Material:	PVDF, Mehatop FR1000 Type III
Covered surface:	700m <sup>2</sup>

# Sun shading of the streets of the shopping mall

The first open-air commercial centre La Factoria is situated in the region of Huelva, Spain. During spring and summer

temperatures exceed 40°C and solar radiation hits directly and very intensively. The demand was to find and realize a possibility of



# Wedding House Canopy

The Municipality of Karşıyaka needed an extension for the main wedding house. The ARCH-ART team designed a conical roof with a hexagonal plan, supported by six arch structures which as a whole represent a wedding gown. The after wedding cocktail receptions and the Turkish traditional jewelry ceremonies take place at this extended area. The main function of the roof is

to protect the guests from rain surprises but mostly from Izmir's hot sun. Also, by creating an optical highlight that can be seen from a large distance, especially from the ferries that constantly carry passengers between the two main zones of the bay; the roof creates an attraction point, enhancing the wedding house. The roof stands like a white flower blooming, representing the purity of the