9th WORLD PULTRUSION CONFERENCE
"PROFITING FROM PULTRUDED PROFILES"

Wednesday March 26th, 2008

All day **Arrival of Delegates**

15:00 - 17:00 **East-West Pultrusion Industry Round Table**
Separate invitation required

As part of the 9th World Pultrusion Conference in Rome a special Round Table Meeting on Structural Profiles has been organised.

The purpose of this Round Table is to bring Pultruders from the Asian region together with their colleagues from Europe and USA and have a discussion and exchange of ideas concerning their common fields of business in general and specifically how to compete with other structural materials, such as metals and hardwoods.

A discussion program has been put together which will cover the following generic subjects:

- Application Markets to address jointly
- Structural Profile Standards
- Product Quality
- Licensing Opportunities and Copyrights
- Recycling and Environmental issues

Only registered delegates to the 9th World Pultrusion Conference will receive a separate invitation for this meeting. Registered delegates will receive a meeting document for this Round Table in time. Pultrusion companies producing structural profiles are encouraged to participate in this unique opportunity to exchange idea's with their colleagues from other parts of the world.

Wednesday March 26th, 2008

All day **Arrival of Delegates**

18:30 - 19:30 **Welcome Reception at "Ristorante da Arturo"**
Drinks are sponsored by:
- Top Glass - Pioltello (MI) Italy
- ATP SrL - Angri (SA) Italy


Photo: Ristorante da Arturo

The "Antica Aurelia Da Arturo" restaurant, situated in the central part of the millenial Via Aurelia, is able to offer the privacy of a verdent and tranquil garden and a covered veranda which permits outdoor dining throughout the year. It has been a part of the prestigious high-quality Roman restaurant scene for more than 35 years.

The Welcome Reception will be held in the Lobby area of Ristorante da Arturo.

Ristorante da Arturo
Via Aurelia Antica, 411/413
I- 00165 Rome
Tel: +39 66 62 34 08 / +39 66 62 38 02
Fax: +39 66 63 70 02
E-mail: info@ristorantearturo.it
Web: www.ristorantearturo.it

2008 Rome Pultrusion Innovation Award

In 2008, again there will be an opportunity to submit pultrusion products for the 2008 Rome Pultrusion Innovation Award, as at previous EPTA World Conferences.

Pultruders from around the world are invited to participate in this highly regarded contest at **no extra cost**.

You may submit maximum 3 products for the Award.

The 2008 Rome Pultrusion Innovation Award will be presented during the Award Dinner on Thursday, March 27th, 2008, by the sponsoring company.

Instructions on how to submit your product(s) will be send to you after registration.

Lightmast innovation with pultruded reinforcement rods. Photo: KCA

Award Dinner Cruise on Tiber river

All delegates and their partners are invited to join the Thursday evening Dinner Cruise on the tranquil river Tiber, along which banks the old city of Rome was established.

A typical Italian buffet dinner is served with excellent quality wines. After dinner there will be an opportunity to dance and enjoy live music on the top deck from where one has an overwhelming view of old and new Rome.

During the cruise the Pultrusion Innovation Award is handed over to the winner by the sponsoring company.

9th WORLD PULTRUSION CONFERENCE
"PROFITING FROM PULTRUDED PROFILES"

Thursday March 27th, 2008

09.00 WELCOME AND OPENING

Formal welcome - Dr. Luigi Giamundo, EPTA Chair

Opening Speech
Prof. Luigi Nicolais, Minister for the Reform and Innovation in the Public Administration, Italy
Professor Luigi Nicolais has been appointed Minister for the Reform and the Innovation in the Public Administration in the Cabinet led by Romano Prodi in May 2006.
He has been full professor of Polymer Technology and Materials Science and Technology, Head of the Department of Process and Materials Engineering;
he has been at the head of the course on Engineering of Materials and the Postgraduate course on Biomaterials at the Federico II University, Naples.
Prof. Nicolais has been a member of the Governing Board of the above University and has chaired the Centre for Science and Technology.
He has been awarded several national and international distinctions, such as the Award of the Society for the Advancement of Materials and Process Engineering (SAMPE), "for services rendered to the understanding and the development of composite materials and their use".

09.45 KEY NOTE 1

Photo: ATLAS Hovercraft Inc., USA

How to build a Hovercraft with an all pultruded main structure
William Hayden, Vice President of Engineering, ATLAS Hovercraft Inc., USA
ATLAS Hovercraft, Inc., is the largest air cushion design and construction company in the world. One of the key components in the ATLAS AH-100-P is the extensive use of pultruded composite construction. This delivers a strong yet light-weight structure that will not rust or corrode like conventional steel and aluminum vessels. Using no traditional mechanical fastening, the pultruded ATLAS Hovercraft is bonded together using the "chemical welding" process of modern methacrylate adhesives. The paper will present the story of designing and building the largest pultrtuded marine vessel and Hovercraft ever constructed and a glimpse into the exciting future of Hovercraft Transportation.

10.30 COFFEE BREAK

11.00 Session 1: PULTRUSION ACADEMIC & RESEARCH PROJECTS

The Structural Design of Civil Constructions with FRP Material, the Reinforcement and New Structures
Dr. Giosue Boscato, University of Architecture of Venice, Italy
Pultruded FRP structural elements have seen increasing application due to excellent physical properties. However they have also some disadvantages. The structural design concepts and analytical models are mostly for steel and concrete. In this paper with two applications we explain a new conceptual design to maximize the structural efficiency of FRP elements and/or hybrid-FRP and all-FRP structure systems. Case one is the reinforcement of an historical pedestrian 19 meter span and 6 meters wide bridge of Venice. The second case is an application of a three-dimensional all-GFRP frame with beam and the column elements for a 60 m2 floor section. This research shows the structural design solutions and the analytical approach by numerical modeling and finite element analysis. The GFRP applications are compared with competitive structural configurations realized by steel or aluminum material.

Introduction of an Advanced Finite Element Modeling Program for the Pultrusion Process
Kathy Kitchen, Ashland Performance Chemicals, USA
Ashland, Inc. has developed a proprietary advanced finite element modeling program for the pultrusion process. The model is applied for process optimization. In addition to calculating temperature and resin degree of cure development, as has been demonstrated by other simulation programs, this program also determines the advancement of modulus, shrinkage, and ultimately a complete stress analysis throughout the pultruded part. The purpose of the program is to assist customers with process efficiency improvements and cost savings associated with formulation, startup, line speed, scrap and energy. The simulation software runs on a PC platform, making it an ideal research and technical service troubleshooting tool.

Designing of new profile pultrusion using mathematical simulation
Prof. A. Ushakov, ApATeCh-Dubna, Russia
Designing of new profile pultrusion is complex problem. It needs many human, material and time resources. Often it's such situation that the end products properties differ from guess values. These inconsistencies may be especially adversely affected in the design of structural profiles for critical composite structures (bridges, railway platforms, etc.). The purpose of this work is to develop methods for virtual design of pultrusion using mathematical simulation. It was simulated following components of technological process: design of folders, impregnation of reinforcing, heating and cooling, curing of resin, profile deformation due to cooling and shrinkage, estimation end-profile properties. Examples of pultrusion design of bridge glass-fiber profiles are described.

CFD Modeling of the Closed Injection Wet-Out Process for Pultrusion
Michael Connolly, Huntsman Polyurethanes, USA
The practice of closed injection wet-out in pultrusion has become increasingly utilized over the last five years. This paper presents a mathematical model for simple geometries of the closed injection wet-out process used in pultrusion and represents an initial step to understanding wetting phenomena in complex shapes with complex reinforcement. The moving porous model used is both a generalisation of the Navier-Stokes equations and Darcy's law used for flows in porous media. The model can predict pressure build-up, flow patterns and composite void content and evaluate the influence of process conditions, injection box design, and material properties on these parameters.

13.00 LUNCH BREAK

14.30 Session 2: GLOBAL MARKET DEVELOPMENTS

High Performance Pultruded Composite Markets
John Ilkka, Reichhold Inc., USA
The pultrusion market in North America continues to experience strong growth through a combination of both rising demand for current products and new market/application development by the pultruders themselves. This paper will review the various growth markets for "high performance" pultruded composites including marine, aviation, wind energy, off-shore oil, sporting goods, and window lineals. The key requirements driving these markets into "high performance" pultruded products will be discussed. We will cross-reference the fiber and resin types to determine how the market has responded in meeting these requirements. Fiber types will include E-glass and carbon fiber and resins systems will include vinyl esters, urethanes, urethane hybrids, and epoxies.

The Story and Analysis of Chinese Pultrusion Industry and Market
Ge Ping, DSM-JDR, China
In China, pultrusion composites make about 20% of increase in the total of production volume. The pultruded parts involve varied applications as the following: tent poles, grating, hand tools, window profiles, optical cable FRP members, shrouds on antennas, electrical insulated profiles, FRP rebar, decking, ladders, structural shapes, etc.
This report tells you the real story about Chinese pultruders, raw materials and equipments for pultrusion industry and the end-users, and analyzes the existing problems. Our target devotes always to promote Chinese pultrusion industry and market to grow and progress continuously and benignly.

Innovative Snap-fit 'Delta Deck' for Vehicular and Foot Bridge
Professor Sung Woo Lee, Kookmin University, Korea. Chair Kookmin Composite Infrastructure Inc., Korea
Due to light weight, high durability and rapid installation, pultruded composite bridge deck have become more popular recently. Applications are found in Korea for traffic and pedestrian use. The most notable applications are the world's largest vehicular bridge 'Noolcha Bridge' of 300m long and a 2 km long walk-side expansion project of 'Hangang Grand Bridge'. This paper presents the development of composite 'Delta Deck' with connections of conventional tongue-and-groove and innovative vertical snap-fit with some analytical and experimental results. The snap-fit deck can be connected mechanically with or without adhesive bonding.

15.30 TEA BREAK

16:00 Session 3: EUROPEAN MARKET DEVELOPMENTS

Composite Profiles in the Transport Sector
Uwe Kassens, Röchling, Germany
Röchling has made a wide range of pultruded solutions for inside and outside claddings in the past. Metros, trams, light-rails but also bus systems carry pultrusions for various purposes. The CNC machining, the coating requirements or the surface specification has always been a challenmge as well as the connection to metal fittings or parts to be glued to the pultrusions, Low smoke emission, toxicity and flamability have also been an issue to look at carefully.

Can Resin Infusion Technology complement Pultrusion in Bridge- and Civil Engineering? Mrs. Liesbeth Tromp. Lightweight Structures BV, Delft, NL (COBRAE Member Representative)
To make large structural profiles with Pultrusion there are practical and economical limitations. Number of infeeds, investment in huge roving racks and the expense and process problems of large dies, create a practical limit to the size and shape of profiles. Even with these problems solved, order size in length does not warrant the investment for creative ideas in structural applications. That is why a combination of pultrusion and resin infusion processes could create new opportunities for large structural applications. This paper may plant some innovative ideas into the minds of the audience.

9th WORLD PULTRUSION CONFERENCE
"PROFITING FROM PULTRUDED PROFILES"

Friday March 28th, 2008

09.00 Session 4: STANDARDIZATION & ENGINEERING DESIGN

09.00 KEY NOTE 2

The State of the North American Pultrusion Industry and update on the LRFD Design Standard. Mr. Tom Dobbins, Chief Staff Executive, American Composites Manufacturers Association (ACMA)
There are several trends in the North American Pultrusion Industry. The industry continues to grow. There is consolidation in the industry as companies try to achieve economies of scale. The growth in the industry is being driven by new applications for pultruded FRP. Growing sectors include transportation, especially in bridge construction; and replacement of wood and other materials in consumer and other applications. These highlight the nearly 2 dozen major markets that are currently being served by the industry. Advances in materials and new processes have enabled manufacturers to create new or improved products to expand the scope of the industry.
The ACMA is working proactively to grow the industry through the development of standards. Lead by the Pultrusion Industry Council, ACMA is conducting a $1.3 million dollar study on the construct properties of pultruded FRP- the Load Resistance Factor Design standards. These will provide critical information for designers to specify FRP as a replacement for traditional construction materials. The focus of this presentation is to provide updates and advancements in the North American Pultrusion Industry.

09.45 Session 5: PROCESSING INNOVATIONS

Continuous production of curved composite profiles for aircraft applications
Holger Purol, Faserinstitut Bremen e.V., Germany
Pultrusion is a well-known process for the continuous manufacturing of composite profiles since decades. Since many years used for building and bridge construction or in sports applications pultuded profiles are already used in aircraft structures like stiffeners for tail planes and wings or as floor cross beams. Because of the mainly spherical shape of aircrafts almost all profiles are curved with radii between 2 m and 12 m, which can be made of metal materials without any difficulties.
Future CFRP fuselage projects in a monolithic design will require curved profiles with changing geometries for stiffeners and frames in a total length of hundreds kilometres per year. Current approaches in the CFRP production technology for frames and stringers (e.g. an automatic RTM process) are not able to achieve manufacturing costs and production rates similar to the processing (milling or forming) of metallic profiles.
Therefore the pultrusion process as an efficient continuous production method was examined for the manufacturing for curved profiles. By adaption of the materials as well as the process curved profiles with radii between 3 m and 10 m have been produced. All manufacturing trials have proved that the pultrusion of curved profiles with constant product quality is possible. The results of the trials and the mechanical testing of the profiles are well-promising for a serial manufacturing for future aircraft programmes.

Pultrusion of Large Structural Sandwich Panels with Integrated Edge Detail and Injected Core
Dr. Jerome Fanucci, KaZaK Composites, Inc., USA
Pultrusion is an extremely cost effective technology for producing structural sandwich panels. However, overall system cost reductions are possible if innovative approaches are taken to further reduce material, machining and assembly costs, providing greater motivation for designers to incorporate pultruded materials into future civil and marine structures. This paper discusses technology development efforts underway at KaZaK to reduce the total installed cost of composite panel systems for the end user. Techniques include pultrusion of very wide structures to reduce the number of costly joints that need to be created in a structure, and the incorporation of highly engineered joints in the pultruded edges of the wide panels to enable cost effective connections that efficiently transfer load across panel-to-panel interfaces. In addition, methods for reducing the cost of sandwich panel core materials by injection of core material precursor directly into the pultrusion die will be described. Core purchase and machining costs are frequently one of the largest cost elements in a pultruded panel.

10.30 COFFEE BREAK

11.00 Session 5: PROCESSING INNOVATIONS (continued)

New Unsaturated Polyester Resins for Pultruded Applications
Steven Hardebeck, Reichhold Inc., USA
In a global market pultruders are looking for products to help differentiate themselves against their direct competitors as well as the indirect competition of wood and metal products. In order to do this new thermosetting resins must be developed to provide a lower total cost product or improved mechanical properties. The typical general purpose isophthalic pultrusion resin have good mechanical properties but processing limitations. This paper will discuss several new thermoset resins that have been developed to increase toughness without sacrificing line speeds. These new unsaturated polyester resins take advantage of the attributes of incorporating dicyclopentadiene (DCPD), soy oil, and urethane moieties. Comparative liquid properties, clear cast properties and reinforced mechanical properties will be reviewed.

Programme may be subject to changes.
Please consult the Brisk Events website for any updates (www.briskevents.nl)

11.20 Session 6: PULTRUSION INNOVATIONS

Development of a Fiberglass Sunroom
Jeffrey V. Miller, Comfort Line Ltd., USA
An industry has developed in the United States for prefabricated home additions consisting mostly of windows & doors. These are known as "sunrooms" and many companies have produced these products during the past 30 years. Originally, the products were all manufactured using aluminum structural members. In recently years, PVC rooms have entered the marketplace, which are really aluminum square tubing sleeved with a thin-walled hollow PVC profile.
Comfort Line Ltd. has produced a PVC/aluminum room for several years using a unique post & beam construction methodology. As thermal efficiency and hurricane resistance became larger factors in the U.S. construction market, we saw an opportunity to marry pultruded fiberglass profiles and fiberglass windows & doors with our post & beam construction methodology and thus create a unique, industry-first fiberglass sunroom with superior thermal and structural properties.The paper will document the technical challenges of pultruding the profiles and describe the patented pultrusion process developed to overcome the challenge. I will also describe the unique partnership established with Owens Corning for marketing the product.

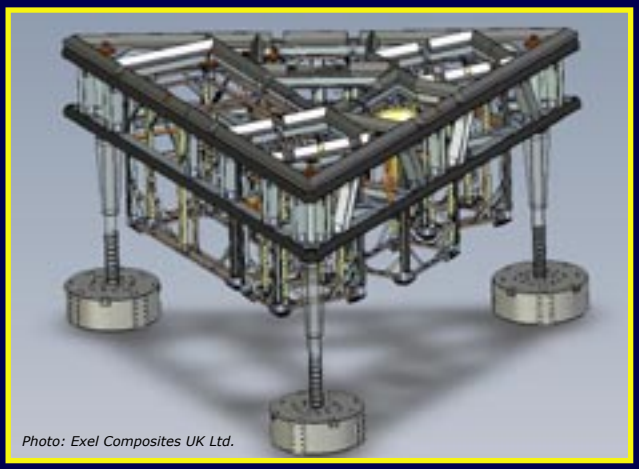


Photo: Exel Composites UK Ltd.

Deep Ocean Environmental Long term Observatory System: The World's 1st composite sub sea structure - DELOS project
John Hartley, Exel Composites, UK
DELOS – Deep ocean Environmental Long term Observatory System will be a 'World's 1st for composites'. Comprising of two Ocean floor platforms each measuring 8m x 8m x 4.5m tall. Situated at a depth of 1400m, they will be serviced periodically by remotely operated vehicles, which will monitor the deep ocean environment within the vicinity of BP operations in Angola. The deep ocean environment into which BP operations are gradually extending are poorly understood with research surveys regularly discovering new habitats and communities of animals previously unknown to science.
The two platforms will be delivered to Ocean Labs in Aberdeen where they will be fitted with the underwater data collection systems from there they will be transported to the BP operations in Angola, with monitoring commencing mid 2008. The presentation will review the origins of the project, technical requirements, the build program and final testing.

12.40 CONCLUDING REMARKS - Dr. Luigi Giamundo, EPTA Chair

13.00 LUNCH

14:30 END OF CONFERENCE

EPTA CONFERENCE COMMITTEE

The Conference Committee has judged the submitted abstracts and acts as Advisory Panel to the organizers.

Jacques Seignan	*Ashland - France*
Luigi Giamundo	*ATP srl - Italy*
Elmar Witten	*AVK - Germany*
Eric Moussiaux	*Exel Composites NV - Belgium*
Uwe Kassens	*Röchling Engineering Plastics KG - Germany*
Alfonso Branca	*Top Glass S.p.A. - Italy*

"PROFITING FROM PULTRUDED PROFILES"

To profit from the production, assembly and marketing of Composite Profiles is a great challenge to pultruders world-wide.

Innovation in the value chain is an absolute requirement to survive in the competing environment of materials engineering and applications.

Associated with this conference theme are the following subjects presented in the conference sessions:

- Academic & Research Projects
- Global Market Developments
- European Market Developments
- Standardization & Engineering Design
- Processing Innovations
- Pultrusion innovations

A total of 17 presentations will be held during the Conference including 2 Key Note papers by Kurt Peterson from ATLAS Hovercraft Inc., and by the ACMA.

The opening speech will be held by Prof. Luigi Nicolais, the Minister for the Reform and Innovation in the Public Administration in the Italian Cabinet of Romano Prodi.

9th WORLD PULTRUSION CONFERENCE

Rome is the venue of the 9th World Pultrusion Conference organised for the European Pultrusion Technology Association (EPTA) by Brisk Events, Technology Conference Organizers.

The conference is to be held on Wednesday, Thursday and Friday, March 26-27-28, 2008 at the Hotel Crowne Plaza St. Peter's in Rome, Italy.

The 3-day conference aims to gather the World Pultrusion Industry, one of the fastest growing Composite Industry sectors. About 300 companies worldwide are producing 0.5 million tons 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.

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.

TIMING

The 9th World Pultrusion Conference is held in the week pre-ceeding the JEC Composites Show 2008 - the World's leading Composites Event.

1-3 April, 2008, Paris Expo - Porte des Versailles - France

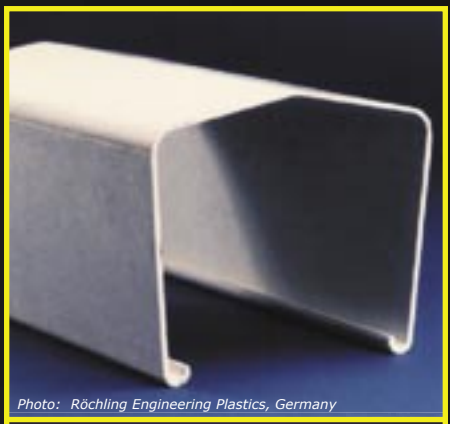


Photo: Röchling Engineering Plastics, Germany

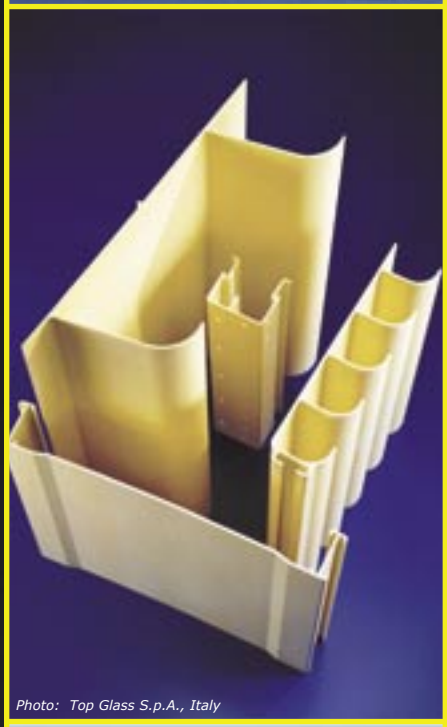
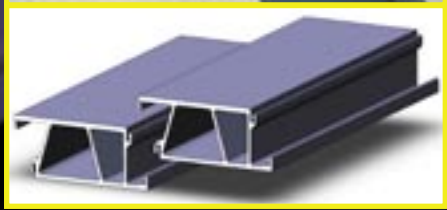


Photo: Top Glass S.p.A., Italy

Photo & schematic drawing: Kookmin Composite Infrastructure Inc. (KCI), Korea



EXPECTED PARTICIPANTS and REGISTRATION

Who do we expect to come to Rome:

* Pultruder Management and Staff from around the world
* Raw Material Suppliers to the Pultrusion Industry
* Pultrusion Equipment Manufacturers
* Standardization Authorities
* University, Academic Staff
* Users of Pultruded Composite Profiles

How to register:
You can register for the 9th World Pultrusion Conference by filling out, signing and returning the enclosed Registration Form per post, fax or e-mail to the Brisk Events office.

If the Registration Form is not enclosed, please go to our website (www.briskevents.nl) and download the Form.

Delegate Fees:
Full Regular Conference Delegate Fee

Regular Fee
Euro 1.200,- (excl. 20% Italian VAT)

EPTA and **PIC Members** receive a 20% discount on the full regular fee when registering for the Conference.

EPTA/PIC Members Fee
Euro 960,- (excl. 20% Italian VAT)

All fees include access to the Conference and Table Top area, Round Table Meeting, Welcome Reception, Tiber Dinner Cruise, coffee breaks, 2 lunches and printed Conference Proceedings.

Table Top Exhibit:
A limited number of Table Tops are available in the break out area. Registration can be done via the Registration Form. Please note that a delegate is not included in the fee.

Table Top Exhibit
Euro 500,- (excl. 20% Italian VAT)
(does not include delegate)

Partner Program:
Partners are invited to join the Welcome Reception on March 26th and also the Tiber Dinner Cruise on Thursday, March 27th at no extra charge. For partners a sightseeing bustour is planned on Thursday March 27th, pending sufficient interest.

Please indicate when registering if your partner wishes to join.

ORGANIZER

Brisk Events is the official appointed organizer of this EPTA Conference.

BRISK EVENTS
P.O. Box 18, 3830 AA Leusden,
The Netherlands.
Tel. +31-33-4343500
Fax. +31-33-4343501
info@briskevents.nl
www.briskevents.nl

BRISK events
NEW TECHNOLOGY EVENTS

HOTEL CROWNE PLAZA ST. PETER'S

The 9th World Pultrusion Conference will be held at the Hotel Crowne Plaza St. Peter's in Rome, Italy.

The Crowne Plaza Rome St Peter's Hotel, a four star superior hotel, is located in a beautiful residential area of Rome, a few minutes away from St Peter's Basilica, the Vatican City and the city centre. Crowne Plaza Rome St Peter's Hotel offers a wide range of services. For instance the St Peter's Spa, 900 sqm of leisure facilities inclusive of 25m length outdoor pool, indoor heated pool, sauna, Turkish bath, whirlpool, gym and tennis courts.

Delegates are strongly advised to make their room reservation as soon as possible due to the busy tourist season.

EPTA nor Brisk Events can guarantee room availability at the Crowne Plaza St. Peter's Hotel.

For information on other hotels in Rome, please go to http://www.romaturismo.it

Photo: Hotel Crowne Plaza St. Peter's, Rome

Photo: KCA - Colosseum, Rome

EUROPEAN PULTRUSION TECHNOLOGY ASSOCIATION

The European Pultrusion Technology Association (EPTA) is an Association formed in 1989 by the leading FRC (Fiber Reinforced Composites) Pultruders in Europe and is open for membership to all companies and organizations, wishing to participate in promoting the responsible use of Fiber Reinforced Composite Materials, and in the exchange of knowledge between members.

EPTA's mission is to support the growth of the composite profiles industry by maximising external communication efforts and having an actively contributing membership.

Sponsors of EPTA are:
* Ahlstrom Glassfibre Oy
* Akzo Nobel Polymer Chemicals BV
* Ashland Composite Polymers
* Jinling DSM Resins Co., Ltd.
* Owens Corning
* PPG Industries UK Ltd.
* Reichhold Inc.
* Saint-Gobain Vetrotex

CROWNE PLAZA HOTELS · RESORTS

Hotel Crowne Plaza St. Peter's
Via Aurelia Antica, 415
I- 00165 Rome
ITALY
Tel:+39 06 66 420
Fax: +39 06 66 37190
E-mail: stpeters@hotel-invest.com
Web: www.crowneplaza.com

EPTA

Association Secretariate:
AVK-TV GmbH
Dr. Elmar Witten
Am Hauptbahnhof 10
D- 60329 Frankfurt am Main
GERMANY
Tel: +49 69 27 10 77 0 -
Fax: +49 69 27 10 77 10
E-mail: info@avk-tv.de
Web: www.pultruders.com

The European Pultrusion Technology Association is sponsored by:

Ahlstrom

DSM

AKZO NOBEL

ASHLAND

PPG

OWENS CORNING OCV™ Reinforcements

REICHHOLD
A DIC Group Company

Final Announcement

"PROFITING FROM PULTRUDED PROFILES"

EPTA

9th World Pultrusion Conference
26-27-28 March 2008, Hotel Crowne Plaza St. Peter's
Rome, Italy

Photo's: Bas Obladen - Strukton BV, The Netherlands