

JISTES 2008 KYOTO

Final Program

Japan International SAMPE Technical Seminar 2008 Kyoto



July 15 (Tue) & 16 (Wed), 2008

DOSHISHA UNIVERSITY, Kyoto, Japan

Japan International SAMPE Technical Seminar 2008, Kyoto

“Innovative Volume Manufacturing Processing Technology for Advanced Composites”

1. Date: July 15 (Tue) & 16 (Wed), 2008

2. Venue: Doshisha University, Kambaikan Hall in Kyoto

3. The Speakers and Titles

Total 10 Speakers, 4 from Japan, 2 from U.S.A., and 4 from Europe,

4. Table-top Exhibition

For enabling attendees to understand clearly the content of lectures, table-top exhibiting desks are provided near the conference hall..

From Japan

- **PAN Based Carbon Fiber, Current and Future**

Toray Industries, Inc. Advanced Composite Materials Div. ACM Technology Dept.
Masahiro Nishihara

- **The unique properties of pitch based carbon fiber “DIALEAD[®]” and the applications, the present and the future**

Mitsubishi Plastics, Carbon Fiber Division
Akihiko Yoshiya

The demand for Pitch based carbon fiber is growing as well as that of PAN based CF. DIALEAD[®] is the trademark of a coal tar pitch based carbon fibers produced by Mitsubishi Plastics Inc which is a core business company of Mitsubishi Chemical Holdings Group. These days, machine industry has become a major market for DIALEAD[®]. The unique properties of DIALEAD[®] such as high modulus, high thermal conductivity, and extremely low thermal expansion are very effective to improve the performance of industrial machines. The behavior of DIALEAD[®] unique properties, the actual applications of DIALEAD[®] composites, and the future prospects will be presented.

- **Application of Tensioned CFRP Strip Method to an Existing Bridge.**

Nippon Steel Composites, Technical Development Department
Akihiro Tateishi, Makoto Saito,

Tensioned carbon fiber reinforced polymer (CFRP) strip method or Outplate-method® was applied to the 28 years old reinforced concrete (RC) box girder bridge in order to rehabilitate and increase the load capacity of the bridge. The Chofu Bridge had been deteriorated by 28 years of heavy traffic and had many cracks on the underside of the main girders. Before and after the CFRP application, on-site load tests of the bridge were conducted using a 45ton-weight vehicle. Results of the tensioned CFRP strip application to the bridge girders proved effective to reduce the stress in the reinforcing bars and to reduce crack widths.

- **Development of the Chain-curing RTM Process**

- extremely high productive composite manufacturing technology**

- Hiroshi Mizuno Mitsubishi Heavy Industries, Ltd.

- Kiyoshi Enomoto R&D Institute of Metal and Composites for Future Industries

Replacement of metals by composites in commercial aircraft prime structures is rapidly increasing to achieve further structural weight saving and reduce fuel consumption with a background of globally soaring oil prices. However, the mainstream of composites manufacturing technologies is still using autoclaves for curing and their production costs are higher relative to metal components manufacturing. Therefore, the reduction of the production costs in composites manufacturing are strongly needed as well as reliability and stability in their quality. We studied liquid composites molding method by the chain-curing technique as a new mean. The chain-curing technique is our original technology and has unique points such as rapid curability, shadow region curing capability, and almost no energy consumption for cure. In this paper, we focus on the innovative RTM technology utilizing the chain-curing system¹⁾ called "the chain-curing RTM". The chain-curing RTM is extremely high productive composite manufacturing technology, which clearly shows the great potential of application to aerospace structures.

From U.S.A.

- **Practical Examples of Design for High Volume Manufacturing of Composite Materials**

- Prof. Dr. Ir. Clem Hiel

- Composite Support & Solutions Inc.

The presenter will discuss relevant manufacturing experience developed on an 85 foot tall electrical transmission tower, and a tubular and tapered powerpole. A common denominator in these applications is the implementation of innovative fabric-folding technology which creates structural joint members with high shear strength. They are ideally suited for snap-joint assembly, which has yielded the latest application breakthroughs in aerospace and energy infrastructure projects.

Time tested integrated design and analysis approaches will be highlighted. These have the advantage that they allow the user to seamlessly move from the development to the prototype and into the production stage.

Ongoing experience with all composite open-top trailers will be discussed as well as a mass-produced composite part which recently received the “world innovation award.”

- **Dynamic Solutions to problematic vacuum bagging challenges**

Craig Barker, CEO, and Michael D. Kipp Chairman

ACTR (American Consulting Technology and Research)

“Explore the problems associated with the vacuum bagging of highly contoured carbon fiber parts. We will provide solutions for vacuum bagging and consolidation of parts formerly considered to be impossible.

A demonstration of the vacuum bagging of Isotruss components will be

Provided as well as the introduction of new products for the sealing and protection of carbon fiber tooling. We will also introduce Isotruss structural technology to the aerospace industry.”

From Europe

- **A two minutes Production of tube molding with tool surface heating by induction**

Alex Guichard, CEO, RocTool, France

- **Composites Implementation Challenges**

Prof. Jan Anders Månson, EPFL, Switzerland

- **Mass production of thermoplastics with continuous fibers**

Dr. Matthias Gäumann, ELCEE, Switzerland

Polymer composites are popular in sports and aircrafts, thanks to their superior performance to weight ratio with respect to many other materials. However, they are traditionally less cost competitive at the high volumes associated with commodity applications.

Integrated Processing of Polymer Composites (IPPC) is a technology that has been developed at the Swiss Federal Institute of Technology, in Lausanne, and has recently been transferred to a start-up, EELCEE SA. This technology enables high series production of molded plastic components with integrated continuous fiber reinforcements.

The presentation highlights fields and applications of IPPC, by covering technical and economic aspects. A special emphasis is given to the automotive industry, given the particularly high demand for light and affordable car components, along with more integration of functions. The presentation will also highlight some challenges related to the

implementation of novel technologies in established industries.

● **Mass Production of Thermoformed CFRP Parts with Highly-Automated Manufacturing Unit**

Prof. Christian Peters, Faserinstitut Bremen, Germany

4. Schedule:

| 7/15 (Tue.) | | 7/16 (Wed.) | |
|---------------|--|---------------|---|
| 10:00 – 10:20 | Opening Remarks | 9:30 – 10:30 | Mr. Alex Guichard LocTool, France |
| 10:20 – 11:20 | Mr. Masahiro Nishihara TORAY | 10:30 – 11:30 | Mr. Akihiro Tateishi Mr. Makoto Saito Nippon Steel Composites |
| 11:20 – 13:00 | Lunch Hour | 11:30 – 13:00 | Lunch Hour |
| 13:00 – 14:00 | Dr. Clement Hiel U.S.A. | 13:00 – 14:00 | Christian Peters Institute Bremen Germany |
| 14:00 – 15:00 | Mr. Akihiko Yoshiya Mitsubishi Plastics | 14:00 – 15:00 | Prof. Anders Månson, EPFL Switzerland |
| 15:00 – 15:20 | Coffee Break | 15:00 – 15:20 | Coffee Break |
| 15:20 – 16:20 | Mr. Michael Kipp Mr. Craig Barker ACTR | 15:20 – 16:20 | Dr. Mathius Gäumann, ELCEE Switzerland |
| 16:20 – 17:20 | Mr. Hiroshi Mizuno Mitsubishi Heavy Industries | 16:20 – 16:30 | Closing Remark |
| 17:30 – 19:30 | Banquet at Kambaikan | | |

7/15~16 Gion Festival, Pre-Festive Evening,

7/17 (Thu) Gion Festival Grand Parade

After the conference on 16th, is over, from 18:00, a Farewell Dinner party with speakers and SAMPE Japan Chapter Committee members will be held at a Japanese Restaurant in Gion area.



Pre-Festival Evening



Grand parade

Registration Fee:

| | |
|--------------|----------|
| SAMPE/Member | ¥30,000. |
| Non-Member | ¥40,000. |

Sponsored by SAMPE Japan Chapter

Chairman Mr. Sakuya Iwai , Chairman SAMPE Japan Chapter
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Yoshiaki Sakatani, Japan Mold Systems Co., Ltd.

Tsuneo Hirai, Professor Emeritus, Doshisha University

Tsutaō Katayama, Professor, Doshisha University

Kazuto Tanaka, Assistant Professor, Doshisha University

Masachika Yamane, Toyobo Co., Ltd.

Masaki Uenoyama, Teijn Techno Products

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