METYX Composites®

Fourth Composites Summit

October 22-24, 2014 • Istanbul, Turkey

Radisson Blu Hotel & Spa, Istanbul Tuzla

METYX® composites

STRENGTH. SUPPORT. SOLUTIONS.

About Us

METYX Composites, a division of Telateks A.S., has been producing high-quality textiles for more than 70 years in Istanbul, Turkey. The METYX Composites vision is driven by customer needs. Recognizing the desire for stronger, lighter structures – as well as more competitive end-products in various industries – METYX Composites was founded to provide the composites arena with the high-performance technical textiles and custom solutions needed to achieve a leading edge in today's challenging marketplace. Among the industries that METYX Composites has served for more than 10 years are the following: marine, automotive, transportation, wind energy, construction and architectural applications, infrastructure, and sports and leisure.

The METYX Composites Team

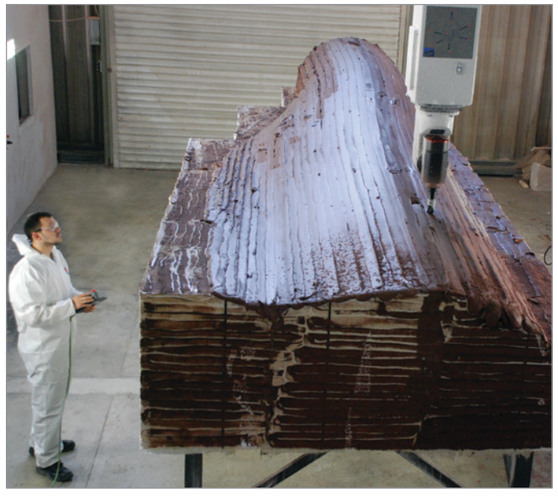
METYX Composites Istanbul Factory

METYX Composites manufactures a wide range of high-performance technical textiles: multiaxial reinforcements (e-glass, aramid, carbon, and hybrids), RTM reinforcements, woven reinforcements, and vacuum bagging products.

Also offered are comprehensive tooling and kitting services. The METYX Composites Tooling Center specializes in composite tooling, prototyping, and pattern and plug production services. The METYX Composites Kitting Center focuses on core material kitting (PVC, PET, balsa, and polyurethane), as well as fabric kitting (reinforcements and vacuum consumables).

All METYX Composites products are manufactured either at the company's 24,000-square-meter, state-of-the-art facility in Turkey or its new 12,000-square-meter manufacturing center in Kaposvar, Hungary. Only certified raw materials are used, and all manufacturing processes strictly adhere to ISO 9001:2008 standards.

As an extension of its technical textiles and composites-related products and services, METYX Composites also delivers extensive consulting and technical training both in Turkey and abroad.



METYX Composites Kitting Center

METYX Composites Tooling Center

About Our Summit Sponsors

METYX Fourth Composites Summit is brought to you by METYX Composites and our valued sponsors:

Airex A.G.
3A Composites Core Materials is a global organization within 3A Composites. The company has operations in Europe, North America, South America, India, and China. The branded products AIREX®, BALTEK®, and BANOVA® pioneered the sandwich technology nearly 70 years ago. Fabricators use these core materials to make innovative, lightweight sandwich structures for the wind energy, marine, and transportation markets, as well as for other industrial applications. 3A Composites Core Materials is the global leader in answering market and user demands for sustainable, lightweight, and resource-friendly materials that enable the production of lighter and thus more energy-efficient end products. In the wind energy market, its core materials are key factors in the growth of renewable energy generation.

DowAksa
Aksa, the world's leading provider of acrylic fiber, and The Dow Chemical Company, one of the world's leading science and technology companies, have formed a joint venture called DowAksa. DowAksa was formed to develop, manufacture, and globally market carbon fiber and derivatives to support the rapidly expanding carbon-fiber-based composites industry. DowAksa will expand on Aksa's existing carbon fiber production assets in Yalova, Turkey, and will combine the strengths of its partners to supply high-tech transportation, energy, and infrastructure solutions at lower total cost to the customer. Development plans include integrated production capability for the manufacture and supply of advanced carbon fiber composites. Upon completion, DowAksa will be the carbon fiber composites industry's only large-scale, full-service, integrated solutions provider.

Composite Integration Ltd.
Composite Integration Ltd. provides market-leading and innovative solutions to the composites industry, specializing in resin transfer molding and resin infusion processes. The company manufactures a full range of RTM and infusion machinery and ancillary equipment supported by comprehensive tooling and training services.

Duratek
Duratek has specialized in polymer chemistry for more than 40 years. Duratek designs, produces, and markets mainly epoxy, polyurethane and acrylic-based materials. Duratek produces certified epoxy-based lamination resins for composite structures (hand lamination, vacuum bagging, vacuum infusion, RTM, and L-RTM), certified wood lamination systems, and high-strength structural adhesives.

Scott Bader
Scott Bader was established in 1921 and today is a Euro 227 million global chemical company, employing more than 600 people worldwide. With manufacturing sites located around the world – including new ventures in Canada, South America, and India – Scott Bader manufactures, sells, and distributes a wide range of composites, advanced composites, adhesives, and speciality polymers to many different markets and has built a reputation for innovation, quality, and excellent customer service.

Turkish Composites Manufacturers Association
TCMA was established in May 2005. The objectives of the Association are: to foster the use of GRP in every aspect of life; to carry out activities regarding its introduction, information sharing, standardization, and development for the benefit of governmental and local authorities, users, manufacturers, and scientific institutions; to conduct scientific studies upon which to base the production and usage of GRP; and to create synergy by gathering the relevant manufacturers and scientific institutions under one roof. TCMA is also a member of American Composites Manufacturers Association (ACMA) and European Composites Industry Association (EuCIA).




About the Summit

METYX Composites Summit was born out of the belief that ongoing formal training and real-world experience are what make it possible to turn ideas into successful end products. Today, the Composites Summit is the most comprehensive event for high-performance composites in Turkey. The event amasses industry leaders and professionals from around the globe in every sector of the composites industry.

The Summit offers attendees the opportunity to take part in interactive presentations and hands-on demonstrations; to learn about new products, techniques, and industry advancements; and to network with composites industry leaders.

Due to industry growth and increased demand for expertise, METYX Fourth Composites Summit promises to be the most informative yet. It includes a one-day composites conference followed by two days of practical training (RTM School and Infusion Training). All sessions have been designed to provide the maximum amount of targeted content, including theory and practice. The goal of the Summit is to teach, challenge, and inspire all attendees.

This year's presenters represent world-renowned companies and institutions, including:

- Arkema (France)
- Composite Integration (UK)
- eCon Engineering KFT (Hungary)
- METYX Composites (Turkey)
- Neo Yachts (Italy)
- Onuk-BG (Turkey)
- Turkish Aerospace Industries (Turkey)
- Walder Mader AG (Switzerland)

Summit Highlights

Composites Conference
October 22, 2014

Learn about the latest developments in production techniques for the composites industry. Experts from various industries present case studies and best practices.

Event Highlights:

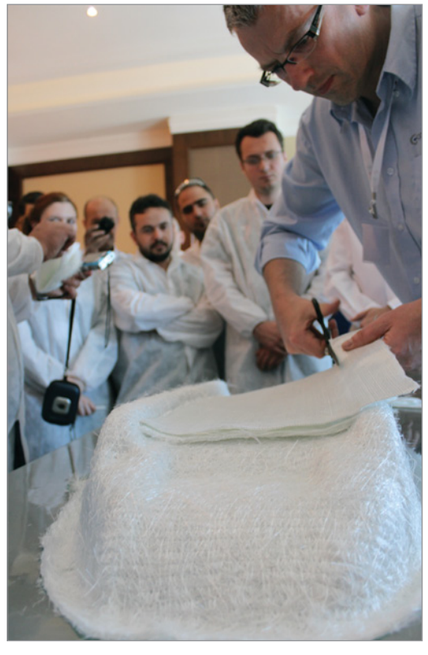
- Developments in Infusion Technology
- RTM Process and Tooling Strategies
- New Materials and Processes in Thermoplastic Composites
- Structural Use of Composites in Public Transport and New Solutions
- Case Studies for High-Tech Marine Composites
- Structural Analysis of Composites
- Use of RTM Process for Aerospace Structures
- Production Technologies of Railway Composites with FST Products

Practical Training (RTM School and Infusion Training)
October 23-24, 2014

Learn about the latest in RTM technology and infusion to enable a quick start for newcomers and advanced techniques for those with experience.

Event Highlights:

- Practical demonstrations and training in RTM and infusion
- See the latest in RTM and resin infusion technology – invaluable for newcomers and experienced molders
- Theoretical training combined with practical demonstrations
- Process techniques and troubleshooting
- Case studies illustrating industrial applications
- Overview of mold design
- Overview of mold construction and mold building materials (comprehensive training materials will be available)



Wednesday, October 22, 2014

9:15 AM
Opening Speech by METYX Composites

9:25 - 9:45 AM


METYX Composites
Composites Reinforcements, Distribution, and Consulting (Turkey)
www.metyx.com

Ugur Ustunel & Tunc Ustunel, Co-Directors

Recent Trends in Composites
This presentation will examine recent developments in the composites industry via new METYX Composites investments and product lines that deliver cutting-edge solutions to manufacturers across industries.

9:50 - 10:20 AM

Turkish Aerospace Industries
Design, Development, Modernization, and Manufacturing of Aerospace Systems (Turkey)
www.tai.com.tr

Hakki Kizilok, Chief Design Engineer

RTM Application in the Aerospace Industry
During the past decades, composites have been widely used in aerospace applications due to their favorable weight-strength ratio and stiffness. The key parameters and demands of the aerospace industry are: reducing weight, decreasing labor cost, and streamlining the process steps – all with the end goal of decreasing fabrication time. Recent developments have made possible new production methods for producing complex aerospace structures. The Resin Transfer Molding (RTM) production method yields high surface quality on both sides of the part, better dimensional tolerance, repeatability, and reduced labor cost, with a high level of integration. The presentation will provide a general overview of the complex composite shapes in aerospace that have been manufactured successfully utilizing RTM.

10:20 - 10:45 AM

ONUK-BG
Defense Systems Research and Development (Turkey)
www.onuk-bg.com

Barıs A. Gumusluoglu, Director

Design of Composite Sandwich Ship-Borne Plates
From a local strength analysis perspective, ship panels consist of plates supported by beams, webs, bulkheads, and other structures. Theoretically, structural analysis of non-rectangular and/or curved composite sandwich plates cannot be carried out with closed form analytical methods in most cases. The purpose of this presentation is to demonstrate that the use of closed-form methods based on Classical Laminated Plate Theory (CLPT) can be considered a viable approach to the analysis of sandwich plates with geometries that deviate, to a certain extent, from a perfect rectangular or flat shape. This solution can only be used as an approximation. Within the context of this presentation, the allowable limits of this deviation – above which closed-form methods start producing irrelevant results for simply supported plates of composite sandwich construction operating under evenly distributed out-of-plane pressures – will be demonstrated.

10:50 - 11:20 AM

Composite Integration
RTM Technology, Tooling, and Equipment (UK)
www.composite-integration.co.uk

Richard Bland, Co-Director

Direct Infusion: Developments in Equipment for Infusion Processes
Traditionally, infusions of large structures have been both labor intensive and wasteful. Resin handling equipment, if used, has been limited to the mixing and dispensing of resin and hardener into large containers. This presentation aims to show how the efficiency and quality of infused structures up to 500 square meters can be significantly improved by the use of techniques and processing equipment normally associated with advanced Resin Transfer Molding (RTM).

11:20 AM - 12:00 PM
Exhibit Area and Free Time

12:00 - 1:10 PM
Lunch Break

1:15 - 1:45 PM

eCon Engineering Kft.
CAE Engineering Services (Hungary)
www.econengineering.com

Marton Graf, Project Manager

Composite FEA in Vehicle Development
Structural composite components are essential to modern, high-performance vehicle design. Originating in the aerospace and marine sectors, today's composite technology has found its way into new industries – like transportation and buses – where it has been adapted in the search for lightweight design, low emissions, and a competitive electric range. Finite Element Analysis (FEA) is an important tool for designing these composite structures. Numerical simulation allows for effective design verification, simulating the effects of different layups and geometries. However, thanks to multiple layers, orthotropic materials, and different failure modes, working with composites in FEA brings an added layer of engineering complexity and a very strong symbiosis with laboratory measurements.

Our presentation showcases two industrial examples of complex composite FEA calculations: an analysis of a small aircraft wing, including numerical airflow simulation coupled with the structural results, and an innovative lightweight-autobus design with full E/V drive built into a fully composite body.

1:50 - 2:20 PM

Arkema
A Leading Global Chemical and Materials Provider (France)
www.arkema.com

Gilles Francois, Composites R&D Engineer

Thermoplastic Resins for Traditional Thermoset Processes
As various industries face demands for lighter-weight and higher-performing parts, the use of continuous fiber reinforced composites has become increasingly attractive. Thermoset resins are typically used as the matrices in these composite parts, but they can bring limitations in terms of recyclability, joining, and post-forming.

To address these concerns, Arkema has developed its new range of Elium® liquid thermoplastic resins. These materials are used in traditional processes like RTM, RTM Light, and infusion. Once formed, the final parts made with Elium® resins are thermoplastic. Then they can easily be joined with adhesives or via welding. They can even be post-formed. Perhaps most importantly, the parts can then be recycled at the end of their useful lives.

This presentation will provide a comparison with thermoset resins along different parameters and will show the ways in which Elium® liquid thermoplastic resins can help solve many common problems facing manufacturers today.

2:20 - 2:45 PM
Coffee Break

2:50 - 3:20 PM

Composite Integration
RTM Technology, Tooling, and Equipment (UK)
www.composite-integration.co.uk

Stephen Williams, Co-Director

Tooling for Closed Mold Processes
Composite Integration is a specialist in closed mold manufacturing solutions, providing equipment and tooling for RTM, VRTM, and Infusion processes. This presentation will use case studies to provide an overview of the various tooling options, including possibilities for master patterns, composite tooling, metal tooling, and flexible tooling.

3:25 - 3:55 PM

Walter Mader AG
Coating, Gelcoat, and Resin Solutions to the Railway and Mass Transport Industry (Switzerland)
www.madercomposites.com

Paul Wartenweiler, BU Manager Composites

Current and Future Production Technologies of Railway Composites with FST Products
Mader Composites is one of the only European suppliers to provide the full technology enabling customers to meet the stringent requirements of the new The European Norm EN 45545, GOST (Russia/CIS), and other regulations. Based on extensive experiences in manufacturing of fire-resistant products by contact, infusion, and RTM Light, this presentation will give an overview on standards of performance and production. New technologies will also be discussed.

4:00 - 4:30 PM

Neo Yachts & Composites
Shipyard – Fast, Comfortable Cruising & Full Carbon Sailing Yachts (Italy)
www.neoyachts.com

Paolo Semeraro, CEO

NEO400, an Innovative Marine Case Study
Neo Yachts & Composites, established in 2013, is a new yard designed to produce state-of-the-art prepreg infusion carbon production yachts. This presentation will focus on an innovative marine case study: the NEO400 sailing boat project. NEO400 carbon is a fast, yet comfortable, cruiser/racer classified as a category “A” boat. It was produced with a direct female mold with low-temperature prepreg carbon fiber. NEO400 is a high-tech and very light yacht, with 50 percent of its weight in the keel, a cutting-edge design (inside and outside), and new deck hardware/rigging solutions. In a nod to offshore racing, NEO400 was designed to be able to defend herself well in w/l races, in addition to being perfect for cruising. Future production of a 50-foot boat made with vacuum infusion and METYX Composites carbon fabrics will also be discussed.

The RTM School and Infusion Training will be led by Composite Integration, a METYX Composites partner. Composite Integration Ltd. provides practical technical support and consultancy in all aspects of closed mold processing.

Richard Bland and Stephen Williams, Co-Directors of Composite Integration, will conduct all the training.

Richard Bland and Stephen Williams

Description of RTM School:

The RTM Day will consist of a mixture of theoretical and practical work, and aims to provide a sound working understanding of the vacuum RTM process. Practical demonstrations of the process will be interspersed with presentations highlighting the key process parameters, including tooling design and construction, materials, injection and vacuum equipment, and process control. Attendees can register to receive the full Composite Integration VRTM mold building manual with comprehensive DVD training content.

Description of Infusion Training:

Following the RTM Day, the Infusion Day will also be a mixture of theoretical and practical work. Starting with the basic principles of vacuum-bag infusion, the presentations will cover the main elements of the process, including materials options, bagging techniques, and process control. Attendees will be able to gain hands-on experience with the various techniques and a good fundamental understanding of the process. Composite Integration is a world leader in the development of equipment for feeding resin directly into infusion processes. The principles of this technique will be explained and practically demonstrated.

Thursday, October 23, 2014

RTM Day

8:30 - 10:30 AM

Theoretical Presentations: Introduction to Composite Integration and RTM training, What is Resin Transfer Molding?, The closed molding options, Description of the various RTM processes (pros and cons), Factors that affect the RTM process

10:30 - 10:45 AM

Coffee

10:45 AM - 12:30 PM

Theoretical Presentations: Flow strategies (advantages and disadvantages), Using vacuum – the VRTM process, Equipment for VRTM

Practical demos (VRTM)

12:30 - 1:30 PM

Lunch

1:30 - 5:00 PM

Workshops: RTM – Mold design considerations, Tooling options for RTM and VRTM, Practical demonstration of various VRTM tooling techniques, Practical VRTM demos, Review of the day's activities and Q&A

Friday, October 24, 2014

Infusion Day

8:30 - 10:30 AM

Workshops: Introduction to infusion training, What is resin infusion?, The basic principles, The link from RTM to infusion, Factors that affect the infusion process

10:30 - 10:45 AM

Coffee

10:45 - 11:30 AM

Theoretical Presentations: Infusion flow strategies (advantages and disadvantages), Equipment for infusion – large-scale infusion processes

11:30 AM - 12:30 PM

Practical demos

12:30 - 1:30 PM

Lunch

1:30 - 5:00 PM

Infusion materials, Practical infusion demos, Review of the day's activities and Q&A

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