

Official edition
Of the Union of Composites Manufacturers
With the assistance of the magazine
«Composite World»

Industry Newsletter

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Composite Materials



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WITH THE ASSISTANCE
Of the Publishing House
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UNION OF COMPOSITES
MANUFACTURERS

1. THE UNION ACTIVITY

The International aviation and space saloon MAKS-2013



Eleventh International Aviation and Space saloon MAKS-2013 finished its activity on 1st of September 2013.

According to the tradition the aviation saloon was marked with the important events of aviation industry. During the working days of the aviation saloon the leading companies of the industry signed the contracts, memorandums of intention and agreements for delivery of the aviation technique and component parts for the total amount more than \$21.2 billion that significantly exceeds the index of 2011. The most part of the deals was concluded by the domestic aircraft factories for the civil aircrafts delivery. In particular the orders booked for the MS-21 aircraft supplemented for 82 units, for Sukhoi Superjet-100 – for 96 units. The integrated cost of the deals exceeded \$9 billion. Moreover the agreements of the “United Aircraft Corporation” and the Ministry of Defense of Russia for the support of the aircraft charterworthiness are estimated equal to \$3 billion. The leasing companies also significantly increased the number of their orders. “WEB-leasing” and “ILYUSHIN FINANCE CO. (IFC)” signed the contracts and memorandums of intentions with the aviation companies for 32 MS-21 aircrafts, 6 aircrafts of SSJ-100 and 15 aircrafts of TU-204SM (plus five aircrafts as the option), their total cost exceeded \$3.8 billion.

The number of the orders increasing from year to year for the domestic aircrafts inevitably involves the increasing of the demands in modern developments in the sphere of the materials and technologies especially in the composite sphere. Among 70 officially announced events of the business program the conference “Composite materials in civil and military aircraft industry” became one of the most significant event organized by the Union of Composite Manufacturers (“Souzcomposite”) and All-Russian Science and Research Institute of the Aviation Materials (VIAM) on August 30, 2013.

Opening the conference the executive director of the Union of Composite Manufacturers Ser-

gey Vetohin noted that «in due time our country was the leader for the composite materials production but now it has to act as “overtaking”. «To increase the production of these materials it is necessary to develop the industries – consumers of the products from composites, and the aircraft construction is one of such industries», – he noted. Sergey Vetohin informed that «the Government program “Development of the industry and increasing of its competitiveness” has been approved by the Government for such purposes», the separate subsection of which is fully dedicated to the development of the composite industry». He also noted that there are the perspectives in the creation of new composites, in the development of which the important role belongs to VIAM.



Denis Graschenkov, the Deputy General Director welcomed the participants of the conference on behalf of VIAM. «Our mutual task is to return to Russia the leading position in development and production of composite materials. We went far in this direction and during this MAKS there has been already signed a number of agreements and contracts for composites», – he declared. «Today the cooperation in this sphere grows strong – as between the domestic enterprises and with the foreign colleagues», – Denis Graschenkov pointed out.

The representatives of the science, production and education sphere took part in the conference. The visitors were welcomed by the holder of the chair of the processing technologies of non-metallic materials, Sergey Buharov on behalf of RSTU named after K. Tsciolkovskiy “MATI”.

During the conference there were presented the novelties from the market of the equipment, raw materials and materials as well as there was shared the experience of the composites application in the production of the parts, aggregates and assemblies of aviation designation.



Thus Anatoly Topolov, the head of Composite Technologies Department of CJSC "Techno-Express" told about the equipment for the production of isogrid composite systems. The newest developments in the sphere of the production of two- and three dimensional preforms from carbon fiber were presented by the General Director of "Stevik SAS" company, Victoria Ruppel.

A great interest of the conference participants was attracted to the report of the head of the laboratory of VIAM Alexandr Raskutin "Carbon and FRP composites on the base of new highly modified resin developed by FSUE "VIAM" for the application in the parts of aviation equipment». He noted that «the institute develops the composite materials not ceding to the world analogues by the characteristics" and then he told about their properties and application spheres. «In VIAM there is not only the development of new composite materials but also the prepreg production on the advanced equipment which our institute has», – Alexandr Raskutin told.



The institutions of higher education are also involved in the development of the modern materials and technologies. The representatives of RSTU named after K. Tsiolkovskiy "MATI" Sergey Buharov and Alexandr Lebedev told about their works in the research sphere of thermocompression methods and developments of thermo-stable matrixes for radar absorbing polymer composites.

The questions of the production of the molds for composite parts production were raised in the report of Zaliznyak Andrey, the head of the representative office of ThyssenKrupp VDM GmbH. He told in details about the choice of the materials for the production of the molds and presented a new development of the company - iron-nickel Co alloy PERNIFER 36, ideal for the production of carbon composite parts for the aviation due to their low coefficient of thermal expansion and high wear resistance.



The leading specialist of CJSC "BiPitron", Vladimir Zaharov told about the automatization of the development process of the structures from polymer composites for the aviation. And the Business Development Director of CJSC "RC "IKAR" Sergey Vinogradov shared his experience of the application of design system and predicting behaviour of the parts from composites on the basis of the example of the construction of AIRBUS aircrafts.

The composite materials have been successfully used in the domestic aircraft construction not for the first year. There are the companies in the industry with the unique experience in the sphere of design and production of the parts from polymer composites for aviation and space industry. LLC "SKTB "Plastik" was presented on the conference, the enterprise working with the leading aviation and space holdings of Russia: FSUE «Progress State Research and Production Space Centre "TsSKB-Progress", OJSC RSC «Energia, SPU named after S. Lavochkin, OJSC "Kamov", OJSC "Fazotron-NIIR", FSUE "RNIIRS", SPU "Energomash", the P.N. Lebedev Physical Institute of the Russian Academy of Sciences.

OJSC PSU "Saturn" was one more enterprise presented its developments for the aviation industry during the conference where the composite parts are actively used in the engine-building, in particular in the work for the production of the modern engines SaM146.



The traditional tendency to the weight reduction of the aviation structures and struggle for increasing of the power supply capacity force to use more widely the light and strength metal composite high pressure cylinders in the management systems and life necessities of the aircrafts of civil and military aviation and space vehicles. The deputy of the head of the Strength Center of CJSC "SAFIT" Konstantin Lebedev told about not only the composite gas cylinders for the aviation but also showed the natural samples. «According to the decision of the International Air Carriers Organization ICAO as of November 03, 1998 all airliners are obliged to be equipped with the oxygen breathing systems. The airliners should have from four to five 20-liters cylinders for the oxygen supply to the passengers in case of decompression of the aircraft and twenty units of 2-liters (pressure is 210 atm.) for the individual use. The two liters steel cylinders operated nowadays are exploded at the bullet tests (according to the international standards). The composite cylinders are explosion-proof and do not produce fragments during the destruction» - he summed up finishing his speech.

Every products manufacturer from composites faces the problem of dust removal at the composite parts treatment as well as cleaning of the air of the working zone from suspended and harmful volatiles substances. The production ecology is an important issue abroad and not less important in Russia. It especially concerns the production of large parts or serial production. The replies to these questions were provided by Trifonov Maksim, the Sales Director LLC "Nederman" and Oleg Kalibabchuk, the General Director LLC "AVESTA". Both companies – partners offer the complex solutions for every enterprise visually illustrating their demonstrations with the help of video.



The conference gathered more than 180 listeners from the countries of Russia and CIS. On behalf of the organizers we would like to tell thank to the reporters for the informative reports and to the listeners, especially those, who listened all reports of the program, for their interest. By the tradition the materials are available for downloading on the web page of the conference on the site of the Union of Composite Manufacturers www.uncm.ru

2. INDUSTRY NEWS

The polyethylene armor for the Russian armor systems

The Ministry of Industry and Trade ordered the development of the production technology of the armor protection of a new generation on the fiber materials base. The perspective material will substitute the steel armor protection of the army MPC, BRDM, GAZ-2330 «Tiger» and the military bugs «Kamaz» and «Ural».



According to the tender documentation for the development work with the word code «Armor-BA (Броня- БЭ)» the sheets from ultrahigh molecular polyethylene will be in the composition of composite body protection and anti-mine hull floor of MPC and military bugs. New material should protect the technique against anti-armor ground bombs, tank-piercing-incendiary bullet as well as against the impact of the aggressive natural factors.

The first pilot samples of new polymer are planned to be produced to June 2014.

By the request of the Ministry of Industry and Trade the polyethylene armor protection should withstand the attack of tactic laser, connection of the armor-piercing bullets 12.7 mm from the distance 300 meters and explosion of 8 kg of tritolo, the influence of the "fire with the capacity 10 Wt/cm² during 15 seconds, the flash pulse with the capacity 42 J/cm² with the endurance 1 second; the laser CO2 with the capacity 42 Wt/cm² during 25 seconds».

The protection sheets should not reduce the protection properties under the influence of the fuel, sea water, UV as well as under the critical temperatures (-50 и +70) of Celsius degree. At the same time they should be lighter by one third than steel one at least.

Among the tactical employment the protection sheets are planned to be used for the provision of the personnel safety of the industrial enterprises during the work with the explosive materials.

The first stage of the developments including the tests of the pilot samples should be finished to the next July. The adjustment of the production technology, drafting of the constant technological order for future products and range field tests of new armor protection will begin in December 2014. 180 million Rubles is provided from the federal budget for the development works.

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The capital government gave the status of the resident of techno polis "Moscow" to the "Nanotechnological center of the composites"

COMPOSITE
HOLDING COMPANY

The capital government gave the status of the resident of techno polis "Moscow" to the "Nanotechnological center of the composites". The corresponding decree was signed by the interim of the Mayor of Moscow Sergey Sobyenin.

The nanotechnological center of the composites (NTC) is the joint project of the Holding Company "Composite" (the factory for the production of the polyacrylic fiber "LLC "Composite-Volokno" and the enterprises of the State Corporation "Rosatom" for the production of high strength and high modulus carbon fiber –

LLC "Argon" and LLC "ZUKM" are the members of the vertically integrated holding) and the Fund of infrastructure and educational programs. NTC specializes on the performing of the engineering and development works from development of computer model to prototype creation and small batch production of the products from composites. The company also invests to the venture and industrial projects, participates in the realization of the Federal target programs.



NTC is involved in the creation of the modern product solutions from the composites for different industry sectors: construction, oil and gas industry, wind energy, nuclear industry, motor industry and the others. The nanotechnological center of the composites has the biggest park of the unique equipment for the production of ready products from the composites.

The full range of the engineering works are performed on the site of the nano technological center: development or search for the current technology, approbation and adaptation to the real requirements of the customer, performing of the design works, computation and modeling, prototyping, production of the small batches. The selection works of the suppliers of the equipment and further implementation of the technologies on the industrial production sites are being conducted as well.

The site of the techno polis "Moscow" was chosen for the location of the nanotechnological center not by accident. «We conducted the consultations and the negotiations with the Government of Moscow from the very beginning of the formation of the concept and approval of the business plan of the Nanotechnological center of the composites. The important condition to choose the territory for the location of the production was to get the preferences provided to the residents of the techno

polis "Moscow"», - the general director of the Nanotechnological center of the composites , Mikhail Stolyarov noted.

Meantime according to his words «the most important for us is the support provided to us by the Government of Moscow for stimulation of the implementation of the high technologies and application of the innovative solutions in the municipal facilities». «Moscow does not only give the favorable conditions to the innovative companies for the creation of new productions in the city but is the biggest and dynamical consumer of the high technological products», - Mikhail Stolyarov underlined.

Press service of HC «Composite »

3. ADVERTISEMENT

November 26, 2013

The Conference «Composite materials: production, application and market tendencies»

On November 26, 2013 the Union of Composite Manufacturers will conduct the 7th annual international science and practical **conference «Composite materials: production, application and market tendencies»** with the informative support of the Publishing House "World of Composites".



According to the tradition in the context of the event there will be discussed the questions concerning the production and application of the composite materials, there will be presented the newest production technologies of the products from composites for different industry sectors, the leading domestic and world companies will tell about their novelties and share their production experience.

We invite the industry companies to participate in the conference, to discuss the problems of development of the production and application of composites in Russian

and CIS; to get the actual information and to exchange the experience.

At present moment the formation of the program begins, and we invite you to take part in this conference as the reporter for one of conference subjects.

- Production of composite materials:

- ✓ Production technologies of composite materials with special and given properties;
- ✓ Equipment and technological tooling for the production of composite materials;
- ✓ Software for designing the parts from composites;
- ✓ Properties of composite materials and methods of their prediction;
- ✓ Quality control of the composite material and products on their base;
- ✓ Raw materials and components for the production of composite materials;
- ✓ Fillers, additives and modifiers;
- ✓ Tools for composite materials treatment;
- ✓ Treatment technologies of the surface of the products from composite materials, etc.

- Application of composite materials (in transport mechanic engineering, infrastructure, electronics, energy, construction and housing public utilities, in the sphere of transportation, processing and storage of the aggressive mediums as well as the oil and gas, in the production of the consumer goods, etc.)



In case of interest to speak with the report kindly ask you to provide the subject and short thesis of the speech to the organization committee beforehand. The decision about your speech will be made by the organization committee.

The requests for speech are accepted till October 31, 2013.

The requests from the listeners are accepted till November 15, 2013.



More than 150 representatives of the leading enterprises and organizations from Russia, CIS countries, Baltic and Europe participate in the event annually.

The working time of the conference: 10.00-18.00

The detailed conditions of the participation in the conference can be given by the coordinator of the conference.

The project coordinator:

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