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Special analytical export project of the United Industrial Edition

№10 (28) November, 2018

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#10 (28) November, 2018

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'Russian Aviation & Military Guide'

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C O N T E N T S

NEWS SHORTLY

- 2 'Mi-171A2 and '昂萨特' 直升机
将在高温和山区条件下试验
- 2 'KAMAZ-Master' '在 '丝绸之路-2018' 获得一切奖
- 4 俄技集团旗下控股公司在光子学领域与中国开展合作
- 4 俄罗斯直升机给老挝转交了一批维修后Mi-17直升机
- 6 Engine Components for MC-21
- 6 Aeroflot and UAC sign agreement for 100 Superjet 100 aircraft
- 8 茹科夫斯基机场旅客流量六月长大390%
- 8 俄罗斯直升机公司展示了新飞行安全系统
- 8 茹科夫斯基机场旅客流量六月长大390%
- 10 乌拉尔车箱工厂将向越南供应公路施工设备
- 10 茹科夫斯基机场开办新中国航班
- 10 Rostec国家集团介绍了极端条件专用超强笔记本电脑
- 12 For armed forces and special units

MAIN TOPICS

- 14 Vladimir Putin and Xi Jinping

INTERNATIONAL COOPERATION

- 18 RUSSIA, CHINA, BRICS

EXPORT REGULATION

- 20 Russian Defense Innovations

MAIN PHOTO

- 24 Su-30SM

该杂志的主题

- 26 苏霍伊超级100型客机
- 28 MC-21: 顺利进行验证试验
- 30 李维诺夫: '关键的任务是保障CR929具有竞争力'

BEST WORLD EXHIBITIONS

- 32 Military Show in Pretoria
- 38 ADEX-2018 in Baku

GLOBAL MARKET

- 46 Contract with India for S-400
- 48 Guides calendar 2018-2019

EDITORIAL



The best offers for ASIA

It has become already obvious and undeniable that security is becoming increasingly important among the various values of civilization. Today, for any state, the ability to reliably and securely protect the territory, residents and values is a priority.

Political situation in the world (conflicts, sanctions, threats of war and other) makes nations once again reconsider their defense possibilities. Threat of local conflicts to be evolved into global ones, failure of worldwide system of safety and nonending crisis – all of this leads to an unstable and dangerous situation.

One can predict raise of defense means market in times like this. But together with developing of defense technologies in order to safety, rivalry among sellers of weapons and defense systems increases in order to achieve such goals as increasing profits and market share. AIRSHOW CHINA 2018 presents in Zhuhai the best Russian weapons and innovations for global aerospace market, which are the undisputed world leaders on price and quality in their segments.

These exhibition shows that it is not serious about how many weapons and planes you have, but quality and possibilities of every single one of them is fact what leads to victory on the battlefield and on the global market. Other significant factor is technological independence from seller – modern technologies make it possible to shut down any device from any place of the globe if you have appropriate access. With hi-tech products, solid aftersales service and proven reliability, Russia is honest and friendly partner for all countries, ready for mutual work.

Taking part in this AIRSHOW Russia continues the policy of open partnership with the China and countries of Asia and the Pacific region. Russia has a wide product line that meets all the needs of air and space in this continent and ready propose the best technology and the best price offers.

Valeriy Stolnikov

COOPERATION WITH SOUTHERN AFRICA

Rosoboronexport took part in the Southern African Development Community (SADC) Day celebrations. 'Rosoboronexport regards the Southern African Development Community as a promising partner. It is one of the largest and most influential subregional organizations whose activities are aimed at comprehensively promoting the development of its member countries. The Community's goals and objectives largely comply with our strategy on the African continent. We are working closely with member countries of the Community in strengthening infrastructural and state security, combating terrorism and organized crime, preparing and equipping peacekeeping missions under the auspices of the Community. We are pleased to have such a strong and reliable partner in Africa,' said Rosoboronexport's Director General Alexander Mikheev.

Today, Rosoboronexport notes an upward trend in the arms market in the sub-Saharan African countries, which is due to a number of objective factors. Among them are the fight against the spread of international terrorism and Islamic radicalism, the continuing threat of maritime piracy. In addition, different units from countries in the region are actively involved in peacekeeping operations.

The Company uses a comprehensive approach to cooperation with the countries of the region, offering its partners the delivery of final products, as well as the necessary logistics support throughout their life cycle, training and the establishment of facilities for the repair and maintenance of products.

RUSSIAN LADA IN GLOBAL MARKET

LADA continues to strengthen its positions on foreign markets. It was sold 27398 cars and SKDs in 9 months of 2018 that is by 65% more vs the same period of last year. Along with that it was opened 2 new directions and 9 dealerships. Since the early year LADA cars started to be sold in two new countries – Tunisia (Tunisia) and Chile (Santiago, Punta Arenas). LADA occupies the second position in Belarus by sales results for 9 months of 2018. The brand's dealership has been actively developed here: since the early year 6 new dealerships were opened in Minsk, Gomel, Mogilev, Pinsk, Vitebsk, and Grodno, fully meeting the new standards of design and service. For 9 months of 2018, 3 new LADA dealerships were opened in Uzbekistan – in Tashkent, Dzhezak and Bukhara. By results of 9 months LADA has again occupied the first position by sales in the Republic of Kazakhstan with a market share of 22.9%. And its growth took 5.2% points vs the same period of last year.

Mi-171A2和‘昂萨特’直升机将在高温和山区条件下试验

俄罗斯直升机控股公司开始了Mi-171A2和‘昂萨特’直升机的试验Mi-171A2将在阿斯特拉罕州进行数次飞行，根据其结果计划证明其是否可以在达到+50°C温度之下使用。

进一步在纳尔奇克进行试验:机上设备将在山区地形的条件下试验。‘昂萨特’将同时在厄尔布鲁士山进行试验。据试验结果计划确认直升机在2500米以下使用可行性。

‘因为我们公司计划将‘昂萨特’和Mi-171A2在多个国家进行认证，对我们十分重要的是检查并以获得文件证明该直升机的尽可能多的功能。’俄罗斯直升机控股公司总经理安德列·博金斯基表示。

他亦指出，直升机试验结果将在潜在客户进行介绍时使用，包括2018年11月在中国珠海国际航空航天航空博览会上。



Mi-171A2多功能直升机为Mi-8/17系列直升机的深度现代化的结果。Mi-171A2的结构经过了80多个改变。直升机配有带数字控制系统的VK-2500PS-03

发动机(是Mi-28战斗直升机发动机的民用改型)。

‘昂萨特’——双发动机多功能轻直升机据证书直升机结构使之可以灵活改成货运机或七人客运机。

‘KAMAZ-Master’在‘丝绸之路-2018’获得一切奖

‘丝绸之路-2018’国际赛车会已结束。在莫斯科红场举行了赛车会闭幕式。三个冠军和货车最后段的获奖者是‘KAMAZ-Master’队的成员。一等奖由阿列克谢·卡尔吉诺夫，二等奖由艾拉特·马尔杰耶夫，最后三等奖由安通·希巴洛夫获得。

最后第七段的优胜者是马丁·万·布林克，第二个到达重点者是埃杜阿尔德·尼古拉耶夫，第三个是德米特里·斯维斯图诺夫。安德列·卡尔吉诺夫乘务组的结果是第五名。但更重要的是安德列·卡尔吉诺夫是第一次在‘丝绸之路’赛车会德胜。

‘因受伤一年没有参加赛车会的安德列表现可靠，彻底的竞争，其获得象征‘丝绸之路’优胜者的金虎是实至名归。二等奖银虎获得者是艾拉特·马尔杰耶夫乘务组，第三个登荣誉台的是安通·希巴洛夫乘务组。’‘KAMAZ-Master’队新闻专员埃里克·海鲁林表示。

据本站已告知，第八届‘丝绸之路’赛车会路过阿斯



特拉罕州、伏尔加格勒州、利佩茨克州、图拉州和卡尔梅克共和国。赛车会总路

程约为3500公里。‘丝绸之路-2018’赛车会的第二部分将今年秋季在中国举行。

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COMPONENTS FOR THE INDIA SPACE CENTRE

The Ruselectronics holding company, which is part of Russian State Corporation Rostec, has supplied ferrite components to the Space Applications Centre of the Government of India. These materials will be used in super-high-frequency devices for space satellites.

Ferrite Domen Scientific Research Institute (part of the Ruselectronics holding) has delivered microwave ferrites for the space industry to the customer. They can be used under conditions of solar radiation and other interference to precisely control wave oscillations, switch energy flows from one direction to another, and partially or fully absorb the power flow. These characteristics mean that microwave ferrites can be used as components in space microwave equipment.

‘India is continuing to actively increase its pace of space exploration and is spending more than \$1.2 billion per year in this field. The country is already ranked fifth among the space powers and intends to strengthen this position. The first supply of ferrites for Indian civilian satellites allows us to open a new area of cooperation and gain a foothold in this fast-growing market. Thanks to the expansion of cooperation with India, in 2018, we already expect to quadruple the share of exports of ferrite products compared to last year,’ says Rostec’s Executive Director, Oleg Yevtushenko. Ferrite Domen Scientific Research Institute manufactures around 40% of all ferrite products in Russia. The Space Applications Centre of the Government of India produces civilian satellites, which are used for telephone communications, radio broadcasting and satellite Internet. In addition, the organization develops optical and microwave sensors for satellites, and software for signal and image processing.

ZENIT & LEICA

Krasnogorsky Zavod, manufacturer of the Russian brand Zenit, in cooperation with Leica Camera AG, German manufacturer of premium cameras and optics, designed a new digital rangefinder camera Zenit M with a new generation lens. The Shvabe Holding, part of Rostec, has presented this product on its exhibition stand at Photokina 2018, the largest international trade fair for the photographic and imaging industries held in Cologne. One of the participants of this Russian-German project is Krasnogorsky Zavod (KMZ Zenit), one of the Russian leading designers of photographic equipment, is part of the Shvabe Holding. The Zenit M camera is technically based on the Leica M Type 240 platform, but has been modified both in terms of hardware and software.

俄技集团旗下控股公司在光子学领域与中国开展合作

俄技集团旗下的施瓦贝控股公司与中国的激光行业协会拟在国际层面上开发并应用光子学技术。施瓦贝控股公司代表与中方代表团于8月签署的关于‘POLYUS国际光子学中心’‘联营企业成立备忘录’中体现了双方所达成的共识。



备忘录由施瓦贝控股公司下属的POLYUS研究所总经理叶夫根尼·库兹涅措夫与湖北省激光行业协会会长朱晓签署。提出双方按量子级联激光器、盘形激光器、陀螺仪与陀螺罗盘等三个方向展开联合活动。双边会谈中指定了执行与协调机构。俄方相关机构是‘光子学学院’‘非赢利组织’。中方则是激光加工国家工程研究中心。

‘与中国光子学领域的专家合作无疑是公司乃至整个光子学领域的发展中重要一步。在初步工作过程中，确定了活动领域与合

作前景。我相信，通过共同努力，我们将能够取得卓越成果。’POLYUS研究所总经理叶夫根尼·库兹涅措夫称。

此外，在活动框架内举行的学术会议中，POLYUS研究所人员向中国代表团成员介绍了企业的主要活动方向，其中重点探讨了中国公司员工赴俄进修或再培训事宜。

下次会议定于今年11月在湖北省武汉市举行。届时，双方将就合作框架内联合科研实验室的设立、研究与开发领域、进修与再培训需求等问题提出建议。

俄罗斯直升机给老挝转交了一批维修后Mi-17直升机

俄罗斯直升机控股公司完成了为老挝国防部第一服务合同的履行，在庆祝电力上给发包方转交了一批Mi-17四架直升机。起重机由控股公司巡回专家组进行维修。

转交典礼在万象市空军基地举行。维修后的Mi-17由老挝国防部副部长和总司令部主任进行检查。在庆祝活动中老挝恐惧的一个机组乘坐维修后的老杨实施了示范飞行。俄罗斯直升机信息中心报道。

‘控股公司任何时候愿意给客户极为方便的条件，包括直升机设备供应以及售后服务。根据老挝方的要求我们准备了另一批Mi-17直升机的维修方案。希望决定将尽快作出’，俄罗斯直升机控股公司总经理



安德列·博金斯指出。老挝飞机有20多俄罗斯控股公司生产的民用和军用直升机。Mi-8/17除老使用Ka-32T重型多用途直升机。

活动结束之际双方进行了有关新直升机设备供应和已供应直升机进一步合作的谈判。

HELD UNDER THE PATRONAGE OF HIS EXCELLENCY, PRESIDENT ABDEL FATTAH EL-SISI
THE PRESIDENT OF THE ARAB REPUBLIC OF EGYPT, THE SUPREME COMMANDER OF THE EGYPTIAN ARMED FORCES

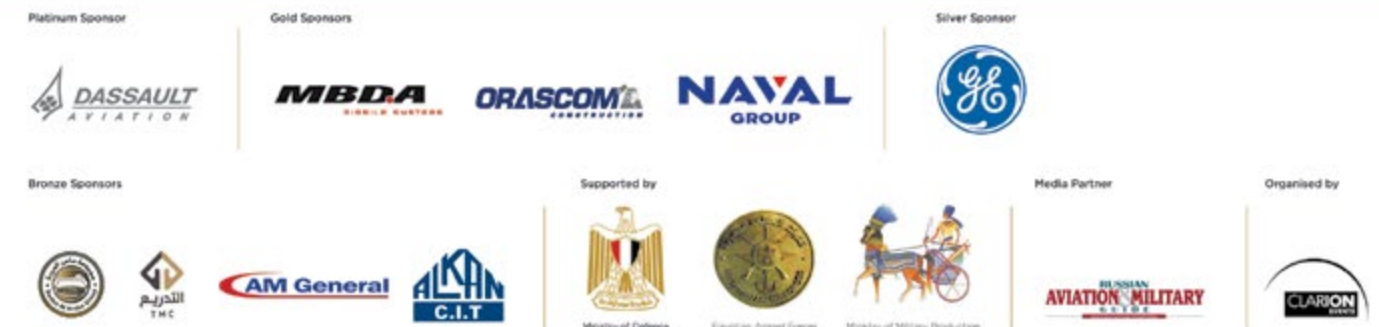


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TEST COMPLEX FOR PD-35

United Engine Corporation (UEC), a part of Rostec, will build a test complex for the prospective PD-35 aircraft engine, which is proposed to be used in the Russian-Chinese CR929 aircraft. The testing facilities will be created at JSC 'UEC-PERM ENGINE'. There will be about 40,000 square meters of production, administration and accommodation, and engineering areas with state-of-the-art equipment on the premises of the out-of-town test facility in Russia's Perm Krai. The cost of the project is about \$300 million, the first test stands will be built in 2021.

'The most important objectives during the implementation of the prospective PD-35 project include exhaustive tests of both separate subassemblies and full-size engines. To achieve this, we are creating infrastructure that meets the latest requirements. We have already started preparing designs for facilities. I would like to remind that PD-35 is one of the most significant developments in Russian aviation. I am convinced that the joint project on creating the engine for the prospective Russian-Chinese CR929 aircraft, based on the PD-35, will combine the best technological and managerial competencies of the two countries and will become an example of successful international partnership in the sphere of high technology', said Victor Kladov, Director for International Cooperation and Regional Policy Department of Rostec. UEC started the development of the PD-35 engine in the summer of 2016. The bypass turbofan engine is expected to have increased thrust (up to 35 tonnes) and to be installed in prospective wide-body aircraft.

The PD-35 project widely uses the scientific and technical reserve obtained during the development of the newest Russian PD-14 engine for the prospective MS-21-300 aircraft. Currently, the design of the PD-35 engine has been determined, cooperation between industry enterprises has been established, and issues related to breakthrough technologies for project implementation have been identified. This allows creating a competitive engine of the late 2020s. A family of high thrust engines may be created on the PD-35 base. On September 20, 2017, during Aviation Expo China 2017 held in Beijing, UEC signed a cooperation memorandum with the Chinese company AECC Commercial Aircraft Engine Co., Ltd. (AECC CAE) on the development of a gas turbine engine for the prospective CR929 Russian-Chinese long range wide-body aircraft (LRWBA).

Rostec continues to implement a large-scale program on developing its Aviation Cluster in accordance with the approved strategy stipulating the main goals such as increasing ruble revenue by an average of 17% until 2025, increasing the share of civilian products in the revenue to 50%, improving operational efficiency and getting into global markets.

Engine Components for MC-21

United Engine Corporation (UEC) and the All-Russian Institute of Light Alloys (VILS), both forming part of Rostec, will prolong the life of the PD-14 engine by using a new heat-resistant granulated alloy.

The new alloy has been used for making high pressure compressor discs and a turbine for the PD-14 engine created for the first Russian short and medium-haul MC-21 aircraft. According to current estimates, its implementation, along with other innovative technical solutions, will increase the life of these components of domestic engines for civil aviation from 5 to 30 thousand flight cycles.

'PD-14 is the result of the broad cooperation work of our enterprises. The innovative solutions applied in it, including new alloys, allowed to create a truly modern, powerful and highly resourced aviation engine. The first flight of the prototype MC-



21 with PD-14 is scheduled for the second quarter of 2019. Deliveries of PD-14 for MC-21 will begin in 2021', said Anatoliy Serdyukov, Industrial Director of Rostec's Aviation Cluster.

In 2019 the All-Russian Institute of Light Alloys (VILS) will conduct

additional research in the interests of UEC, which will allow more extensive use of this technology for engines of civil aircraft. The research includes development of new alloys and products for a new generation of PD-35 engines based on these alloys.

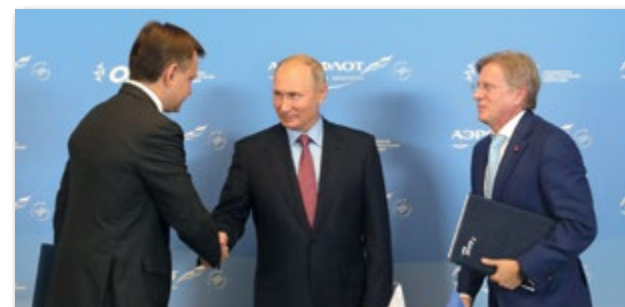
Aeroflot and UAC sign agreement for 100 Superjet 100 aircraft

Aeroflot and the United Aircraft Corporation have signed an agreement for delivery to Aeroflot, the national carrier, of 100 Superjet 100 (SSJ100) aircraft. The document was signed by Aeroflot CEO Vitaly Saveliev and UAC President Yuri Slyusar during the Eastern Economic Forum in the presence of President of the Russian Federation Vladimir Putin.

Under the agreement UAC will deliver 100 SSJ100 aircraft to Aeroflot between 2019 and 2026. The aircraft will be configured with 12 seats in business class and 75 seats in economy class. The final contract documents will be signed after the parties agree on material terms of the transaction and obtain necessary corporate approvals.

Vitaly Saveliev, CEO of PJSC Aeroflot, said:

'We have signed the largest aircraft delivery agreement in Aeroflot's history, under which the Company will receive 100 modern Russian-built SSJ100 aircraft. Including the expected delivery of 50 MC-21, by 2026 Aeroflot will operate 200 Russian-built aircraft. Aeroflot has historically been the largest operator of Russian aircraft and has helped to improve all Russian aircraft models currently in operation. It is Aeroflot's top priority to act in the interests of Russian aviation and our country.'



Yuri Slyusar, President of PJSC UAC, said:

'We have worked with Aeroflot for many years. As the first and largest operator of SSJ100 aircraft, Aeroflot has significantly helped the development of Russia's aircraft industry. The signing of the new agreement marks the next stage of our cooperation and joint contribution to the development of the aircraft industry and the expansion of regional and international air connections. We are happy to continue working with Russia's leading airline.'

Aeroflot currently operates 49 SSJ100 aircraft and is expecting the delivery of the 50th aircraft. Aeroflot's first commercial SSJ100 flight took place on 16 June 2011 between Moscow and Saint Petersburg. Today, SSJ100 aircraft operate on routes to Belgorod, Nizhny Novgorod, Orenburg, Perm, Saratov, Sochi, Syktyvkar, Tyumen, Chelyabinsk and other cities. SSJ100 aircraft also fly to international destinations including Dresden, Vilnius, Gothenburg, Bucharest, Zagreb, Ljubljana, Riga, Sofia and Tivat.

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HELICOPTER ENGINE MAINTENANCE

JSC UEC-Klimov and Vietnamese Helicopter Technical Service Company have signed a distributor agreement on maintenance of TV3-117 and VK-2500 civil helicopter engines. The companies will support the operation of the engines and main gearboxes in 12 Asian countries. For this purpose, the Center for Integrated Logistics Support will be created in Vũng Tàu (Vietnam) by the end of this year. The partners have signed the agreement today in Saint Petersburg. Within the framework of the deal, Helicopter Technical Service Company, that provides maintenance of Russian built helicopters, will distribute TV3-117 and VK-2500 civil helicopter engines designed by UEC-Klimov in Indonesia, Malaysia, Cambodia, Thailand, Vietnam, Myanmar, Laos, Australia, India, China, Bangladesh and Sri Lanka. UEC-Klimov will repair power units, supply engines, components, assemblies and spare parts, and train the staff in maintenance of civil engines. Within implementation of the agreement, the Center for Integrated Logistics Support of UEC-Klimov will be established in Vũng Tàu (Vietnam) by the end of this year. It will include a center for mid-life repair of civil helicopter engines, a warehouse of spare parts and assemblies, and a representative office of UEC-Klimov. The aviation authorities of the Socialist Republic of Vietnam are expected to issue the certificate to the Center in December 2018 after completion of pilot repair of one engine.

NEW ARTILLERY PROJECTILE

Techmash Concern (part of Rostec) is developing a concept for a new 152 mm correctable artillery projectile. Its key feature is trajectory correction in the final stage of flight, i.e., immediately after firing, the ammunition piece will move ballistically, like a conventional projectile, but in the vicinity of the target, it will use its own control system to correct its trajectory. Now design specifications and general outline of the new projectile are being developed. The design does not have a name yet. The new projectile should fall in the middle price range – cheaper than guided projectiles like the Krasnopol type, but more expensive than conventional projectiles. 'Rostec pays special attention to developing and producing high tech products and promoting them on the international market. I am sure the new correctable projectiles that are being developed by Techmash will interest our foreign partners in a number of countries, including the Middle East,' said Sergey Abramov Industrial Director of the cluster of conventional weapons, ammunition and special chemistry at Rostec.

茹科夫斯基机场旅客流量六月长大390%

2018年六月茹科夫斯基国际机场旅客流量六月与去年同期相比长大390%，首次超过月旅客人数10万的指标。机场的发展由Ramport Aero公司管理，是Rostec国家集团与Avia Soultions Group国际航空控股公司的合资企业。

对所达成的结果作出评价时 Ramport Aero 总经理托马斯·崙什维拉指出：‘十万旅客对我们而言心理上是个重要的边界。在很大程度上这意味着对实质上新水平的转变，可以肯定地说机场的发展方向是正确的。目前的增长部分是足球世界杯旅客流量增大而导致的。但与其无关亦如此结果在预料之内。其主要原因在于路线网络的扩大以及已开定期航班次数的增加。我们自信地走到此处，我们最近的计划是巩固并发扬成果’。

今年对茹科夫斯基而言较为成功，首六个月内运输472877名旅客，超过2017年一年的人数。旅客流量的增长由合作伙伴航空公司的积极营业和主要路线的航班次数



而保证。最受旅客欢迎的是往明斯克、台拉维夫和辛菲罗波尔的航班。在俄中航空交通的发展上也达成了重要成果：目前茹科夫斯基往广州、西安、海口、济南进行定期航班。

茹科夫斯基机场继续积极地发展国内外路线网络并吸引新航空公司合作。

2016年开办的茹科夫斯基机场离莫斯科有23公里，在曾经拉姆斯科耶机场的位置，有欧洲最长的跑道(5500米)。因此可以接受任何类型的客运、货运航空器。茹科夫斯基与塔吉克斯坦、吉尔吉斯斯坦、白罗斯、土耳其、以色列、中国、格鲁吉亚、意大利的国际机场保持航空交通。据2017年营业结果，茹科夫斯基机场获得了‘俄罗斯航空大门’的旅客流量五十万以内国际机场奖。

俄罗斯直升机公司展示了新飞行安全系统

Rostec国家集团俄罗斯直升机控股公司旗下喀山直升机工厂专家在Innoprom-2018国际工业展览会上展示了安装积极减震系统、能量吸收座椅以及一块铺板的展示台。专门安装于‘昂萨特’直升机的系统保证飞行舒适，添加安全措施。

该系统可以将驾驶舱内震动降低至舒适的水平。直升机首套经过认真的积极减震系统被安装于正在运用的成批生产的‘昂萨特’VIP改型。目前按客户的要求可以在直升机上安装此类系统。

能量吸收乘客座椅用加强塑料纤维制造。座椅靠着乘客一面的外表面全部用芳纶以减少事故时造成人身损伤。为了减少发生事故时损伤脊椎的风险，座椅内装有能量吸收系统，另外座椅可以全部往下移动。能



量吸收座椅在客运改型和VIP改型均可使用。

‘昂萨特’为轻型双发动机多功能直升机，在喀山直

升机工厂成片生产。据证书直升机结构使之可以灵活变形为货运机或七人客运机。

A T A N E W L E V E L

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FOR DRONE MANUFACTURERS

Techmash (part of Rostec) is ready to adapt ammunition to meet the needs of drone manufacturers. Companies of the concern produce a wide range of air ammunition, such as aerial bombs whose weight ranges between 2.5 kg and 50 kg. Rostec is actively expanding military-technical cooperation with its partners, including organization of licensed production of its ammunition abroad. In 2014 Rosoboronexport signed a contract for transferring a license for production of Techmash's Mango tank ammunition to India. Rostec continues to implement a large-scale program on developing its weapons cluster in accordance with the approved strategy stipulating the main goals such as increasing revenue by an average of 17% in rubles until 2025 and improving operational efficiency and getting into global markets.

CONTRACT FOR S-400

On October 5, 2018, in Delhi Rosoboronexport (part of the Rostec State Corporation) signed a contract to supply India with the S-400 Triumph long-range air defense missile systems (ADMS). 'The S-400 supply agreement with India is a new landmark in the history of military-technical cooperation between our countries. The deal demonstrates the highest level of trust and understanding between India and Russia. I am sure that this agreement will also be a new impulse for strengthening and deepening our cooperation in civil industry,' said the Head of Rostec State Corporation Sergey Chemezov.

The main advantage of the S-400 lies in its versatility. The system is able to engage both all types of aerodynamic targets and ballistic missiles, up to intermediate-range ballistic missiles. The Triumph is far superior to its foreign counterparts in maximum engagement range and minimum engagement altitude, emplacement/displacement time, as well as in a number of other key characteristics.

'The contract for the supply of S-400 Triumph air defense missile systems to India is the biggest for the entire period of military-technical cooperation between Russia and India and the largest in history of Rosoboronexport. Today we begin to execute it' said the Head of Rosoboronexport Alexander Mikheev.

Regular meetings between the leaders of Russia and India give strong impetus to the development of relations between the countries and play an important role in expanding and strengthening military-technical cooperation, which has been underway since 1960. Since then, exports of Russian military products to India have exceeded \$65 billion.

乌拉尔车箱工厂将向越南供应公路施工设备

Rostec国家集团的乌拉尔车箱工厂旗下车里雅宾斯克拖拉机工厂-乌拉尔拖拉机公司与越南俄发公司签订了B10M.0100E拖拉机供应合同。拖拉机工厂的代理商在南越南山村公里维修与重建的国家投标项目中中标。

俄发公司周洪鸿表示，国内预算无法让地区自行购物设备，因此国家协助山区公民提供设备并负责部分基础设施投资。B10M.0100E拖拉机乃是如此投资项目。成功使用车里雅宾斯克施工设备以后越方会考虑再次获得二辆同样的拖拉机。

八月为止设备应当已组装、试用、喷涂并准备发送给客户。拖拉机将以拆开状用40尺集装箱运送到越南。代理商具有适当的生产基地和有资格的机械员，可以在场自力组装拖拉机。代理商亦将设备交付使用并将提供保修等售后服务。



茹科夫斯基机场开办新中国航班

Rostec国家集团与Avia Solutions Group国际航空控股公司的合资企业Ramport Aero公司开发的茹科夫斯基国际机场报道开办新航班。现在可以从茹科夫斯基坐飞机直达中国南宁。新航班8月8日由Pegas Fly公司开始经营。据时刻表航班将一周一次每周三进行。

'中国与俄罗斯之间的航空通行是茹科夫斯基发展最快的国际航班。自2017年12月至广州第一次航班后开办了六个新的航班，而我们有任何理由继续开发该项目。我们原来设计的目标为在茹科夫斯基建造可靠的俄罗斯与中国之间的航空桥梁，变得越

来越进'。Ramport Aero股份公司总经理托马斯·威什伟拉关于开新航班说明。

南宁为Pegas Fly在发展中国旅游共同项目之下从茹科夫斯基开办的第七个航班。与广州、西安、福州、海口、济南、太原等六个航班一样，南宁航班的载客程度进100%。

Rostec国家集团介绍了极端条件专用超强笔记本电脑

Rostec国家集团旗下的俄罗斯电子控股公司在Innoprom-2018国际工业展览会上介绍了成片生产的新版本俄罗斯国产极端条件专用安全笔记本电脑。电脑的计算核基于俄罗斯厄尔布鲁士1S+处理器。

'信息工业领域进口替代为Rostec的关键任务之一。许多国家集团专家进行该领域的系统性研究。此工作在信息安全威胁日益增加的条件下特别重要。我们创造的产品基于国产安全厄尔布鲁士平台并由俄罗斯开发的软件控制。此方法尽可能保护用户预防信息披露'。Rostec国家集团联络总经理叶卡捷丽娜·芭拉诺娃叙述。

笔记本的密封外壳用超强铝合金制造，对震动、冲击、极端温度(-20至+55°C)、浸湿等外部因素的影响具有耐久性。ES1866的模块结构可以不改变结构而选择中央处理机构架。电脑具有17吋屏幕，外尺寸41.3cm长、34cm宽、8cm厚。



展览会上展示的电脑由俄罗斯厄尔布鲁士操作系统控制，但亦可安装任何其他操作系统，包括Astra Linux专用系统。

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Rosoboronexport (part of the Rostec State Corporation) took part in the 22th International State Security Exhibition, Interpolitex 2018 (VDNKh, Moscow). During Interpolitex 2018, Rosoboronexport undertook aggressive marketing efforts to promote the entire range of security products for security agencies and private partners of foreign countries. The Company has invited over 80 delegations from more than 60 countries of the world to the exhibition.

Promotion of state and infrastructure security tools and services to the world market has been chosen as one of the drivers of achieving Rosoboronexport's strategic objectives. An unprecedented rise in terrorist and extremist threats in almost all regions of the world reinforces the urgency of this area of activities. The Russian industry has a high level of competence in these matters, while the practicality and a wide range of use of weapons, military and special equipment produced in our country have been repeatedly proved in actual combat conditions,' said Rosoboronexport's Director General Alexander Mikhnev.

The exhibition was held in three halls of Pavilion No. 75 and in an open area totaling over 25,000 square meters. Rosoboronexport's exhibit comprised more than 100 models of weapons and military equipment developed and produced by Russian

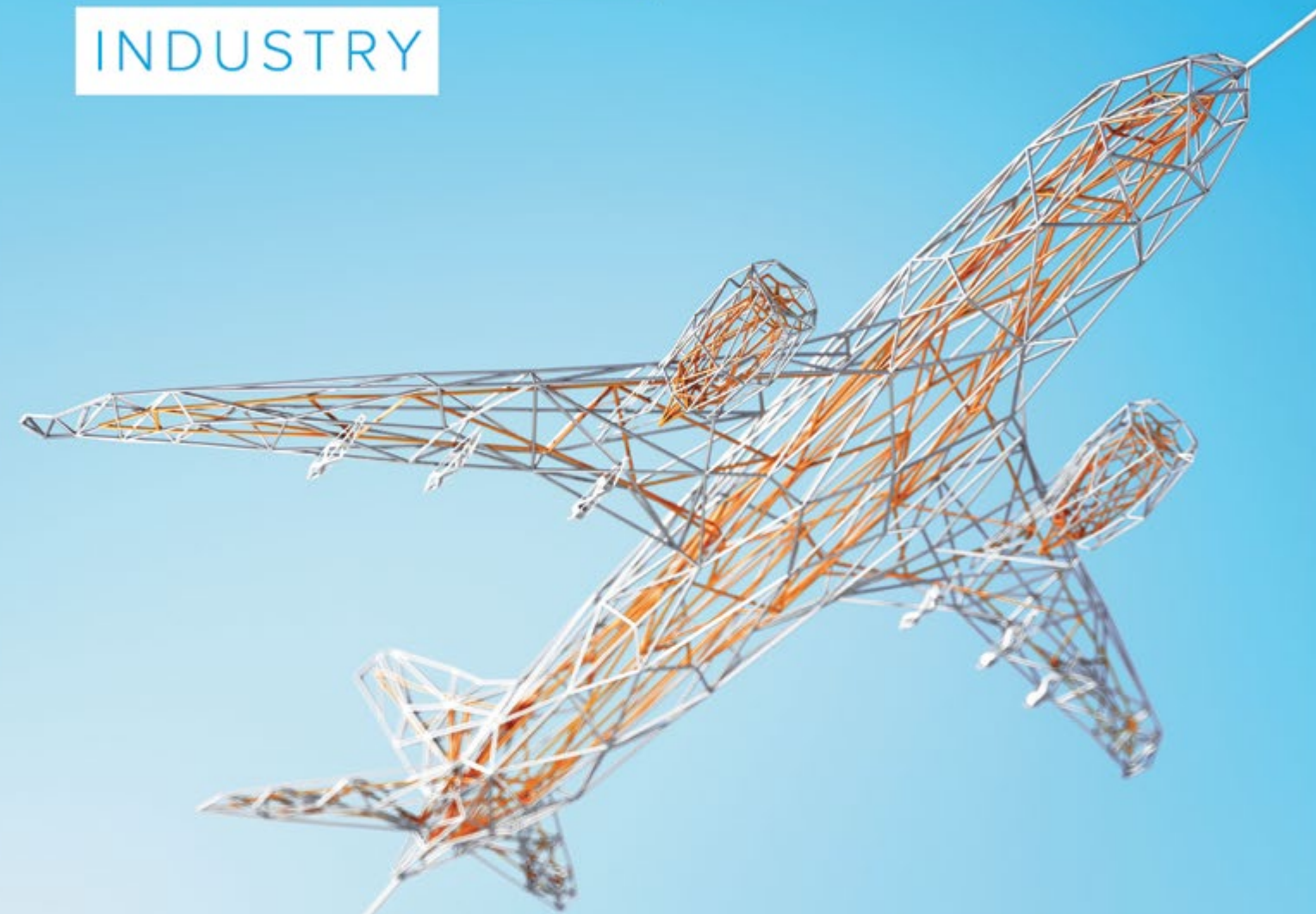
defense enterprises. At the Company's stand, experts tested skills in shooting the Kalashnikov MMG-AK-101 assault rifle and MP-446 Viking self-loading pistol mockups on the SKAT small arms trainer.

At Interpolitex 2018, Rosoboronexport also showcases a wide range of means of ensuring law and order, combating terrorism, protecting high-priority and critical infrastructure facilities, extended borders, as well as anti-UAV systems, electronic warfare capabilities and confidential communication facilities.

Equipment offered by Rosoboronexport for the armed forces and special units for combating terrorism and organized crime were presented at a static display. It is very popular in many regions of the world and includes the KAMAZ-53949 mine-resistant vehicle of the Typhoon-K family, the Tigr special wheeled armored vehicle, and also special vehicles on the Ural chassis.

/IA&MG/

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VLADIMIR PUTIN and XI JINPING

Relations between Russia and China are currently on the rise. They demonstrate the embodiment of the best principles of partnership and justice. Both in the political and economic spheres, we observe surprising mutual understanding, interaction and perspectivity. To a large extent, the guarantor of these relations is the interaction of the leaders of the two countries – President of the People's Republic of China Xi Jinping and President of the Russian Federation Vladimir Putin.

In early October, this year Vladimir Putin sent a message of greetings to President of the People's Republic of China Xi Jinping on the Republic's 69th anniversary, where he said: 'Under your guidance China has achieved impressive successes. The Chinese economy is growing at high speed, as is the prosperity of your country's citizens. Plans have been approved for national economic development up to 2035 and to 2050. Beijing's prestige in the global arena is growing,' the Russian leader stressed in his message.

The President praised the progress in the Russian-Chinese strategic partnership, which is on the upswing: the two nations have stepped up political dialogue, mutually advantageous cooperation in trade and the economy, science and technology, humanitarian and other areas and are coordinating efforts in resolving regional and global problems. Vladimir Putin reaffirmed his readiness for further joint work with China's President on the bilateral and international agendas.

Also in September of this year, a large meeting of the two leaders took place in Vladivostok. Vladimir Putin

and Xi Jinping made press statements following their talks.

Vladimir Putin said after it: 'Allow me to begin by expressing my gratitude to President of China Xi Jinping for accepting our invitation to attend the Eastern Economic Forum in Vladivostok, for the first time as the main guest. President Xi is accompanied in Vladivostok by a large delegation, which includes senior government officials, representatives of regional governments and business leaders.

As usual, we paid special attention to trade and economic cooperation.

'Russia and China reaffirmed their interest in expanding the use of national currencies in bilateral deals, which would improve the stability of banking services during export and import transactions under the risky conditions on the global markets.'

Vladimir Putin



We noted with satisfaction that bilateral trade increased by almost one third in the first six months of the year, reaching \$50 billion. We have every reason to believe that by the end of the year, trade will reach a record high of \$100 billion. The signing in May 2018 of the Agreement on Trade and Economic Cooperation between the EAEU and China creates additional opportunities for expanding bilateral trade flows.

Russia and China reaffirmed their interest in expanding the use of national currencies in bilateral deals, which would improve the stability of banking services during export and import transactions under the risky conditions on the global markets.

Energy is an important area of cooperation. Last year, Russia supplied 30 million tonnes of oil to China as part of intergovernmental agreements, or over 52 million tonnes

when commercial deals are taken into account.

The construction of the Power of Siberia pipeline is being carried out as planned. The launch is scheduled for late 2019. Agreement has been reached on the main conditions for gas supply from the Far East. Chinese investors own a large share in the Yamal LNG project. Clients in 14 countries, including China, have received four million tonnes of liquefied nat-

'Much work is being done by the Intergovernmental Commission for Cooperation and Development of the Far East and Baikal Region of Russia and Northeast China. The second meeting of the commission in Dalian in August focused on the expansion of the border infrastructure and international transport corridors. Our humanitarian ties are multifaceted. The citizens of both countries show an increasing interest in mutual tourism. I must note that a record number of Chinese fans, about 70,000, visited the FIFA World Cup in Russia.'

Vladimir Putin





'We are pleased to see that, step by step, joint efforts are turning the political advantages and strategic values of our bilateral relations into substantive results of cooperation. The bilateral trade grew to \$58.3 billion during the first seven months of this year, which is 25.8 percent higher than during the same period last year.'

Xi Jinping

ural gas from this enterprise since December 2017.

China imports a large proportion of its electricity and coal from Russia. Russian-Chinese cooperation in the peaceful atom sphere is also developing. The first stage of the Tianwan Nuclear Power Plant is already in operation. This year, the third unit has been completed and the fourth is soon to be ready. Rosatom plans to build two more units there.

We also note the expanding cooperation in science, in the peaceful use of nuclear energy. In addition, cooperation in agriculture is developing. Exports of Russian agricultural products to China increased by more than 50 percent during the first six months of this year: for example, 656,000 tonnes of grain were exported, more than during the whole of 2017.

We continue negotiations aimed at increasing the number of the Russian regions that can export wheat to China and at simplifying mutual supplies of meat and dairy products.

We consider the strengthening of direct ties between Russian regions and Chinese provinces to be especially important. The 2018–2019 Years of Interregional Cooperation should promote this.

President Xi Jinping and I will also meet with the participants of the roundtable discussion involving heads of Russian and Chinese regions.

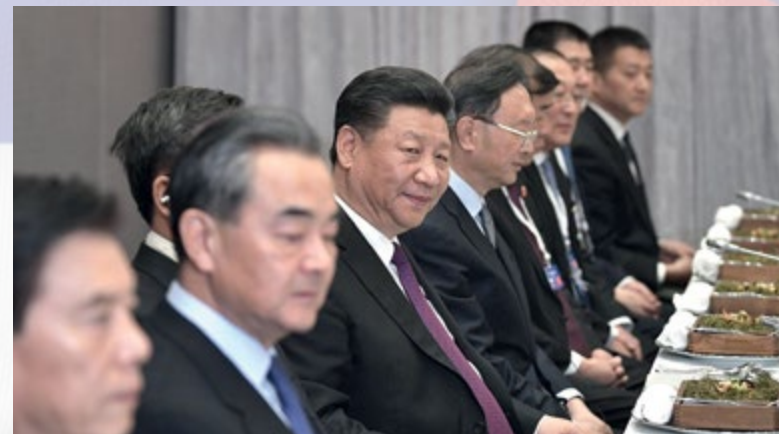
Much work is being done by the Intergovernmental Commission for Cooperation and Development of the Far East and Baikal Region of Russia and Northeast China. The second meeting of the commission in Dalian in August focused on the expansion

of the border infrastructure and international transport corridors.

Our humanitarian ties are multifaceted. The citizens of both countries show an increasing interest in mutual tourism. I must note that a record number of Chinese fans, about 70,000, visited the FIFA World Cup in Russia.

Our cooperation in education, culture, sports, and youth exchanges is deepening.

We can see growing interaction between our countries in international organisations such as the UN, the Shanghai Cooperation Organisation, BRICS, the G20, and others. We will continue our joint efforts towards political and diplomatic settlement on the Korean Peninsula in accordance with the Russian-Chinese roadmap.



We support the steps taken by the leadership of South and North Korea to restore bilateral relations and hope that the next inter-Korean summit in Pyongyang will be effective. We consider the normalisation of relations between North Korea and the United States an important component in the overall stabilisation process on the Korean Peninsula.'

Xi Jinping said: 'This is my seventh visit to Russia as President of China but it is the first time I take part in the Eastern Economic Forum. I was in Vladivostok eight years ago. This time I see a city that looks both familiar as well as new. I am sincerely happy that the city is developing dynamically.'

Today in the afternoon President Putin and I held sincere, deep and fruitful talks, discussed a wide range of matters related to bilateral relations and the topical international agenda and reached important agreements. After this we continued our joint programme: we have a roundtable discussion with the heads of Chinese and Russian regions planned. All these events are very important and representative; they show how wide and

deep our cooperation is. Tomorrow President Putin and I will take part in the 4th Eastern Economic Forum where we will discuss cooperation and development plans with countries of the region.

During the last four months President Putin and I have already had three meetings. This intensity of contacts proves the high level and

special character of Russian-Chinese relations and stresses their priority in our foreign policy. Spanning over a period up until the close of the year President Putin and I have a number of other meetings scheduled which will take place at important events to continue our contacts.



The President and I agree that since the beginning of this year Russian-Chinese relations have been showing dynamic growth, have entered a new era of rapid development and are reaching a higher level. The parties reaffirmed firm mutual support in the choice of the development path that agrees with the national features of both countries as well as our security and development interests. All of this can serve as an example of what relations should be like between states and neighbour countries.

We are pleased to see that, step by step, joint efforts are turning the political advantages and strategic values of our bilateral relations into substantive results of cooperation. The bilateral trade grew to \$58.3 billion during the first seven months of this year, which is 25.8 percent higher than during the same period last year.

Our trade is making progress. Both sides are actively working on the rapprochement of the projects One Belt, One Road and the EAEU, promoting large strategic projects in the energy sector, aviation, space and transport links and also developing our cooperation in new spheres, such as finance, agriculture, and e-commerce. Cooperation is impressive both in quantity and quality, it's being filled with new content and its borders are expanding.

We are developing our cultural and humanitarian cooperation. The ties between citizens of our coun-

tries are becoming increasingly closer. Records are being broken one after another when it comes to the number of student exchanges and tourists. We are particularly pleased to note the strengthening of the mutual understanding and friendship among young people.

The Ocean Russian Children's Centre in Vladivostok is the best example of love and friendship and demonstrates the true feelings of our young people. I am sure that this will build up the inexhaustible strength of friendship between China and Russia.

regional cooperation and the establishment of twin ties between cities, provinces and regions, and all-round interregional cooperation for promoting friendship of our nations. I am sure that tomorrow's Eastern Economic Forum will give a fresh impetus to the deepening of interregional cooperation in the Far East as well as other areas.

As permanent members of the UN Security Council and leading countries in the developing markets, China and Russia bear enormous responsibility for the maintenance of peace and stability together with the promotion of the development and prosperity all over the world.

We have similar or identical positions on international matters, broad common interests and firm foundations for cooperation. China-Russia cooperation in maintaining equality, justice, peace and stability throughout the entire world is gaining ever more importance against a backdrop of growing instability and unpredictability on a global scale.

Together with our Russian colleagues we will be promoting our fruitful cooperation in international affairs

'Together with our Russian colleagues we will be promoting our fruitful cooperation in international affairs and step up our coordination at multilateral venues, such as the UN, SCO, and BRICS. In cooperation with the international community we will facilitate political settlement of urgent matters and hot spots and firmly uphold the goals and principles of the UN Charter. We will work together against the unilateral approach and trade protectionism, and for the creation of a new type of international relations and common destiny of humankind.'

Xi Jinping

This and next years are years of interregional cooperation between China and Russia. A number of major events are being held in this connection. The regional cooperation mechanism in the formats Northeast of China – Russia's Far East and the Yangtze Volga rivers is developing. Contacts and cooperation between other regions of our countries are also growing.

President Putin and I reaffirm our active support for comprehensive inter-

and step up our coordination at multilateral venues, such as the UN, SCO, and BRICS. In cooperation with the international community we will facilitate political settlement of urgent matters and hot spots and firmly uphold the goals and principles of the UN Charter. We will work together against the unilateral approach and trade protectionism, and for the creation of a new type of international relations and common destiny of humankind.' /IA&TG/



RUSSIA, CHINA, BRICS

In Johannesburg (South Africa) there was the 10th summit BRICS, where the leaders of Brazil, Russia, India, China and South Africa were to consider the current situation and prospects for cooperation within BRICS in various areas, the development of BRICS and priorities of the strategic partnership. They will also discuss important current issues on the global and regional agenda, including problems of joint counteraction to modern challenges and threats. The summit programme included a meeting between the BRICS leaders and invited leaders of African and other countries. Vladimir Putin was held a number of bilateral talks with the heads of state and government participating in the summit.

Summit participants discussed steps to further improve the BRICS format, promote political, security and trade cooperation, and coordinate efforts regarding regional problems, including the developments in Syria and the Middle East in general, a settlement on the Korean Peninsula and the Iranian nuclear programme.

Vladimir Putin attended a meeting of BRICS leaders with delegation heads from invited African states and chairs of international associations. Those invited included the leaders of African countries, namely, Angola, Botswana, Ethiopia, Gabon, Lesotho, Madagascar, Mauritius,

Malawi, Mozambique, Namibia, Rwanda, Senegal, the Seychelles, Tanzania, Togo, Uganda, Zambia and Zimbabwe. The meeting was also attended by the heads of Argentina (the current chair of the G20), Turkey (the current chair of the Organisation of Islamic Cooperation) and Jamaica (the current chair of the Caribbean Community).

At the summit President of Russia Vladimir Putin said: 'The advantage of BRICS as a format is that it is free of all the red tape you find in many other associations like this. As President of Brazil, Michel Temer said today, BRICS is an organic association of countries that have many things in common:

they have many shared interests and common approaches to addressing challenges that are relevant to all of humanity, including Russia.

In fact, there is no formal leader within BRICS. All decisions are taken by consensus with full respect for the interests of all the participants in this organisation. This is one of its key advantages. Today, we also mentioned the fact that many countries are showing an interest in what BRICS is doing.

BRICS Plus and an outreach format have already been created to this effect. For now, we agreed to rely on these formats for expanding our reach and drawing into our orbit

countries that share the underlying principles and values of BRICS.

So far, we have no plans to expand BRICS membership, since the existing formats have proven effective. As for our discussions and the issues we intend to address, these are issues relevant for a vast majority of countries and economies around the world. The sky is the limit for us. The same applies to politics and security.

These are the subjects we discussed and on which we have adopted decisions or coordinated positions. You may see, regarding the non-deployment of weapons in space, it boils down to security and the arms race, or rather the prevention of an arms race in this particular case.

We also talked about fighting terrorism, but is this not a vital task facing many countries? In this context, we spoke about Syria, of course, and my colleagues welcomed our idea of encouraging a more active contribution to humanitarian aid to the Syrian people, which is an absolutely natural desire.

The fourth issue we discussed concerned the industrial revolution. This is happening in Russia and the other leading and emerging economies. Why did our colleagues support our proposal on strengthening our cooperation in the humanitarian area, as well as in culture, cinema and sport? Because this is what brings us closer together and creates a natural basis for interaction between people.

The Prime Minister of India said it was a very good idea because we can organise sporting events like a mini-Olympics for the BRICS countries, a sports mini-festival that could include national sports, which are not generally known in other countries but could be interesting for our countries.

This is a natural way to bring millions of people, or even hundreds of millions or billions of people closer together, considering that the BRICS countries account for nearly half of the world's population.

Africa is one of the world's most rapidly developing regions. According to the UN, the population of this continent will reach 2.5 billion by 2050. The level of urbanisation in Africa is increasing as well: the proportion of the population living in

urban areas is expected to reach 60 percent by 2050.

The domestic African market and consumer demand are expanding. BRICS and the African states have similar development goals in many respects. In 2015, the BRICS summit in Russia adopted the large-scale BRICS Strategy for Economic Partnership.

We need to think about involving our African partners and friends in the work of each of the areas we identified then: the economy, finance, and food security.

Russia has always given priority to the development of relations with African countries, based on long-standing traditions of friendship and mutual assistance. We have recently held a number of high-level contacts, including with many of the leaders present in this room.

Russia's trade with African states grew by more than 25 percent in 2017. Food supplies increased by 38 percent, metals – by 30, machinery and equipment – by 24 percent.

Russian businesses are interested in working with African partners in a variety of areas, including industry, agriculture, healthcare, communications, geology and mining. I will give just a few examples of Russian companies' interaction with countries represented at this forum.

I would like to note in particular that Russia plans to increase its assistance to the development of the national energy sector in African states. We are implementing promising oil and gas projects with a number of countries, such as Angola, Mozambique, and Gabon.

In the nuclear power industry, where Russia is a technological leader, we offer our African partners the creation of an entire industry on a turnkey basis. Agreements on cooperation in the field of atoms for peace have been signed with a number of countries in the region, while in some of them the work has acquired a practical dimension. All these projects will be of strategic importance for Africa, where, according to different estimates, as many as 600 million people still live without electricity.

A considerable part of Russian initiatives provides for localising industrial businesses in Africa, including,



among other things, the construction of plants manufacturing component parts and assembly works.

The implementation of these joint projects will serve to strengthen the industrial potential, support local businesses and create new and well-paid jobs. On the whole, this will lead to an improvement in living standards and a solution of social problems in African states.

Russia has a vested interest in intensifying interaction with African regional and sub-regional organisations, primarily with the African Union as well as the Southern African Development Community.

The amount of Russian assistance to Africa exceeded one billion dollars in 2017. Russian contributions to the World Food Programme fund are constantly growing. Russia is the fifth biggest contributor to the UNIDO Industrial Development Fund.

Considerable funds are remitted to the World Health Organisation for the fight against non-infectious diseases on the African continent. Our work to combat the Ebola virus has proved highly efficient.

Russia has for years trained national professional personnel for countries of the continent. Currently, thousands of Africans are being educated in Russia. We will continue to build up cooperation in this sphere.

In conclusion, I would like to inform you that we are studying the idea of holding a Russia-Africa summit with the participation of heads of African states. This could be preceded by relevant meetings of prominent business people, experts, and public figures; I intend to discuss this with representatives of African countries.'

/IAATG/



RUSSIAN DEFENSE INNOVATIONS

Rosoboronexport advances cooperation with China and pacific countries

Rosoboronexport, a member of the Rostec Corporation, is to set up a joint Russian exposition at AIRSHOW CHINA 2018, which is held in Zhuhai. AIRSHOW CHINA includes the international conferences, technical product presentations, avia demonstration and network with industry experts. Russian participation in this AIRSHOW is traditionally large-scale and representative.

It is important to remember that only Rosoboronexport has the right to supply the world market with a full range of arms and military equipment manufactured by Russia's defense industrial complex and approved to be exported. Rosoboronexport accounts for more than 85% of Russia's arms exports. Rosoboronexport

is among the major operators in the world market for arms and military equipment. This year JSC Rosoboronexport will mark its 18th anniversary.

Rosoboronexport was set up by RF President's Decree as a federal state unitary enterprise tasked to implement the national policy in the area of military-technical cooperation between Russia and foreign countries. Since 1 July 2011



Rosoboronexport has been operating as an open joint stock company. Rosoboronexport operates under the strict supervision of the Russian President, the Russian Government and in full conformity with the UN arms control treaties and the relevant international agreements.

The official status of the exclusive state intermediary agency gives Rosoboronexport unique opportunities to expand long-term mutually beneficial cooperation with foreign partners, provide guaranteed state support of all export-import operations, and strengthen Russia's leadership in the world arms market.

Rosoboronexport is the only state-owned arms trade company in the Russian Federation authorized to export the full range of military and dual-purpose products, technologies and services. It is a subsidiary of the Rostec Corporation. Founded on 4 November, 2000, now Rosoboronexport is one of the leading world arms exporters to the international market. Its share in Russia's military exports exceeds 85 percent. Rosoboronexport cooperates with more than 700 enterprises and organizations in the Russian defence industrial complex. Russia maintains military technical cooperation with more than 100 countries around the world.





Rosoboronexport pays great attention to both major billion dollars contracts and small deals. The company seeks to operate flexibly and efficiently by using modern and advanced marketing and customer settlement methods. The special exporter cooperates with more than 700 Russian defense-industrial enterprises and organizations, which enables it to offer partner countries the comprehensive and cost-effective solutions for strengthening their defense capability and national security.



The main result of biography of Rosoboronexport, despite the difficult economic conditions and fierce, often unfair, competition in the global arms market, that company have managed not only to carry its sales, but also significantly enlarge its footprint in the traditional and new arms markets. Through integrated marketing strategies, company have ensured that order book today exceeds US\$ 46 billion.

The special exporter makes painstaking efforts on a daily basis to increase Russian arms exports resulting in more than a thousand contract documents signed with foreign customers every year. Over the period of its operation in the international market, Rosoboronexport has delivered hundreds of thousands of units of military equipment and weapons worth more than US\$ 120 billion to 115 countries.

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- Core areas of activities of Rosoboronexport**
- Export / import of all types of conventional weapons, military and dual-use equipment and services.
 - Organization of licensed production of armaments and military equipment abroad, joint R&D efforts with foreign partners.
 - Maintenance and repair of earlier supplied weaponry and military equipment.
 - Modernization of Russian-made weapons and military equipment.
 - Training foreign specialists in Russia and customer countries in the operation and maintenance of supplied military equipment.
 - Technical assistance in the construction of military infrastructure facilities: defense plants, airfields, depots, ranges, training centers.

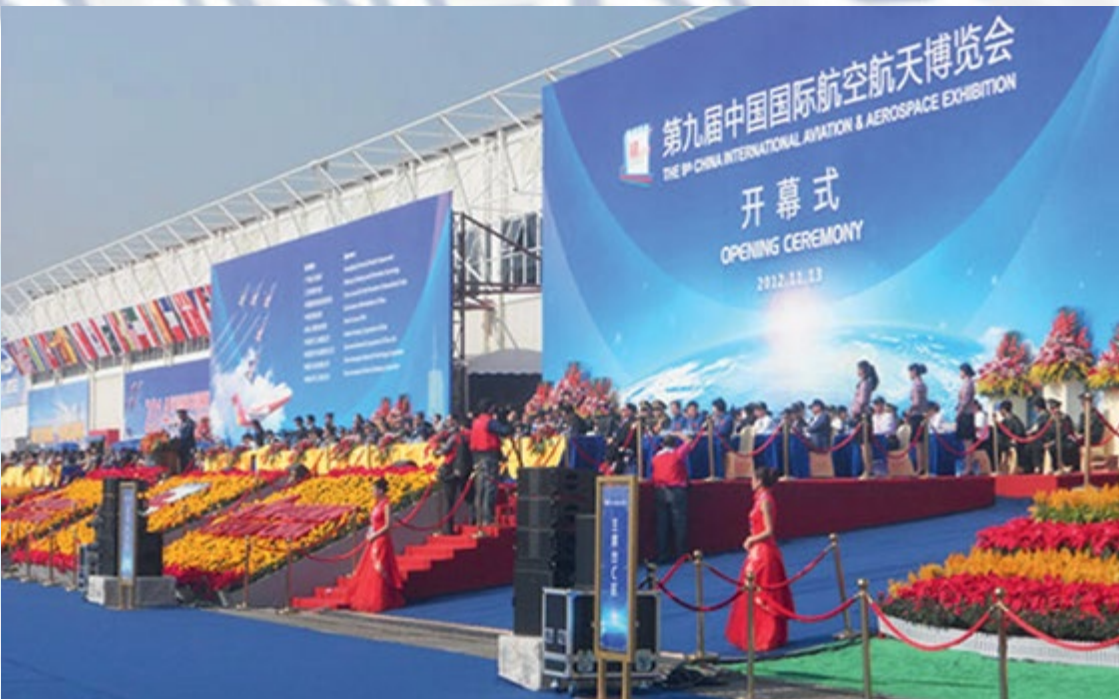
Rosoboronexport widely uses the optimal offset programs. With regard to foreign customers' interests and the opportunities of the Russian defense industrial complex to increase its exports, Rosoboronexport pays much attention both to major billion-dollar contracts and small deals worth the hundreds of thousands to several millions of dollars.

By concluding export contracts, Rosoboronexport supports the Russian defense industry, which is especially important under difficult conditions in the global market. High-tech products are in increased demand in the world arms market today and thus the company is interested in developing smart manufacturing in Russia. In addition, Rosoboronexport is actively involved in a number of charitable and sponsorship projects. The company provides assistance to military hospitals, military historical museums, and children's educational institutions. Rosoboronexport supports major sporting events and various sports federations, acts as sponsor and partner of the largest industrial exhibitions and cultural events held in Russia and abroad.

Rosoboronexport pursues a marketing strategy targeted to expand the geography, range and volume of export deliveries. A number of special programs and projects for exporting products to specific countries have been developed based on a comprehensive analysis of the arms markets and foreign partners' needs. Rosoboronexport seeks to operate flexibly and efficiently in the market, using modern and advanced marketing and customers' settlement methods.

Foreign customers are offered package solutions for national systems intended to defend land, air and seaside borders, which feature the optimal trade-off between cost and performance. These solutions may include both the supply of military products and services and orga-

nization of licensed production in customer countries, the setting-up of joint ventures to manufacture and maintain equipment, as well as joint R&D efforts. Rosoboronexport widely uses the optimal offset programs. With regard to foreign customers' interests and the opportunities of the Russian defense industrial complex to increase its exports, Rosoboronexport pays much attention both to major billion-dollar contracts and small deals worth the hundreds of thousands to several millions of dollars. /IAATG/



SU-30SM



*Aerobatics in the framework of the
demonstration program of the International
Military-Technical Forum 'Army-2018'
Photo by V.Karnozov*

国际军事技术论坛 '陆军2018'
示范项目框架内的特技飞行
摄影：V.Karnozov

苏霍伊超级100型客机

苏霍伊超级100型客机 (Superjet 100) (SSJ100)是新一代飞机，由苏霍伊民用飞机公司研制开发。这个飞机才有最先进的空气动力学，动力装置和航空电子设备方面的技术，保障良好的运营效率和乘客的舒适。

SSJ100 主要为中短程的航线而设计。这个飞机2007年9月第一次亮相。截止2018年10月份，一共在使用138个SSJ100 飞机运营在各个俄罗斯各个航空公司和国家机构，其中包括：俄罗斯航空，俄气航空，雅库特，亚马尔，伊尔库茨克航空，方位角航空 (Азимут)，俄罗斯联邦内务部，俄罗斯联邦紧急情况部，俄罗斯号特别飞行队，RusJet航空公司，以及国外航空机构：Interjet (墨西哥)，CityJet (爱尔兰)，泰国空军。这款飞机一共完成了30多万次商务运输航班，总飞行时间超过46万飞行小时。

为床在新的国产支线飞机SSJ100，2005年俄罗斯远东地区设立了苏霍伊民用飞机股份公司阿穆尔河共青城分公司 (阿穆尔共青城分公司)。2007年首架SSJ100原型机公开展览，再过一年完成第一次首飞。于是，从开始安排生产到系列成品飞机出来只过了5年时间。目前共青城分公司包括了以下组成部分：综合性技术中心—负责将零配件分配到分公司不同的生产基地；机身组装车间，飞机最终组装车间和试飞站。最终组装车间同时操作七个工艺段，机身组装车间同时操作五个工艺段，试飞站两个工艺段对于生产出来的飞机进行地面检查。

SSJ100型客机如何组装？信息图形备注：

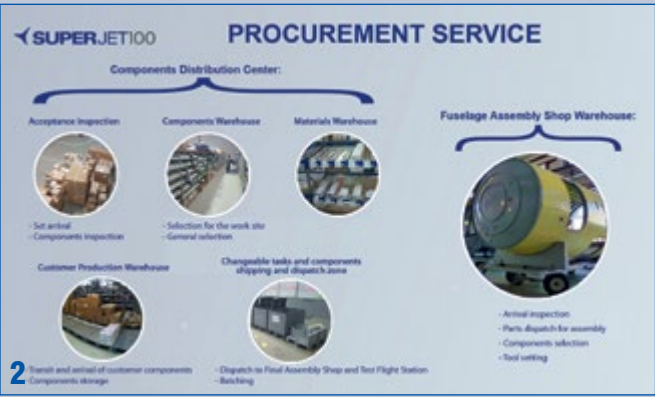
工厂结构

无论如何，实现要讲工厂 (共青城分公司) 结构



综合性技术中心

零配件先到综合性技术中心



机身组装车间

接着到机身组装车间进行机身的组装



最终组装车间

再将组装好的机身运输到最终组装车间



试飞站

机完成组装以后需要到试飞站进行试验



完成工厂试验以后飞机被送到乌里扬诺夫斯克市进行喷涂和内部设施的安装，之后飞机飞到苏霍伊民用飞机公司在茹科夫斯基市的供应中心，在那面交接给客户。

MC-21: 顺利进行验证试验

新技术保障飞机在国际市场上的竞争能力

俄罗斯伊尔库特集团（俄罗斯联合航空制造集团公司的子公司）在进行新中程飞机MC-21-300的验证试验。参加飞行的有两架原型机，还有一架飞机正在中央空气流体动力研究所进行静力试验。伊尔库茨克飞机制造厂另外在建立两个飞机用于试验飞行和一个用于寿命试验的飞机。

伊尔库特集团航空技术研发副总裁，MC-21型飞机总设计师康斯坦丁·波波夫维奇说，试验已证明了关键设计和制造方案的正确性，因此目前已经可以为供应给客户的飞机开始生产头几批零配件。由于所有原型机采用批量技术进行生产，这个大量简便了批量生产的安排。

降低耗油

MC-21型飞机的创造市俄罗斯在民航领域的重点国家项目。考虑到单走道飞机市场上形成的双头垄断情况，MC-21的优点主要集中在两个方面：经济效率和舒适性。

经济效率的增长主要基于两个关键因素：更好的空气动力性能和新的引擎。

据有关计算和试验结果表明，MC-21空气动力性能会比现有的西方国家制造的客机高5-6%。这个会按大约同样的比例减少耗油量。

空气动力性能的改善主要基于绝无仅有的大伸长机翼。由于金属制作的机翼无法达到想要的要求，这款飞机采用最新复合材料。值得强调的是，这种级别的飞机从来没有使用复合材料制作的机翼。

另一个减少耗油量的因素是新的引擎。目前MC-21-300安装了Pratt&WhitneyPW1431G引擎进行试验。2018年10月俄罗斯新的PD-14（PD-14）引擎已通过产品验证，这个引擎的性能也是很类似。客户可以根据自己的需要选择配用的引擎装置。

有关计算和初期试验结果表明，MC-21的创造者会达到自己的目标：和当代最先进的其他窄体客机对比降低运行费5-7%是完全可行的。

更加舒适

基本机型是MC-21-300，可载客数量为商务舱16位，经济舱147位。高密度的全经济舱布局可容纳211个乘客。这个比重竞争对手的基本机型稍微多。

增加乘客舒适性的关键因素是MC-21的加宽机身，它比波音（Boeing）B737大30公分，比空中客车（Airbus）A320和中国研发的C919大11公分。

MC-21创造者认为，乘客和航空公司都会更加重视舒适性这个因素。单走道飞机越来越多用于长途航线，包括洲际航线。这种情况下，另外增加的几公分空间已经会带来完全不同的感觉。比如，乘客在从加宽的走道走过去时，可以更容易的越过空姐推的手推车。

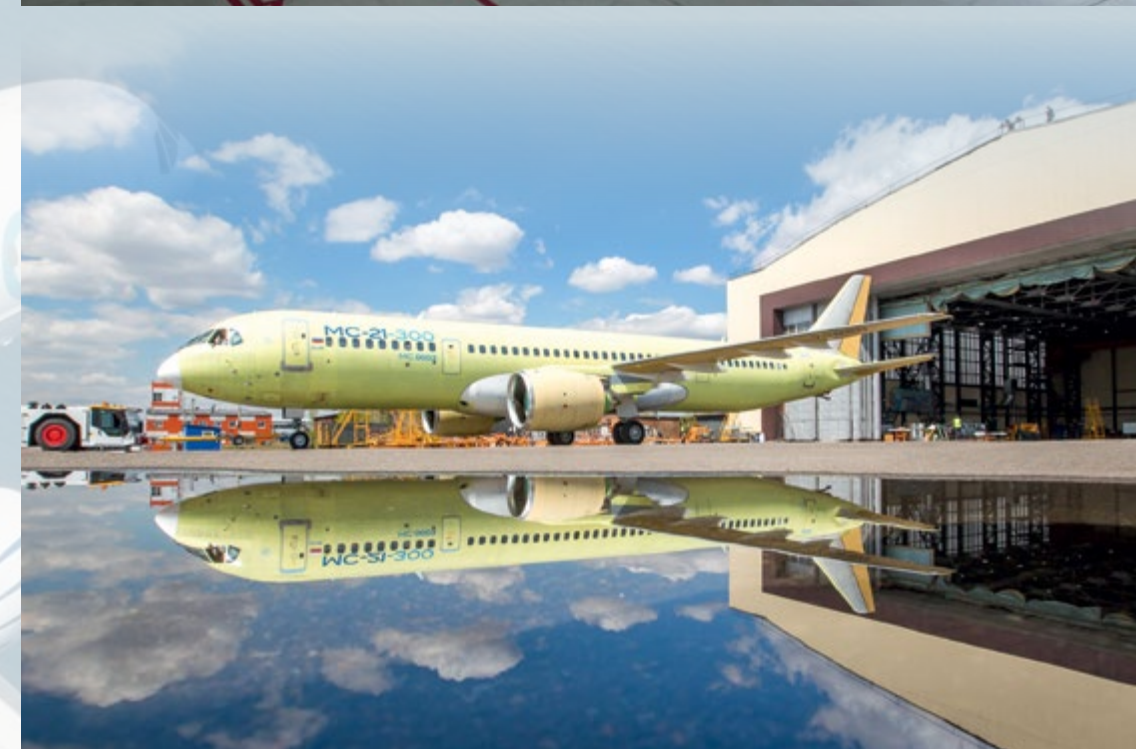
加宽的机身给航空公司也带来一定的利益。希望尽量缩短飞机在地上带的时间的廉价航空公司可以加快乘客上下飞机的速度。伊尔库特吉集团副总裁基里尔·布达耶夫指出：‘每一个阶段节省5-7分钟。一般一年进行1500次航班时，这样帮航空公司省了大约150个小时的时间可以用于飞行。’

效率和舒适性，再加上很合理的价格（MC-21-300目录价格为9610万美元），为新出来的客机很好的机会在快速发展的中程飞机市场上占领明显的份额。在俄罗斯政府指导下创造的有效销售和售后服务制度，也一定会对这个做出相应的贡献。

目前伊尔库特集团已签订了供应175架飞机的合同。首批使用者包括了俄罗斯国家承运人俄罗斯航空公司，它订了50架MC-21型飞机，交付时间2020到2026年。

关于MC-21的详细信息:

<http://mc21.irkut.com/program/>



商用飞机有限责任公司成立！ Поздравляем с созданием компании
Commercial Aircraft International Corporation Limited ("CRAIC")！

李维诺夫：‘关键的任务是保障CRJ929具有竞争力’

CRJ929型新一代宽体远程飞机由俄罗斯和中国航空制造商代表的俄罗斯联合航空制造集团公共股份公司和商用飞机有限责任公司联手进行研制工作。这是两国共同实施的伙伴项目当中最高科技的一个项目。

俄罗斯联合航空制造集团公共股份公司和商用飞机有限责任公司各承担了一部分投资风险和时间风险，为在竞争非常激烈的市场上创造CRJ929型飞机集合了知识、技术和其他资源。

宽体飞机在国际民用航空行业中占领者很特殊的位置。按数量看，宽体飞机在世界所有类型的民用飞机当中的比例不超过20%。但所有宽体飞机累计市场成本占所有类型民用飞机市场成本的50%以上。

根据俄罗斯联合航空制造集团公共股份公司和商用飞机有限责任公司发布的预测，在2023-2045年期间世界在宽体远程飞机方面的需求会达到7200架。其中20%是两国伙伴国家市场需求，即中国15%、俄罗斯5%。需求量的28%是其他亚太地区国家市场。CRJ929会以项目成员国的国内市场为起步点。

座位新一代宽体远程飞机的CRJ929要达到哪些基本要求，俄罗斯联合航空制造集团公共股份公司和商用飞机有限责任公司在采访各个航空公司和租赁公司之后形成了一个清单。关键要求包括了使用中的经济效率，更好的燃油性能，更完善的航空器技术保养，飞行技术性能和起落性能方面的保障。

‘设计部面临的关键任务，就是要保障CRJ929的竞争能力。由于较小的起飞重量，我们希望能保障省油。优越的技术方案会提高使用性能，可以给承运人带来明显的经济利益，而且通过飞机舱工业化设计可以给乘客更加舒适的飞行体验’。——俄方总设计师马克西姆·李维诺夫介绍CRJ929对比竞争对手的优势。

目前CRJ929项目处于Gate 3阶段。这个阶段的主要任务是草图设计和开始供应商挑选。同时这个阶段上还会对飞机各个系统研发出相关的要求，并在空气动力方面进行试验研究工作，选择材料。这个阶段上会确定生产协作模式，研发出售后服务系统和销售战略。这些工作的最终结果是要形成出CRJ929外观并确定项目的商务计划。

Gate 3 阶段计划在2019年中要完成。

ОПК РФ

СПЕЦИАЛЬНЫЙ ИНФОРМАЦИОННО-АНАЛИТИЧЕСКИЙ ПРОЕКТ

ОБОРОННО-ПРОМЫШЛЕННЫЙ КОМПЛЕКС РФ



‘Defense Industry Complex of the Russian Federation’ (‘OPK RF’) – a magazine about key programs, development trends, innovation processes, success in diversification, etc. of defense Industry. ‘OPK RF’ is based and is being published by ‘United Industrial Edition’. The magazine is published 6 times a year. It is distributed by subscription, at major exhibitions and forums, among government agencies and subjects of international economic activity of different countries. An editorial subscription to the magazine is possible from any issue of the journal, it is possible to receive previous issues.

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MILITARY SHOW in PRETORIA

Africa Aerospace & Defence 2018: specific region, special site

The 10th edition of International Conference and Exhibition of arms and military equipment for all types of the Armed Forces 'Africa Aerospace and Defence – 2018' held on September 19-23 in Pretoria (The Republic of South Africa) at Waterkloof Centurion air base ended on high note with a spectacular showcasing of air-acrobatics gracing the Tshwane skies. Russian participation in the exhibition was perhaps not so large-scale, but very noticeable and important. Russia introduced the name of military equipment, specifically designed for the harsh conditions of Africa. Reliability and performance of Russian technology on the continent is well known. Therefore, a high interest in Russian proposals was not accidental. The official Russian Delegation was headed by D.E.Shugaev, Director of FSMTC of Russia.

The Exhibition is being held since 1992 and it is the largest exhibition of Land, Naval and aerospace equipment on the African continent. The main subjects – equipment and technologies connected with defence and aerospace subject (military and civil), military and civil aviation, arms and means for defence, all necessary for the Air Force, aviation and space branch, ground sup-

port means of the Air Force and aviation.

The organizers of the event – the Ministry of Defence and Military Veterans of the Republic of South Africa, South African Aerospace, Maritime and Defence Industries Association (AMD), the Armaments Corporation of the South Africa (ARMSCOR) and the Commercial Aviation Association of Southern Africa (CAASA).

The 2018 version of Africa Aerospace and Defence (AAD) brought together African and global business leaders and high-ranking military delegations for weeklong engagements and robust discussions on a myriad of topics, notable cyber security and the global contribution to peacekeeping efforts.

President Cyril Ramaphosa certainly signaled his support not only for the event as such, but also for an

outreach to captains of the industry around the world and for expanding relationships with them, as AAD was his inaugural opening as the Commander-in-Chief of the South African National Defence Force. In keeping with this year's theme of 'Unlocking Africa's aerospace and defence potential', AAD2018 presented business opportunities on a continental and global front.

'The African Aerospace and Defence exhibition offer a massive opportunity for all present to identify areas of synergy and convert them into joint ventures,' the President said. The exhibition played host to 415 exhibitors from 40 countries, as well as 71 official delegations and attracted over 32000 trade visitors on the three trade days. On the two open days over the long weekend, no less than 55000 members of the public passed through the gates. This attendance is an example of the growth of the exhibition despite the hard-economic times being faced in South Africa and globally.

The organizer of the Russian exposition of the military-purpose products was JSC 'Rosoboronexport'. On the total area of 470 sq. meters stands it was showed productions of such enterprises as JSC 'UAC', JSC 'USC', JSC 'Russian Helicopters', 'HPW' JSC, JSC 'Tecnash'. Foreign specialists and visitors of the Russian exposition could familiarize themselves with



Aleksandr Rybchuk,
Top Specialist of Vympel Shipyard JSC:

'Vympel Shipyard JSC presented a number of products with the displacement of up to 2,400 tons both of military and of civil use at the AAD-2018 exhibition. Among the presented military items were Molniya missile boat, Grachonok anti-saboteur ship, Mangust fast patrol boat, Lamantin patrol boat; and seagoing passenger-carrying hydrofoil vessel Kometa 120M.

The primary goal of the participation in the exhibition was to present our products to eventual buyers. Our products are of high consumer appeal. For example, Mangust is fast-speed and highly mobile. Grachonok anti-saboteur ship is very effective in preventing acts of sabotage. It can also be successfully used in military operations. The new project Lamantin is used for patrolling. Kometa passenger-carrying vessel for 120 passengers, which is a rebirth of a well-known Soviet project of the same name, is of persistently high interest.'



Dmitry Novikov,
IMEX Department Head of JSC 'Research and Production Enterprise 'Rubin':
'The Research and Production Enterprise 'Rubin' presented its advanced pilot projects at the exhibition in RSA. Among them were a base set of the air defense control subsystem of the unified troop (forces) and weapons control system at the tactical level of Barnaul-T as a part of a planning module, tracked chassis reconnaissance and control module. The reconnaissance and control module collects and processes air information, ensures the operative command communication with higher-ranking control points, subordinate and coordinating points, provides for the planning of unit actions and task communication, and also ensures the automated control of air defense battery military equipment and personnel. The product provides for the effective backfiring against a concentrated hostile attack integrating heterogeneous air defense missile systems.

JSC 'Research and Production Enterprise 'Rubin' also presented the reconnaissance and control vehicle of the man-portable air defense system platoon commander, which excited interest. It is equipped with modern automated, communication and data exchange equipment and provides for the effective control of AA sniper sections, their response coordination, improvement of mobility and survivability under any battle conditions.

We communicated with technical experts from several states at the exhibition. One of them (a representative of Belgium) stated a very interesting assessment which, I think, shows the actual state of things in the manufacturing of control systems in Russia. He said that Russia is behind western states in terms of the element base, but is ahead of the curve as regards the algorithmics and software'.

the samples of the military-purpose products, which were represented in the form of models, patterns and advertising material.

Among them: Mi-28NE, Ka-52, Ka-226T helicopters; MiG-29M2, IL-76MD-90A, IL-112V aircraft, Amur-950 and Amur-1650 submarines, 22160 Project patrol ship; Kornet-EM and Metis-M1 antitank guided missile systems; Bakhcha combat module; Shmel-M and Varna flame-

throwers; different types of small arms, ammunition and rounds.

Within the framework of the business schedule of the exhibition the meetings and negotiations were with the representatives of other countries on the issues of the current and perspective projects.

Russian helicopter products had at the exhibition large interest. The African countries are traditionally one of the largest operators of

Russian-made helicopters. The total fleet of Russian-made rotorcraft on the continent exceeds 700 units. On top of all, a service center to maintain civil helicopters of Mi-8/17 type was established at Denel Aviation premises in RSA.

Russian Helicopters Holding Company (part of Rostec) presented the unique capabilities of advanced models of civil Mi-171A2, Ansat, Mi-38, Ka-62 and Ka-226T rotorcraft and the financial instruments offered to the customers for procuring new helicopters.

Mi-171A2 and Mi-38 helicopters offered to African customers are primarily used in civil aviation – for cargo, passengers and VIP transportation. These rotorcraft sport excellent flight performance, reliability, capability of operation within the wide range of conditions and temperatures, versatility, easy operability and maintainability. Moreover, Ansat helicopter is to be presented to national security, defense and law enforcement agencies. It is designed for cargo and passenger transportation, police and EMS missions, surveillance and SAR operations.

At the same time, Russian Helicopters Holding Company's representatives participated in the event's expansive business program.



The Company's delegation was meet partners from African countries during forums and roundtable discussions.

'This expo is one of the main platforms to promote helicopters in Sub-Saharan Africa and we are hoping to reach a number of agreements here that will be transformed into the actual contracts in the future. Russian-made rotorcraft are very well known on the African continent for their long-term and successful performance of humanitarian missions and casualties' evacuation during emergency relief. Superior flight performance, reliability, capability of operation within the wide range of conditions and tempera-



tures make Russian-made rotorcraft one of the best offers for the African market', highlighted Andrey Boginsky, Director General of Russian Helicopters Holding Company.

Several highlights were witnessed this year and included amongst others: The Paramount Group's announcement of the establishment of Paramount South Africa, a transformed Black-Owned Enterprise constituted to provide the future capability requirements of South Africa's defence, police, border and peacekeeping forces.

Denel showcased its RG41 8x8 armoured, fitted with a 30 mm modular combat turret. The RG41 is a new generation wheeled armoured



Bogdan Terekhov,
Department Head of NPO Splay:
'At the exhibition in RSA, NPO Splay, as the developer of multiple-launch rocket systems, first of all presented the MLRS main range. The most heavy system is the Smerch MLRS which allows to solve a wide range of any battle targeting tasks over a distance of up to 90 km. Together with the system itself, we also presented the whole set of missiles with different combat equipment – five options in all, which allow to attack both heavy weapons and lightly-armored vehicles, manpower, and fuel-oil depots – fundamentally, any target which may appear in the operational activity. Famous Grad MLRS is a more mobile and simple system which we can offer. This system has already been upgraded several times; now it is the automated complex with almost new distant-range weapons.

Our equipment is well-known in the region. It may be said that nearly a half of armed forces in Africa are equipped with our MLRS. Officers who use our equipment often return thanks for the quality and reliability of our systems. These words are worth much! After all, what do army men want? They need reliable and adjustable equipment that would not give bother, would not be pain in the neck. In our case, the systems are tried and tested. They have been produced a while and are reliable to comply with all the requirements which can arise under real combat conditions'.



combat vehicle and a cost-effective solution for clients who require a combination of high mobility, protection and fire power. Airbus fixed the spotlight on its South African industrial partnerships, alongside its product portfolio. Some of the returning exhibitors who notably intensified their participation included MILKOR, a South African defence company, which develops and supplies a wide range of defence and security products.

East Africa was also well represented by SAFAT, a division of the military industry corporation MICSudan who exhibited for the second time, showcasing 122 products including static aircraft and their latest technology in Smart Air Surface Pumps guided by GPS known as precision guided bombs (BK-3). The Airforce of Zimbabwe K-8 Karakorum light attack fighter aircraft was also flown with a support CASA 212 on static display. Squadron 2 was well represented at the show once again as audiences were able to see six Gripens in formation, two Gripens in the mini-war and a solo gripen display flown by Major Geoffrey 'Spartan' Cooper and a 2v1 combat routine.

BELOMO Holding presented a new series of scope sights for sniping weapons at the international defense exhibition in RSA: sights GS 3-12x50, GS 4-16x56, GS 5-25x56 which can



be mounted on rifles of all main calibers from 7.62 mm to 12.7 mm. The sights conform to all international standards; the controls are set up as per the system familiar to professional riflemen using foreign optics.

Among other significant developments presented is a compact collimating sight presented for the first time abroad. The current configuration sight is not expensive due to the optimization of process solutions applied, without depreciation of quality and retaining the technical characteristics. The sight is an excellent supplement to combat rifle systems like the Kalashnikov assault rifles and analogues.

The presentation of a new holographic sight at AAD-2018 should be specially focused on. It is a joint development with the Russian JSC 'Vavilov State Optical Institute' (St. Petersburg). There was also a thermal imaging sight with a distance meter for sniping weapons presented for the first time in this region.

A display stand of the Jordanian Jadara Equipment & Defence Systems Co PSC enterprise was also presented at the exhibition. BELOMO Holding cooperates with Jadara in the field of development of optics for different systems.

Keeping with tradition, AAD2018 also enabled the unlocking of the potential of South Africa's youth. AAD's youth development programme (YDP) ensured that thou-

sands of school learners got exposed to the aerospace and defence technologies on display. They had the opportunity not only to engage with exhibitors, but also to explore career possibilities in the high-technology industry and military environment.

As Defence Minister Nosiviwe Mapisa-Nqakula said: 'Since much of the world has already entered the fourth industrial revolution with its nano-technology and artificial intelligence (AI), South Africans should be part of it.' CAASA, the commercial aviation association of South Africa, was the lead partner for AAD2018.

At the close of the exhibition, the baton was handed over to AMD: The South African Aerospace Maritime and Defence Association. President Ramaphosa observed that AAD is a national asset that has value for many departments and agencies of government and pledged the highest office's support to this expo as it brings together the largest gathering of the aerospace and defence industry players and buyers.

'AAD lives by the mandate of showcasing high technologies for the benefit of South Africa, its neighbours and the world at large and so we wish to thank all our exhibitors and sponsors for their contribution to another successful edition. We look forward to welcoming them all back in 2020 on 16 to 20 September' said Leon Dillman, CEO of CAASA in conclusion.

/IAATG/



**Igor Markin,
Deputy Director General of Economics of Tula Arms Plant PJSC:**

'Tula Arms Plant PJSC presented a wide range of military products at the exhibition in RSA. First of all, I am referring to 9M113M guided missile of the Konkurs-M complex. This missile has given a good account of itself. The product has been produced a while and is delivered to many countries of the world being still popular among other things thanks to the efficiency and reliability. It has a wide range of use – from +50 to –50. It is jam-resistant, it has the increased penetrating power. . . Generally, it is a high demand and advanced missile.

We also presented a 9 mm AM small-size assault rifle, 9 mm AS special assault rifle, 9 mm VSS special precision rifle, and other products at the AAD-2018 exhibition in RSA. The presented rifles can be of different colors including a camouflage coating for the desert. Our rifles, just as all Russian weapons, are reliable, easy, convenient, user-friendly, and have high combat qualities. Although our enterprise was at the exhibition in RSA for the first time, we are sure of the prospectivity of this region for the Tula Arms Plant products, which by their characteristics completely comply with the needs of the African military.'





ADEX-2018 in BAKU

The 3rd Azerbaijan International Defence Industry Exhibition

The International Defence Industry Exhibition 'ADEX-2018' was held on September 25-27, 2018 in Baku (the Republic of Azerbaijan) with the assistance of the Ministry of Defence and the Ministry of Defence Industry of the country. More than 220 companies from 29 states participated in exhibition. The organizer of the event was the exhibition company 'Caspian Event Organizers LLX'. The main subjects were arms and military equipment of the Army, Air Force, Navy and interior troops. ADEX 2018 became the largest International Defence Exhibition in the region.

The 3rd Azerbaijan International Defence Exhibition ADEX 2018 was held at Baku Expo Center in the capital of Azerbaijan from the 25th to the 27th of September. This large-scale event enjoys the status of a major regional exposition of weapons and military equipment; ADEX 2018 is a grand display of modern weaponry and equipment, where the force and power of Azerbaijan's military and industrial complex was showcased. The President of the Republic of Azerbaijan H.E. Ilham Aliyev sent a greeting letter to the partici-



Dmitry Glushkov,
Commercial Director of Polet JSC (Ivanovo Parachute Plant):

'Ivanovo parachute plant exists for more than 90 years in the market of parachute equipment, next year marks the 95th anniversary of the enterprise. The company produces a full range of parachute equipment for civil purposes. For all types of troops and law enforcement agencies in Russia and a number of foreign countries.

Although Polet has been working with Azerbaijan for eight years to supply landing and rescue parachute systems, we took part in the ADEX exhibition for the first time. We consider the market of Central Asia to be very promising due to the fact that the entire post-Soviet space exploits aviation technology and landing facilities of Soviet developments.

We came to the last ADEX with the purpose of marketing intelligence – to get acquainted with the spectrum of everything that is represented here. I liked that the program of visiting official delegations was formed in advance. That is, things stated by the organizers of the exhibition are actually carried out here. I think that the prospects in this market for us are very big, also in terms of product supply to the countries that traditionally participate in ADEX.'

pants of the exhibition. The initiator of the exhibition is the Ministry of Defence Industry of the Republic of Azerbaijan, and the exhibition is also supported by the Ministry of Defence of the Republic of Azerbaijan. The exhibition was organised by Caspian Event Organisers, CEO.

This year, 224 companies from 29 countries took part in the ADEX. The exhibition were features 11 national

stands from Azerbaijan, China, France, Iran, Israel, Russia, Serbia, Turkey, the Republic of Belarus, Ukraine, Pakistan, and representing leading companies from these countries. Many countries have expanded the area of their national expositions; the top four with the largest number of companies represented are Turkey (41 companies), Russia (25 companies), Israel (14 companies) and Belarus (10 com-

panies). In total, companies and delegations take part at the exhibition from 44 countries. The registration sponsor of the ADEX 2018 exhibition is the Secretariat of the Defence Industry of Turkey.

The organizer of the Russian exposition of the military-purpose products was JSC 'Rosoboronexport'. Stands of 21 Russian organizations was placed on the area of 363 sq.

Dmitry Zhidkov,
Deputy General Director of Shvabe Holding:

'At the exhibition in Baku Shvabe Holding presented the products of two enterprises: Novosibirsk Instrument-Making Plant and Krasnogorsk Plant Named after S.A. Zverev. Among the most popular prototypes are night vision sights for small arms, thermal imaging monoculars (including a universal night vision monocular), thermal imaging sights, pancratic optical sights, collimator sights, laser target indicators of both visible and invisible spectrum, sniper sights, stabilized binoculars and other full-scale prototypes.

Products of Shvabe Holding in Azerbaijan have a fairly stable interest of representatives of the Ministry of Defense of the Azerbaijan Republic, enterprises of the optical-electronic industry. This is also facilitated by the fact that the enterprises of the Holding have since the Soviet times been on good cooperative terms with the Azerbaijan enterprises. It is known that the equipment was supplied with the products of our defense enterprises, which later became part of the Holding. Currently, the license to carry out independent foreign trade activities in relation to the defense products allows the Holding (Shvabe JSC) to carry out mutually beneficial cooperation in terms of spare parts supply, repair and modernization of military-purpose equipment produced by the Holding.

There is no need to speak about the quality of Shvabe products – it is at the highest possible level, and this is well known all over the world. Our clients particularly often talk about the high operational suitability of the Holding products that work reliably and efficiently in any conditions, are simple and, maintenance-friendly and show high efficiency. At the same time, we constantly introduce new developments, rely on the latest trends in technological progress, while maintaining the key competitive qualities – reliability, operational suitability, affordability.'

**Maxim Stepanov,
Deputy Director of AlmaDK LLP (Republic of Kazakhstan):**

'At the ADEX-2018 exhibition, our company presented a wide range of special and military-purpose products, both for security agencies and rescue organizations. We have also introduced training and military pyrotechnics designed for personnel training – smoke-puff charges, imitation cartridges, which simulate the detonation of grenades, mines and shells, but without fragments. Our products are in demand both in Kazakhstan and in many other countries. One of our key competitive advantages is a reasonable price with very high quality. We produce everything in Kazakhstan, but we can deliver to any part of the world without difficulty. We consider ADEX a very successful exhibition, we participated in it for the second time already, and the practical results of our participation are already evident.'



meters, 19 of them represented the military-purpose products, among them: JSC 'Rosoboronexport', JSC 'RPC 'Uralvagonzavod', JSC 'Tecmash', JSC 'Russian Helicopters', JSC 'RAC 'MiG', JSC 'Shvabe', JSC 'Tactical Missiles Corporation'. In the form of models, patterns and advertising material the information on more than 537 exhibits of the military-purpose products were represented at the Russian exposition.

Among those represented by Russia at ADEX-2018, special attention was paid helicopter equipment – Ka-52 combat reconnaissance attack helicopter, Mi-35M transport combat helicopter, Mi-26 heavy transport helicopter, Mi-28NE combat helicopter. Also traditionally a lot of interest aroused armoured vehicles – T-90S modernized tank (T-90MS, T-90SK), BMPT tank support combat vehicle, BT-3F armored personnel carrier, BMP-3MS armored mine-clearing vehicle, BMP-3F infantry combat vehicle.

The experts and guests of the exhibition paid great attention to Russian

products in the field of antitank guided missile systems – Kornet-E/EM, Khризantema-S self-propelled anti-tank system, and air defence missile complexes and systems – 9K331MKM Tor-M2KM air defence missile system with combat and technical modular means, 9K317E Buk-2E air defence missile system, Igla-S 9K338 man-portable air defence missile system, modernized antiaircraft mounting ZU-23/30M1.

A special place in the Russian exposition was given electronic warfare means – 1RL257E ground-based electronic warfare module, RB-531BE multifunctional system for electronic countermeasures against communication facilities. Besides that, different types of ammunition, sights, communication means and individual protective equipment were represented.

For the first time, at the ADEX-2018 JSC 'VPK' was presented GAZ-233014 special vehicle and its modifications (233114 Tigr-M multipurpose vehicle with combat remote weapon station Arbalet DM and 233115 Tigr-M special purpose vehicle).

**Nikolay Semenenko,
Managing Director of JSC NIMI Named After V.V. Bahirev (Mechanical Engineering Research Institute Named After V.V. Bahirev):**

'At the exhibition in Azerbaijan this year NIMI presented the traditional line of ammunition for tank, field and naval artillery used by the active army of the Russian Federation – from 76 mm to 152 mm. And since NIMI is the developer and manufacturer of shots for tanks, field and naval artillery, traditionally, all exhibitions show great interest in our exposition. Among the particularly striking NIMI developments there is, for example, 125 mm tank shot 3VBM17 with an armor-piercing sub-caliber shell, which is one of the most powerful shots for modern tanks.

At the same time, exhibition is not only an occasion for us to show products and opportunities of NIMI, but also a place to meet our colleagues, friends and partners. Military equipment implementing our shots is presented in almost all post-Soviet countries. And, I would say, in a decent amount. And many countries in one way or another already possess the technology that was developed by our enterprise and put into service in Soviet times. Naturally we are working with these countries both in the framework of products supply and with a view to prospective joint projects. We talked about this with representatives of different countries at an exhibition in Baku.

Successful fulfillment of contracts under military and technical cooperation is one of the key tasks for NIMI n.a. V.V. Bahirev. For this purpose the enterprise has all necessary conditions: many years of experience, trained personnel, production base and coordinated cooperation of industrial enterprises. At the same time, it is already obvious that today the sanctions policy implemented against Russia by a number of Western countries make our partners appreciate us as suppliers even more – I mean, our scientific potential, our production competencies, and our reliability.'



Among the innovations presented by the Russian delegation at the ADEX-2018, particular attention (including that of President Ilham Aliyev) was drawn to the project of a new integrated technology center, presented by 'UVZ-Spetssservis' company. The demand for this project is due, among other things, to the objective needs of the Republic of Azerbaijan in maintaining of a large fleet of ground forces equipment in good condition.

What is the peculiarity of this project...

'UVZ-Spetssservis' company has proposed a truly new solution for the Armed Forces of Azerbaijan to create an integrated technology center for

maintenance and repair of ground forces equipment. Unique character of this center is that it employs completely new technologies, for example, 'Graphite' software and hardware system, which allows you to approach the solution of all issues related to the equipment maintenance and repair on the system level.

This includes the creation of regulatory reference information, electronic equipment accounting, creation of electronic passports, assistance to repair crews to ensure quality service and repair of equipment, ability to monitor the implementation of all operations, accounting for logistics of all spare

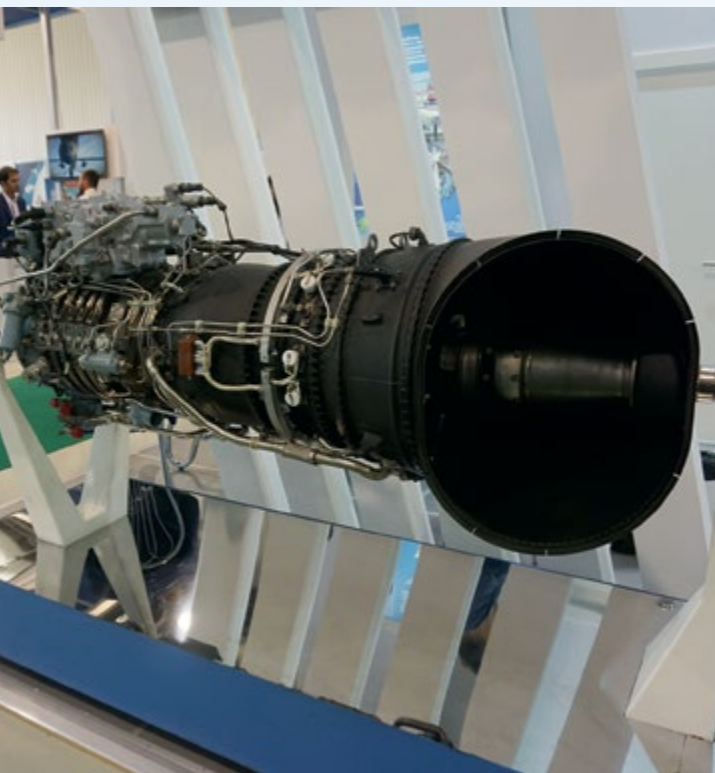
**Igor Kulikov,
Director for Military-Technical Cooperation and External Relations of Uralvagonzavod:**

'At the exhibition in Baku Uralvagonzavod presented a large product line of the Corporation, as well as programs for after-sales service, repair, modernization. That is, almost all the opportunities that can be performed by us in Azerbaijan, where the fleet of armored vehicles is presented mainly by T-72 and T-90 tanks, as well as various engineering vehicles based on them. We actively cooperate with Azerbaijan, we offer various programs for servicing and modernizing of equipment. And these are of high demand.

One of the peculiarities of Azerbaijan is the large amount of our equipment, which was produced in Soviet times. These are T-72 tanks, armored vehicles, infantry fighting vehicles... This equipment works reliably today, performing all the tasks. At the same time, prospects for their modernization are fairly high. And we, being a party to military-technical cooperation, can carry out direct after-sales service for this equipment, its repair and modernization...

At the same time, the market of Azerbaijan is highly competitive; companies from other countries come here trying to offer their services in this area. Of course, we are defending our right as a developer of armored vehicles for further work on its modernization, since the solutions incorporated in the technology are our intellectual property. We are actively working to counter unfair competition from a number of foreign companies.'





**Dmitry Bruskov,
Director General of CJSC KSF Peredovaya Tekstilschitsa:**

'At the exhibition in Baku, we presented the traditional products of 'Peredovaya Tekstilschitsa' – fabrics of 'the last hope', as I call them. What does the 'last hope' mean? When the bullet flies, the last hope is a bulletproof vest. Made of our fabric. When the plane is hit, the pilot's last hope is a parachute. Made of our fabric. When the ship is sinking, the last hope is a life raft. Made of our fabric.

In Baku at the ADEX-2018 we also presented a new perspective fabric with zero permeability. This is a high-strength fabric developed for parachutes with unique characteristics, created at the instructions of our specialized industry enterprises. In Russia, the fabric is already being introduced in new parachute systems.

'Peredovaya Tekstilschitsa' is one of the leading developers and manufacturers of innovative fabrics with special characteristics not only in Russia, but in the world as well. We are constantly expanding our product line, creating new fabrics made of promising materials. For example, we are working today on new ballistic fabrics, we are creating fabrics of special fire resistance, next generation covering fabrics, etc.

And although, of course, the specificity of our products is that the marketing result is determined primarily by the work of manufacturers and suppliers of final products, I can state: literally unique historical competence of our enterprise allows us to feel confident in any market. We do not concede to anyone neither in quality, nor in price nor in technology.'

parts and so on... Application of this software hardware complex allows significantly reduce the time of maintenance and repair of the equipment.

The new technical center comprises production workshop, designed for a certain number of maintenance and repair sites for ground forces vehicles, as well as a warehouse for spare parts and materials. In parallel with this, conditions are created for arrangement of a software and hardware complex and a number of related elements of this technical center. By and large, the project represents a higher level of organization of repair and maintenance work

using new technological approaches and advanced technical solutions. Experts say that there are no analogues to the project in the market.

Moreover, it is important that the solutions proposed in Baku have already been tested in practice in Russia and have sufficient flexibility resources, allowing in practical terms to adjust the project to the realities and desires of the customer.

Within the framework of the business schedule were held the presentations of the results of innovative researches, products and technologies, as well as bilateral meetings with the representatives of the offi-

cial delegations and manufacturing enterprises.

The Ministry of Defence Industry of Azerbaijan and its related structures and plants, and ANAMA, actively participated at the exhibition. Here, the industry professionals was able to get acquainted with the new products of defence complex many nations and witness both the cur-



rent and growing capabilities of the Russian military-technical complex.

The exhibition, occupied three halls of the Baku Expo Center as well as open spaces, is 10% larger this year. ADEX 2018 presented the following sectors: Air Defence (AD) and Missile Defence (MD) Systems; Military Shipbuilding; Development and Upgrade of Weapons Systems; Military Research; UAV Systems; Robotic Systems; Small Arms, Ammunition and Accoutrements; Demilitarization Systems; Missile and Artillery Rounds; MLRS; Electro-optical and Laser Technology; Armoured Vehicles; Submarines; Cyber-security of Naval Forces; EW & C4ISR Systems; Machinery and Equipment of Railway Troops; Technology and Equipment for Manufacture, Maintenance and Disposal of Weapons, and many more. Such well-known companies as Aselsan, CETC, Damen, MBDA, Norinco, IAI, Roketsan, Rosoboron Export, Thales and others will participate with demonstrations of military equipment. Alongside the other sectors, this year's exhibition will widely feature the military aviation industry sector where famous corporations such as MIG, TUSAS, Leonardo, United Aircraft Corporation (UAC), Motor Sich, Russian Helicopters and Aeronautics Group.

Companies from around the world occupied a separate open exhibition area deserving special attention. The outdoor area was host a static exposition of weapons, military and special equipment, logistics, as well as a variety of products required for daily activities of the army and the day-to-day life of their personnel.

The ADEX 2018 exhibition broke the record for the number of visits by foreign delegations. 34 high-level official delegations from 23 countries of the world visited the event, which is more than at previous exhibition. Among the countries sending delegations to the ADEX exhibition for the first time were Egypt, Uzbekistan and Kazakhstan. As part of the exhibition, it were negotiations between the heads of foreign delegations and representatives of Azerbaijani departments and entities, where the prospects of bilateral military-tech-



**Nikolay Gaichuk,
First Deputy Director – Deputy Director for Commerce of Zenit-BelOMO JSC:**

'Our enterprise was established in 1973 as one of the leading manufacturers of photographic equipment and optical devices in the USSR, so we have accumulated vast experience and unique competencies. The company's director is Alexander Vladimirovich Radchenko.

Sights with the brand name 'POSP', 'PO' and 'PK' are known around the world due to their user and maintenance-friendliness and high quality. At present, the enterprise is part of 'BelOMO' Holding with General Director Doctor of Technical Sciences, Professor Vyacheslav Aleksandrovich Bursky.

At the exhibition in Baku, our holding presented optical-electronic, laser and optical-mechanical products. Our holding is the leader in this sphere in Europe. We have extensive experience in export supplies to more than 70 countries, also with the help of special exporters of the Republic of Belarus, we work a lot with customers from the Russian Federation and from other countries of the former USSR. The quality of our products is well known, and the company constantly develops new solutions and releases new products. Due to the fact that the holding has its own scientific and technical center 'LEMT' (Director – academician of the National Academy of Sciences of Belarus, doctor of physical and mathematical sciences, professor Alexey Petrovich Shkadarevich) and unique specialists, our products have a very high level of innovativeness, embodying the most advanced technologies and new developments.'

Director General of the 'MART GROUP' company:

'Our company has been well-known for many years, we are primarily engaged in electroshock weapons for citizens and for the police, for law enforcement agencies. The 'MART GROUP' stand at the exhibition in Baku presented models of civilian and police contact-distance stun guns, inspection and video inspection devices 'Periscope-185' and 'Periscope-PRO', police electric-shock shields 'SKALA' of various modifications, and other developments of the 'MART GROUP' engineers.

Among the new products, we can distinguish an electro-shock shield and a metal detector with the function of an electric-shock weapon. This metal detector is unique, there are no analogues in the world. This is the so-called hybrid, which allows turning a metal detector into a weapon that can stop the enemy by literally one button. All our products are easily rechargeable.

Currently, MART GROUP is actively expanding its export activity, today the company has representatives in more than 30 countries. We see that although this market is highly competitive, our company occupies a strong position. And from the point of view of innovative developments, we are definitely among the world leaders. Moreover, we have a full-cycle production – from idea to implementation.'

nical cooperation were discussed. A special negotiation zone was been designated in the third hall of Baku Expo Center for holding such bilateral meetings. The immense interest shown in ADEX on the part of international delegations and companies once again confirmed the high status and importance of Azerbaijan as an important strategic partner.

As is tradition, the business program of ADEX 2018 was rich in thematic events with informative and eye-catching content; these events

included presentations in the field of innovative research, developments and technology in the field of national defence and security.

More than half of the exhibitors have expressed that they usually plan to use the exhibition to present new products. The exhibition became an active demonstration platform for armament, military transport of local and foreign production, new technologies, materials and the achievements of other branches of science and industry, to foment their intro-



duction into production at enterprises of the defence-industry complex. Among these innovations were the IHTAR Anti-Drone System (ASELSAN), the tactical interaction simulator (Zen TacSim), VITTA unmanned aerial vehicles; a range of products from Arsenal; Corvette sea vehicles from Dearsan; rockets and missile complexes from Roketsan; simulators and training games from Simsoft; vehicles from Yugoimport; the 7,62x51mm machine gun Arsenal MG-M2 (Arsenal); military uniforms and accessories from Trud; camouflage clothing from Baku Weaving Factory; the 'National Boat' concept from SSBC Ltd; and much more.

This year all of Azerbaijan solemnly celebrated the glorious date in its history – the 100th anniversary of the formation of the Azerbaijan Democratic Republic and the 100th

anniversary of the creation of the Armed Forces of Azerbaijan. The participation of Museum of Military History and the National Museum of the History of Azerbaijan has made the exhibition even more spectacular; they both exhibit unique expositions of weapons and uniforms, which are dedicated to these landmark occasions in the history of Azerbaijan.

The programme also included a performance of the military orchestra of the Armed Forces of Azerbaijan, a demonstration of a unique method of gunpowder drawing by Burhan Imranoglu, and an art exhibition

of paintings by children of the Dirchelish Youth Socio-psychological Rehabilitation Centre.

The ADEX exhibition provided an opportunity for industry professionals to get acquainted with modern defence technologies and samples in a variety of MIC industries, and met the latest developments of military equipment that are being offered for export on the world's arms markets. ADEX became an excellent platform to demonstrate the latest weapons and to finalize new agreements in the field of international military-technical cooperation. /IAATO/

**Boris Obnosov,
Director General of Tactical Missiles Corporation JSC:**

'TMC constantly takes part in the ADEX exhibition in Baku. Moreover, directors of our leading enterprises are always present. I believe that this is the most important market for our country. At the same time, I personally am not satisfied with Russia's presence here, it is clearly not enough... Knowing the needs of Azerbaijan, I understand that this is a rich and capacious market for mutual cooperation. Because one thing is to talk about peace and friendship, and another thing is actual cooperation. I see how companies from other countries are actively moving here, trying to oust us, even from seemingly unshakeable segments that are historically firmly occupied by the Russian weapons.'

We should not think that inertia will take care of this. We must really interact, actively promote ourselves, because the market won't wait long. At the same time, the Russian administration is doing everything necessary – signs agreements, determines the possibilities... And then is the time for the producers and exporters, like our company, to move into action. In general, we must be more active and more persistent... Russian products must be of high quality and affordable – as they say, 'cheap and cheerful'. At the same time, after-sales service shall be fast, efficient, high-quality. One more important indicator is time to failure. The reliability of our weapons must be simply flawless.'

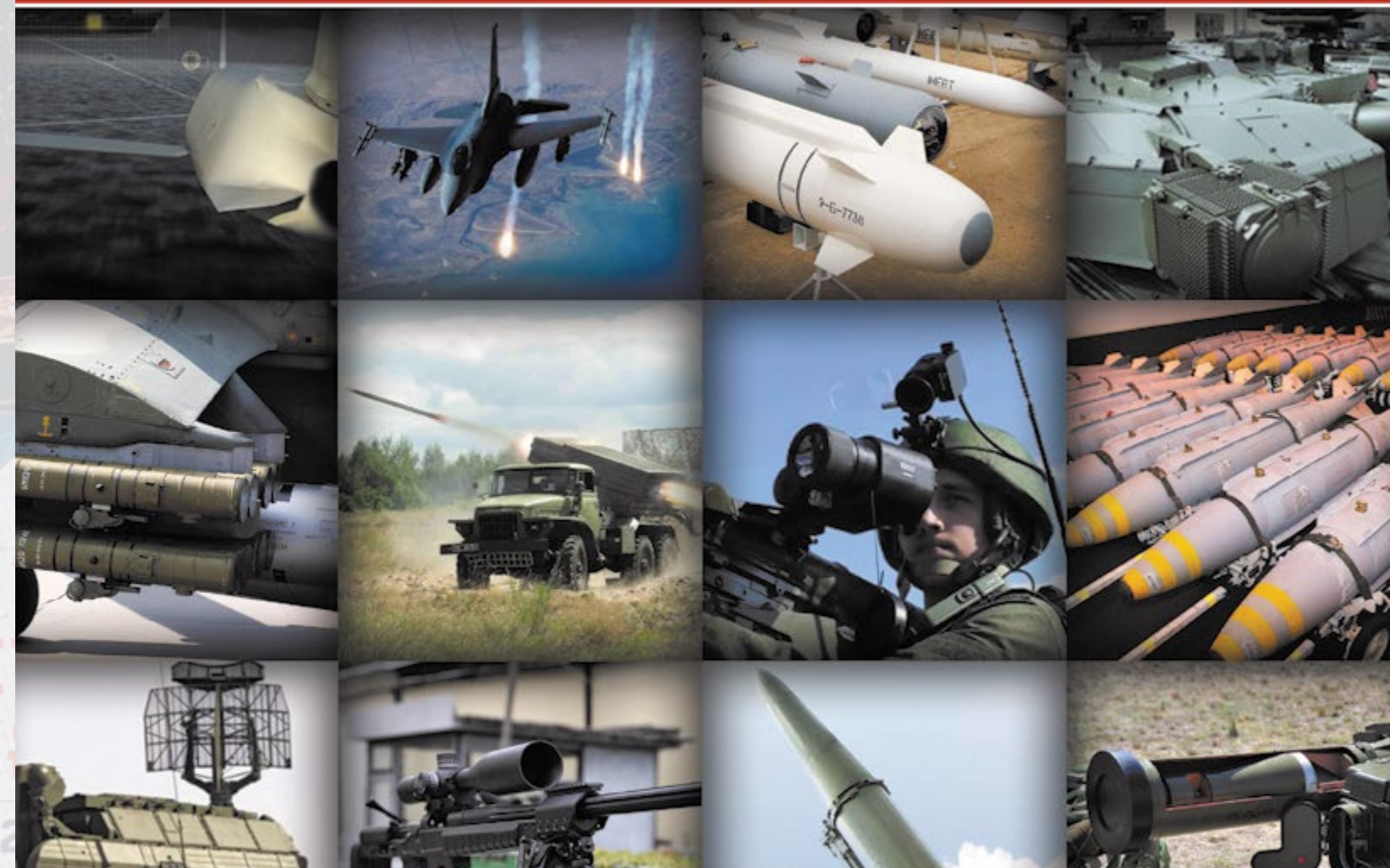


HIGH-PRECISION WEAPONS IN RUSSIA AND IN THE WORLD

ВЫСОКОТОЧНОЕ ОРУЖИЕ в России и в мире

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CONTRACT WITH INDIA FOR S-400

On October 5, 2018, in Delhi Rosoboronexport (part of the Rostec State Corporation) signed a contract to supply India with the S-400 Triumph long-range air defense missile systems (ADMS).



'The contract for the supply of S-400 Triumph air defense missile systems to India is the biggest for the entire period of military-technical cooperation between Russia and India and the largest in history of Rosoboronexport. Today we begin to execute it.'

Alexander Mikheev

The S-400 supply agreement with India is a new landmark in the history of military-technical cooperation between our countries. The deal demonstrates the highest level of trust and understanding between India and Russia. I am sure that this agreement will also be a new impulse for strengthening and deepening our cooperation in civil industry,' said the Head of Rostec State Corporation Sergey Chemezov.

The main advantage of the S-400 lies in its versatility. The system is able to engage both all types of aerodynamic targets and ballistic missiles, up to intermediate-range ballistic missiles. The Triumph is far superior to its foreign counterparts in maximum engagement range and minimum engagement altitude, emplacement/displacement time, as well as in a number of other key characteristics.

'The contract for the supply of S-400 Triumph air defense missile systems to India is the biggest for the entire period of military-technical cooperation between Russia and India and the largest in history of Rosoboronexport. Today we begin to execute it' said the Head of Rosoboronexport Alexander Mikheev.

Regular meetings between the leaders of Russia and India give strong impetus to the development of relations between the countries and play an important role in expanding and strengthening military-technical cooperation, which has been underway since 1960. Since then, exports of Russian military products to India have exceeded \$65 billion.

'Rosoboronexport is prepared to cooperate with India in any areas. At the moment, a number of other major contracts for the supply of Russian weapons to India are in the final stages of preparation and we hope they will be signed soon,' Alexander Mikheev said.

/IA&TG/

Международный военно-технический форум **ARMY 2019** OFFICIAL SHOW-DAILY №01. 25 июня 2019 года ДЕНЬ ПЕРВЫЙ

ОФИЦИАЛЬНОЕ ЕЖЕДНЕВНОЕ ИЗДАНИЕ ФОРУМА

Главный форум
Инновационный союз ОПК России
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«С 22 по 27 августа Министерство обороны Российской Федерации проводит Международный военно-технический форум «АРМИЯ-2019». Это третье по счету масштабное мероприятие, в котором примут участие крупные отечественные и зарубежные предприятия оборонно-промышленного комплекса, ведущие конструкторские бюро и научно-исследовательские институты.



Основные мероприятия Форума пройдут в Конгрессно-выставочном центре «Патриот». Общая площадь экспозиции в павильонах и на открытых площадках превысит 300 тыс. кв. м. Динамические показы ходовых, летных и огневых возможностей вооружения, военной и специальной техники состоятся на аэродроме Кубинка, полигоне Алабино, а также в военных округах и на Северном флоте.

Научно-деловая программа пройдет в формате пленарных заседаний, конференций, круглых столов и брифингов, что позволит обсудить актуальные вопросы обороны и безопасности, дальнейшие направления совершенствования способов производства продукции военного назначения.

Тысячи посетителей смогут ознакомиться с последними достижениями в области высоких технологий и перспективными разработками, которые реализуются в военной сфере.

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In 2018

ISSUE	RELEASE DATES	ADDITIONAL DISTRIBUTION
'RA&MG'№09 (27)	September 24th	ADEX 2018 (26-29.09.2018, Azerbaijan, Baku)
'RA&MG'№10 (28)	November 05th	Airshow China 2018 (06-11.11.2018, Zhuhai, China)
'RA&MG'№11 (29)	November 07th	INDO DEFENCE 2018 (07-10.11.2018, Indonesia, Jakarta)
'RA&MG'№12 (30)	November 26th	IDEAS 2018 (27-30.11.2018, Pakistan, Karachi)
'RA&MG'№13 (31)	December 01th	EDEX 2018 (03-05.12.2018, Egypt, Cairo)

In 2019

ISSUE	RELEASE DATES	ADDITIONAL DISTRIBUTION
'RA&MG'№01 (32)	February 12th	AERO INDIA 2019 (14-18.02.2019, India, Bangalore)
'RA&MG'№02 (33)	February 15th	IDEX 2019 / NAVDEX 2019 (17-21.02.2019, UAE, Abu Dhabi)
'RA&MG'№03 (34)	March 24th	LIMA 2019 (26-30.03.2019, Malaysia, Langkawi)
'RA&MG'№04 (35)	April 01th	LAAD 2019 (02-05.04.2019, Brazil, Rio de Janeiro)
'RA&MG'№05 (36)	April 28th	IDEF 2019 (30.04-03.05.2019, Turkey, Istanbul)
'RA&MG'№06 (37)	May 12th	IMDEX ASIA 2019 (14-16.05.2019, Singapore)
'RA&MG'№07 (38)	May 26th	SITDEF 2019 (16-19.05.2019, Peru, Lima)
'RA&MG'№08 (39)	May 14th	Security Week Russia 2019 (28-31.05.2019, Russia, Moscow)
'RA&MG'№09 (40)	June 16th	Paris Air Show 2019 Le Bourget (17-23.06.2019, France, Paris)
'RA&MG'№10 (41)	June 16th	ARMY 2019 (25-30.06.2019, Russia, Moscow)
'RA&MG'№11 (42)	June 24th	IMDS-2019 (26-30.06.2019, Russia, Saint Petersburg)
'RA&MG'№12 (43)	August 18th	MAKS-2019 (27.08-01.09.2019, Russia, Moscow)
'RA&MG'№13 (44)	September 16th	AVIATION EXPO CHINA 2019 (18-20.09.2019, China, Beijing)
'RA&MG'№14 (45)	October 01th	INMEX SMM India 2019 (03-05.10.2019, India, Mumbai)
'RA&MG'№15 (46)	October 13th	SEOUL ADEX 2019 (15-20.10.2019, Korea, Seoul)
'RA&MG'№16 (47)	October 28th	BIDEC 2019 (28-30.10.2019, Bahrain, Manama)
'RA&MG'№17 (48)	November 02th	Defense & Security 2019 (04-07.11.2019, Thailand, Bangkok)
'RA&MG'№18 (49)	November 16th	Dubai Airshow 2019 (17-21.11.2019, UAE, Dubai)
'RA&MG'№19 (50)	December 08th	Gulf Defense & Aerospace 2019 (10-12.12.2019, Kuwait, Al Kuwait)

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