China’s Aerospace Makes Progress

中国众多航空项目取得新进展

Two of China’s newest aerospace companies are making their mark as they lead the country’s strategic goal to be a player in world markets.

Their latest triumphs and technologies can be seen here at China Aviation Expo. Comac, China’s airliner manufacturer, celebrates the first flight in May of the narrowbody C919, the launch of the widebody C929, and the first year in service of the ARJ21 regional jet.

AECC, the Aviation Engine Company of China, is responsible for developing China’s first airliner turbofan, as well as new engines for military aircraft and helicopters.

Airbus Expands Work in China

Airbus is ramping up its activities in China with milestones at its final assembly and completion facilities in Tianjin.

The A330 completions center will deliver its first outfitted A330 in the coming days, and the A320 Final Assembly Line will be renamed A320 FAL Asia as it begins delivering aircraft to customers outside China.

Meanwhile Airbus plans to boost its industrial cooperation with Chinese companies to $1 billion a year by 2020.
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LEAP

Extraordinary together
China increasingly seems to be taking a leading role in a politically driven widebody-aircraft program that has been defined as an equal partnership between Moscow and Beijing.

Launch of full-scale development of the aircraft, comparable to the Airbus A330-900, was marked in May by registration of a Shanghai-based joint program company, China-Russia Commercial Aircraft International Company (Craic), owned by China’s Comac and Russia’s United Aircraft Corp.

General Electric and Rolls-Royce will compete to supply a Western engine, with which the widebody will enter service around 2027. The Chinese side is reportedly pushing to develop the intended second type of engine for the aircraft, the Long-Range Wide Body Commercial Aircraft (LRWBCA), known in China as the C929. Thrust requirement is probably more than 70,000 pounds, per engine.

Shanghai, Comac’s home town, was chosen last year as the project company’s headquarters. That was to be partly balanced by setting up the joint engineering center in Moscow. But it has now been decided that the office, responsible for top-level development, will also be in Shanghai, says an industry source. The engineers will spend some months each year in Moscow.

Comac is to build the C929’s metal-and-composite fuselage, while UAC makes the composite wing. In both cases, that work will presumably include detail design and development. Comac will also perform final assembly.

The aircraft will be able to carry about 280 passengers over 12,000 km (7,500 mi.) in its basic configuration. A generous 10 years has been allowed for development.

UAC and Comac are targeting a 10% advantage in operating costs over aircraft that will compete with the C929.

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**C929 Launched, Interior Unveiled**

中俄远程宽体客机三舱布局首次亮相国内航展

A three-class interior for the C929 will be unveiled at the show.

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中国商飞（COMAC）在2017北京航展第一天，首次在国内航展上展出了其中远程宽体客机剖开式三舱布局模型。该机型的基本型航程为12000km，座级为280座，计划年底完成系统初步技术方案。

为了更好推进中俄联合研制新一代远程宽体飞机项目的运行工作，中国商飞与俄罗斯联合航空制造集团（UAC）在中国成立合资公司—中俄国际商用飞机有限责任公司（CRAIC），目前合资公司已完成工商注册程序，取得了营业执照，于今年5月22日在上海成立。经营范围为宽体飞机产品研制和技术开发、制造、市场营销、销售、售后服务、咨询和项目管理等其他相关业务。

合资公司充分利用双方母公司的优势资源，开展宽体客机系列化机型的研制工作，双方已经确定了远程宽体飞机系列化发展方案。此款新型双通道宽体客机的竞争对手是空客A350-900和波音787-9。新宽体机将在上海制造，其机翼、尾翼和气动控制面的设计工作将由UAC的工程技术人员负责，这些部件将大量使用复合材料，机身总体结构大约50%由复合材料构成，15%为铝合金。
LEAP Engine Orders by China ‘Worth Billions’
LEAP发动机今年已获中国市场订单价值数十亿

To date, more than 5,000 CFM engines have been ordered/committed in China, including orders for more than 1,000 LEAP-1C integrated propulsion systems for the C919.

Chinese airlines have placed orders so far this year for 360 CFM LEAP-1A engines worth $6.4 billion to power 180 Airbus A320neo family airplanes.

China Eastern’s $3.2 billion order for 140 engines for 70 A320neos is valued at $3.2 billion including a long-term support agreement. It will start taking delivery in 2018.

The airline’s 15-year Rate per Flight Hour (RPFH) maintenance agreement with CFM will guarantee maintenance costs on a dollar per engine flight hour basis. China Eastern has been a CFM customer since 1984 and currently operates the largest CFM56 fleet in China of more than 650 engines.

Largest airline in China by fleet size, China Southern ordered 100 LEAP-1As, worth nearly $1.5 billion, to power 50 new A320neo aircraft. The airline is scheduled to begin taking delivery in 2018. China Southern was one of CFM’s first customers in China and has been operating CFM56-powered aircraft for more than 30 years.

Headquartered in Guangzhou, China Southern Airlines operates more than 700 passenger and cargo aircraft.

Spring Airlines, the first low-cost private airline in China, signed this year for 120 LEAP-1A engines to power 60 new Airbus A320neo/A321neo aircraft. The order is valued at nearly $1.70 billion U.S. The aircraft, which were announced in 2015, are scheduled for delivery between 2019 and 2023.

The first CFM56 engines in China entered service in December 1985 with Air China Southwest and China Eastern Yunnan. Those CFM56-3 engines, powering Boeing 737 aircraft, were among CFM’s very first orders.

The LEAP engine family has had an exceptional entry into commercial service since its first commercial flight on Aug 2, 2016, says CFM, with 18 customers currently operating more than 85 aircraft on four continents. Overall, the fleet has logged more than 100,000 cycles and 200,000 hours while maintaining industry-leading reliability and the highest utilization rate in this thrust class. It is also demonstrating a 15 percent improvement in fuel efficiency with an equivalent reduction in CO2 emissions, and lower noise and NOx emissions.

CFM International is a 50/50 joint company between GE and Safran Aircraft Engines. It has delivered more than 31,000 CFM56 engines to more than 570 airlines around the globe and has logged orders and commitments for more than 14,000 LEAP engines.

CFM engines also power the Boeing 737 and 737 MAX families, where they are the exclusive powerplant, whereas Airbus offers a choice of engines. The LEAP-1B for the 737 MAX entered service in late May with Malaysia’s Malindo Air. The LEAP-1C engine also powers the Comac C919 narrowbody airliner, which made its first flight on May 5.
LEAP Engine Orders by China ‘Worth Billions’
Airbus to Deliver First A330 from Tianjin
空客在中国即将迎来新的里程碑

Delivery of the first twin-aisle A330 airliner from Airbus’ widebody completion center in Tianjin should take place in the coming days, the company says.

The completion of the first A330 in Tianjin marks the second major milestone in Airbus’ drive to increase China’s involvement in its product line. The first was the rollout of the first narrowbody A320 from a purpose-built Final Assembly Line in Tianjin in June 2009; 335 aircraft have since been built there and they are being turned out at the rate of four per month. The FAL is being renamed A320 FAL Asia and will complete aircraft for customers throughout the region.

The A330s to be completed in Tianjin—activities there will include aircraft cabin installation, aircraft painting and flight test, aircraft delivery and customer flight acceptance—will be assembled in Toulouse, France, and flown to Tianjin as “green” aircraft.

The facility will complete one aircraft every month for the first year, then reach a stable rate of two per month in the second year. It will work on both the current A330, and the re-engined A330neo.

More than 200 A330s are in service in China.

The new centre could be expanded to complete A350XWB widebodies if the local market generates enough demand, Airbus says.

The company continues working to convince China of its long-term and continuing commitment to the country’s aviation industry, and it currently has five joint ventures, including three engineering or manufacturing facilities, that provide training and support, engineering, assembly and composite parts manufacturing.

Airbus promises to further enhance its industrial cooperation with China, targeting a total of $1 billion in value by 2020, double the amount in 2015.

Airbus to Deliver First A330 from Tianjin

今年9月20日，空客天津A330系列飞机完成及交付中心就将正式落成并交付首架A330飞机，将空客与中国航空业的合作推向新的高度。

2015年7月2日，在中法两国总理见证下，在法国图卢兹签署协议并宣布正式启动该项目。这是继空客A320系列飞机天津总装线和空客天津交付中心之后，空客在天津的又一重要合作项目。该项目已于今年2月25日开工建设，今年8月第一批厂房竣工并投入运营，9月20日首架在中国完成生产的A330飞机将交付使用。

项目计划，该项目运营第一年1架，第二年达到月产2架的稳定速率，产品主要为A330ceo，A330neo。

2013年7月，空客在图卢兹向南京航空交付了全球第1000架A330系列飞机，2015年，中国东方航空公司和中国航空公司分别接收了利润A330系列飞机共有200多架。


空客与中国的工业合作从交付中国第一架飞机起就已经开始，而多年来双方的工业合作不断扩大和深化。空客与中国的合作伙伴在中国共同投资了5家合资企业，建立了空客（北京）工程技术中心、空客A320系列飞机天津总装线和哈尔滨哈飞复合材料制造中心等，涵盖了培训和支持、工程、总装、复合材料制造等多个领域。

2015年，空客在中国航空工业的投资额达5亿美元，而到2020年，空客每年的投资额预计将达到10亿美元。而根据国家发改委的要求，未来将把A320项目二期和A330项目建设为契机，各方将进一步拓展合作内容，进而打造空客亚洲中心。

China introduced the first Airbus aircraft in 1985. Today, some 1,484 Airbus aircraft are being operated by Chinese airlines, accounting for some 50% of the total fleet of aircraft over 100 seats in China.
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限责任公司的“新舟”700支线客
机的项目。今年6月加普惠PW150C
在“新舟”700的动力项目中从“备
选方案”转化为“最终协议”。

新的PW150C发动机是在
PW127/150A系列产品的基础上开发
来的，它也为“新舟”700的竞
争对手ATR和庞巴迪的支线客
机提供动力。相比于PW150A，PW150C
有许多改进，例如它具有三级动力
涡轮，而PW150A只有两级动力涡
轮。其他的改进包括先进的高效燃
烧室技术、先进材料和制造工艺
等，其齿轮箱也经过改进，以支持
飞机的大直径螺旋桨和经济化的低
压气机。这些改进可以使发动机
节省4%~5%的燃油。PW150C发动
机控制系统将与“新舟”700的航
电和飞控系统集成，以减少飞行员
的工作量。同时新发动机也将进一
步提升在华南等高温地区运行的可
靠性，以及燃料效率。

PW150C发动机控制将被
集成到“新舟”700的航电和飞控
系统中，以减少飞行员的工作负
荷。它将提供增强的运行可靠性和
派能力。在第一阶段，MA700将
会配备标准座椅，可以容纳78名
乘客。未来，MA700将开发装有
90座的加长版。

P&WC和AVIC之间的长期合作
关系追溯到20世纪80年代，当时
PT6发动机被选为运12飞机的动
力。这种关系进一步加强了在
“新舟”60/600项目中的合作。到
date，已有超过100架MA60飞机
被交付给用户。

The MA700 will be the first all-new turboprop regional airliner in 30 years.

The MA700 will be the first all-new turboprop regional airliner in 30 years.
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Boeing: China a $1 Trillion Market

China will become one of the world’s first trillion dollar aviation markets with North America and Europe as demand for new airliners continues to grow.

Boeing has raised China’s demand for new airliners by 6.3% in its latest annual 20-year outlook, released in Beijing this month. It projects a demand for 7,240 new airplanes, valued at nearly $1.1 trillion dollars, up from 6,810 a year ago worth $1.025 billion.

“China’s continuous economic growth, significant investment in infrastructure, growing middle-class and evolving airline business models support this long-term outlook,” says Randy Tinseth, vice president of Marketing, Boeing Commercial Airplanes. “China’s fleet size is expected to grow at a pace well above the world average, and almost 20% of global new airplane demand will be from airlines based in China.”

Due to the growth of its middle class, China is expected to become the largest domestic air travel market in the world in the next 20 years, increasing 6.1 percent annually and surpassing North America, Boeing adds.

Single-aisle airplanes continue to top the list for domestic and regional fleets in China. Boeing sees the need for 5,420 new single-aisle airplanes through 2036, accounting for 75% of the total new deliveries in the country. Full-service airlines and low-cost carriers have been adding new single-aisle airplanes and expanding new point-to-point services to cater for both leisure and business travel demand.

Tinseth said the backlog from Chinese customers demonstrates that the new 737 MAX 8 remains at the heart of the single-aisle market.

Boeing forecasts the widebody fleet over the next 20 years will require 1,670 new airplanes.

“Airlines continue to shift to small and medium widebody airplanes for long-haul expansion and flexibility. Primary demand for very large widebodies going forward will be in the freighter market.”

“China’s outbound travel market continues its rapid growth toward 200 million passengers annually,” said Tinseth. “With new technologies, superior capabilities and advanced efficiency, the 787 and 777X families will play a key role in supporting the growth of China’s long-haul market.”

More than 50% of all the commercial jetliners operating in China are Boeing airplanes.

Meanwhile, China has a component role on every current Boeing commercial airplane model – the Next-Generation 737, 747, 767, 777, as well as the 787 Dreamliner. Over 9,000 Boeing airplanes fly throughout the world with integrated China-built parts and assemblies.

China is becoming one of the world’s first trillion dollar aviation markets, with North America and Europe as demand for new aircraft continues to grow. Boeing has raised China’s demand for new airplanes by 6.3% in its latest annual 20-year outlook, released in Beijing this month. It projects a demand for 7,240 new airplanes, valued at nearly $1.1 trillion dollars, up from 6,810 a year ago worth $1.025 billion.

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### New Airplane China Deliveries Through 2036

<table>
<thead>
<tr>
<th>Airplane type</th>
<th>Seats</th>
<th>Total deliveries</th>
<th>Dollar value</th>
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<tr>
<td>Regional jets</td>
<td>90 and below</td>
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<tr>
<td>Single-aisle</td>
<td>90-230</td>
<td>5,420</td>
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<tr>
<td>Small wide-body</td>
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<td>Medium/large wide-body</td>
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<td><strong>Total</strong></td>
<td></td>
<td>7,240 (18% of world total)</td>
<td>$1.09T (18% of world total)</td>
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</table>

9月6日，波音公司在北京发布了针对中国市场的最新《市场展望报告》，预测未来20年中国将需要7240架新飞机，总价值达1.1万亿美元。与2016年度发布的预测相比，新飞机需求数量调高了6.3%。

波音民用飞机市场营销副总裁兰迪·廷塞斯（Randy Tinseth）表示：“中国经济的持续增长、中产阶级人群的不断扩大、对基础设施建设的巨大投入以及航空商业模式的发展变化等因素为这一长期预测提供了依据。中国机队规模的增长速度远高于世界平均水平，并且未来20年全球新飞机需求中的近20%将来自于中国的航空公司。”

### 新飞机中国交付展望到2036

<table>
<thead>
<tr>
<th>飞机类型</th>
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<td>固定翼大型宽体</td>
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<td>$60B</td>
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波音预测: 中国将成为全球首个超万亿美元航空市场

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The first Boeing 737 with a Chinese-fitted interior is expected to be delivered next year from the U.S. manufacturer's completion center in the coastal city of Zhoushan.

This is Boeing's first such facility outside the U.S. It broke ground on the factory in March, and will operate it with the Commercial Aircraft Corp. of China (Comac).

The plant aims to deliver 100 planes a year, according to China's official Xinhua news agency, and will create 2,000 jobs installing interiors, painting the aircraft and handing them over to the airlines. They will be flown "green" to Zhoushan from Seattle.

Rival Airbus already has two plants in China, with a final assembly line for the Airbus A320 family and a completions center for the Airbus A330, both at Tianjin.

Development of the Chinese completion center forms part of a broader strategic move by Boeing which has preferred to keep final assembly within the U.S. rather than adopt the Airbus model of opening production lines in key overseas markets. The Zhoushan site extends Boeing's already extensive existing relationship with China's aerospace industry which currently makes the horizontal stabilizers, vertical fins, aft tail section, doors, wing panels and other components of the present 737 model. Chinese manufacturers also supply parts for the 747-8, as well as the rudder, fairings, leading edge vertical fin panels and other composite parts for the 787.

5月11日，波音737完工和交付中心，在舟山朱家尖航空产业园正式开工。根据计划，预计2018年投入使用，2018年年底开始交付首架波音737。

737完工与交付中心项目是波音公司首次将737生产线延伸至海外的一个项目，主要有两个部分组成，一是波音公司与中国商飞合资的波音737完工中心，二是波音公司独资的737交付中心。项目占地面积40公顷，主要设施包括制造机库、喷漆机库、交付中心办公楼、检验机库，以及仓储设施、停机坪和滑行道等。

波音的竞争对手空客也在中国设立A320的总装线，位于天津的完工中心也将在9月20日交付首架A330。

对于为什么波音将首个海外工厂设在中国，主要还是基于市场，波音出厂的每4架飞机，就有1架是交付给中国用户。

737完工中心对于合资方中国商飞显然也会带来一定的益处。目前中国商飞公司的单通道干线客机C919已经首飞，商飞在与未来的直接竞争对手合资建设和经营单通道干线飞机局部的生产系统过程中，可以就供应链管理、质量控制以及现代化工业制造体系方面不断交流学习，也将给中国商飞在相关业务能力上带来一定帮助。
A Chinese-Ukranian joint venture is building a complex in Chongqing to manufacture aero engines it hopes will power future aircraft here.

The Beijing Skyrizon private company and Ukrainian engine-maker Motor Sich completed Phase 1 in Chongqing, Sichuan Province, at the end of July, using imported tools and equipment to support and overhaul “some types” of Motor Sich aero engines. Phases 2 and 3 will see a complex that can manufacture engines, an R&D center, and a maintenance and supply chain management center. Chinese investment of $250 million is anticipated to help modernize Motor Sich in the Ukraine.

Motor Sich already has a large fleet of engines in China, in aircraft such as the Mi-8/17 and Kamov Ka-32 helicopters, and the L-15 jet trainer. The JV hopes to compete on new helicopter and aircraft programs. 

Skyrizon and Motor Sich are together showing five engines and an APU here at the show:
- The AI-322-25 turbofan powers China’s AVIC L-15 and Russia’s Yak-130; an afterburning version will be used in the L-15 Lead In Fighter;
- The TV3-117VMA-SBM1V turboshaft series is widely used in China’s Kamov and Mil helicopters;
- The AI-450C turboprop for light utility aircraft, trainers and unmanned aircraft, powers the Austrian Diamond DA-50 and DART-450 trainer;
- The MS-14 turboprop engine together with AV-17/AV-36 propeller could power a 30-seat regional aircraft, Skyrizon suggests, should Chinese industry develop one to fill the gap between the 17-seat Y-12 and the 60-passenger MA60;
- The CIS-certified MS-400V turboshaft suitable for helicopters with a maximum take-off weight of 3.5-6 ton;
- The AI-9V-1 APU, which could be used as ground and airborne power and for starting a turboshaft by providing pressured air.

Skyrizon Brings Ukrainian Engines to China

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来自中国和乌克兰的两家公司正在重庆组建一家合资公司，以生产乌克兰的航空发动机，并希望为中国的飞机提供动力。

北京天骄航空产业投资有限公司和乌克兰发动机制造商马达西奇于7月底在重庆完成了第一阶段工程的建设。采用进口工具设备支持和检修马达西奇某些型号的发动机，并在第2和第3阶段的工程完成后将包括发动机制造工厂、研发中心、维护中心和供应链管理中心。同时中方向投资2.5亿美元用于马达西奇在乌克兰的工厂进行现代化改造。

马达西奇的发动机在中国有广泛的装机机队。例如Mi-8/17、卡-32，以及L-15教练机等。合资公司希望在新型直升机和固定翼飞机项目上进行动力系统的竞争。

天骄和马达西奇在北京航展上共同展出5款发动机和1款APU产品：
- AI-322-25涡扇发动机可配装在L-15和俄罗斯雅克-130高级教练机上，其中在L-15的战斗入门型（LIFT）将使用该发动机的加力型；
- TV3-117VMA-SBM1V系列涡轴发动机广泛应用于中国装备的米系列和卡系列直升机；
- AI-450C系列涡桨发动机主要用于轻型多用途通用飞机、教练机和无人机，并为奥地利钻石公司生产的DA-50和DART-450提供动力；
- MS-14涡桨发动机与AV-17或AV-36螺旋桨搭配，可为搭载30座级支线飞机提供动力，该级别的飞机可填补17座运12和60座“新舟”60之间的空白；
- MS-400V系列涡轴发动机于2014年取得独联体航空委员会（CIS）颁发的型号合格证，可配装于起飞重量为3.5~6吨的多用途直升机；
- AI-9V-1是一款APU产品，它具备更强的发电能力，可作为地面或机载电源，并为直升机发动机起动系统提供压缩气流。
葡萄牙可以为您提供高级技术工程师、高效的研发团队、遍布各行业领域的承包商以及完善的基础设施。

现已在葡萄牙投资的全球大型跨国公司包括英国Cohort集团、巴西航空工业公司Embraer、法国航天航空企业，如Mecachrome、Lauak等等。

正确投资的时刻就是现在，把握机会来葡萄牙吧！
China’s state-owned aero-engine company (yes, company. It used to be industry), is charged with developing jet fighter and commercial airliner engines that can compete with the world’s best.

Realization that China needed to catch up in this regard led to the inauguration on Aug. 28, 2016, of Aero Engine Corp. of China (AECC), the consolidation of 22 aero engine companies across the country that mostly operated as a single group under the umbrella of AVIC.

The new company, with nearly 100,000 employees and registered capital of 50 billion yuan ($7.5 billion), intends to enter world markets and be a global player by 2025. A driving goal, which can be seen as a national strategic strategy, is to produce commercial turbofans for both of Comac’s large airliners, the single-aisle C919 and the widebody C929 being developed with Russia.

It might work with Russia’s United Engine-Building Corp. on the C929 powerplant.

AECC, based in Beijing, is a major exhibitor at this year’s show.

The new group was separated from aeronautics conglomerate AVIC, which now concentrates on airframes, onboard systems and various other activities.

The decision to create AECC “proceeds from the high-level consideration of developing the country and strengthening the military,” President Xi Jinping said Aug. 28, when the group was ceremoniously inaugurated.

Before AECC, most of China’s aero-engine activities were already in a single group under AVIC. But now AVIC is a shareholder in AECC, as is Comac, a commercial-aircraft builder that was split from AVIC in 2008. Both are state companies. The Chinese state is a direct shareholder in AECC, since the central government has a stake and so has the Beijing city administration.

Although AECC is organized as a company, and even has units listed on the Shanghai stock exchange, it remains as much an arm of the Chinese state as are Casic and AVIC.

AECC manufactures products almost entirely for the Chinese state, but it is expected to expand its horizons.

It has launched a special project: In line with the “Made in China 2025” strategy, it plans that by the end of the 13th Five-Year Plan in 2020 China’s aero-engine industry will exceed 70 billion yuan with several products entering the international market.

By 2025, it will exceed 100 billion yuan, and the aero-engine industry will rank in the best in the world.
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中航文化有限责任公司（中航文化）是中国航空工业集团公司下属文化宣传业务板块，下设中国航空报社（航空传媒中心）、航空工业出版社、航空工业期刊报社、航空工业影视中心、中航传媒（北京）展览有限公司、品牌服务与营销事业部分公司及飞客航空文化传播有限公司等七个业务单元，主要业务包括新闻出版传播、国内外展览会展示与会议活动、品牌形象、品牌策划与市场推广、航空飞行大会、航空文化影视产品开发与服务等。中航文化的战略目标是在服务航空工业宣传和文化传播业务的同时，不断探索新需求，全面开拓新市场，努力成为集团信赖、国内认可、国际知名的航空文化传播平台。
Comac C919 Makes Progress

C919取得突破性进展

China's narrowbody C919 has made significant progress this year. Not only did it make its maiden flight on May 5, kicking off its flight test campaign, but it also unlocked the key to world markets with the acceptance of Comac’s application for type certification by the European Aviation Safety Agency.

EASA will now begin work on validating the narrowbody airliner’s prospective Chinese type certificate. For most of the world’s commercial aircraft market, a type certificate from the Civil Aviation Administration of China (CAAC) is not enough. Comac had been working with the U.S. Federal Aviation Administration but became frustrated with the lack of progress.

The C919 made its historical 79-minute maiden flight on May 5 from Shanghai Pudong International Airport. Flight testing will last well over two years and employ another five aircraft, the first of which will join the flight test program by the end of this year.

China Eastern, the launch customer for C919, sent a customer representative to Comac at the beginning of September to evaluate the C919’s cockpit Human Machine Interface.

ARJ21 Celebrates First Anniversary

ARJ21运营一周年

Comac subsidiary Chengdu Airlines celebrated the first anniversary of service of the Chinese-built ARJ21-700 regional airliner with a round-trip flight on June 28 between Chengdu Shuangliu and Shanghai Hongqiao International Airports. The round trip flight makes one stopover at Changsha Huanghua.

Chengdu Airlines, the only operator of the 78-seat ARJ21, now flies two of the aircraft.

They have carried over 20,000 passengers to date. Some design optimization work has been performed during operation, including upgrades to the entertainment and satcom systems, and optimization of cabin configuration.

Lessons learned in operational service are helping Comac design and build modern aircraft, the company says. Thanks to the ARJ21, Comac will be experienced in customer support and keeping customers’ aircraft flying when the C919 finally goes into service.

Orders for the ARJ21 stand at 413 from 19 customers.

ARJ21, Comac will be experienced in customer support and keeping customers’ aircraft flying when the C919 finally goes into service.

The ARJ21 received its production certificate from the Civil Aviation Authority of China (CAAC) July 9, and five are scheduled to be delivered this year.

ARJ21飞机目前已获得413架份订单。
China’s MRO market is growing at more than twice the rate of Europe’s or the United States’ and is set to be worth about $10 billion in five years’ time.

Ameco, mainland China’s largest maintenance, repair and overhaul company, aims to capture a growing share as it develops a string of new capabilities across its businesses. It is also expanding its geographic reach beyond China, and developing more cooperative relationships with original equipment manufacturers in such areas as engines, components and landing gears.

“Ameco is dedicating itself to meeting customers’ maintenance needs and promoting brand image through the comprehensive and one-stop maintenance services,” says Zhu Xiao, Executive Vice President and Chief Market Officer of Ameco. “In future, on the basis of business cooperation on aircraft, engines, components and landing gear, Ameco will seek more cooperation opportunities on new maintenance services to reach a full coverage on products and services.”

Ameco has spent the two years since June 2015 integrating Air China Technics with the former Ameco Beijing, a 60/40 joint venture with Lufthansa German Airlines. While the absorption of Air China’s assets diluted Lufthansa’s shareholding in Ameco to 25%, the German company’s monetary investment remained unchanged, and the Sino-German cooperation continues on large-scale MRO projects such as landing gear.

The merging of Air China Technics and Ameco reduced duplication of resources while adding to the capabilities offered to customers. It also aligned MRO and line maintenance activities at nine branches – Chengdu, Chongqing, Hangzhou, Tianjin, Hohhot, Shanghai, Guiyang, Wuhan and Guangzhou with the Beijing base. Together they hold maintenance licenses from almost 30 countries or regions, including CAAC, FAA and EASA.

Now as one entity they are flexing their muscles.

For airframe overhaul, Ameco has added new customers from such as Germany, Czech Republic, Russia/CIS, Turkey, Iraq and Hong Kong as it develops new capabilities on new-generation aircraft. Meanwhile, it is expanding modification and retrofit capabilities such as passenger-to-freighter conversion on Boeing 757s.

For engine overhaul, Ameco has seen rapid growth in its V2500-A5 engine overhaul business, and it now performs repairs on thrust reversers for V2500-V5, CFM56-5B, CFM56-7B, CFM56-3 and Trent 700. Ameco is planning a new aircraft-related component workshop.

For components and landing gear, Ameco plans to build up Boeing 787 and Airbus A350 generator capabilities. Its landing gear products cover Airbus A320 family, Airbus A330 and Boeing 737NG, 737CL and 747-400, and a new landing gear overhaul capability is in preparation.

Ameco Develops New Letter-checks

MRO giant Ameco is developing new letter-checks to keep pace with maintenance needs as new and next-generation aircraft enter the world’s airline fleets.

This February it completed its first 3C-check on a Boeing 747-8F operated by an international customer, and in provided its first 2C-check for a Boeing 777-300ER.

It has already provided Boeing 787 maintenance service for four global customers since 2014 and began line maintenance on Air China’s 787 fleet last year. It plans to do the first letter-check on a 787 within the next two years.

Ameco started its Airbus A350 maintenance service in 2015 with its first A350XWB releasing service for Finnair in Shanghai.

Based on Air China’s fleet plan, Boeing 737MAX, Airbus A350XWB and Airbus A320neo checks will be coming in two years, with C-checks on the narrowbody types in one to two years.
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Unmanned Z-5 Scores a First in Low Level Work

The widely-used Z-5 unmanned helicopter designed in 2011 by No.60 Research Institute of The People’s Liberation Army General Political Department has just scored a new first thanks to a Ku-band satellite communications system: low altitude surveillance in mountainous terrain.

Flying at low level through plains, hills and mountains makes line-of-sight communication impossible. But fitted with Ku-band equipment—a first in China for an unmanned aerial vehicle—the Z-5 demonstrated the feasibility of unmanned operations in those environments.

The helicopter performed 18 sorties and 20 flight hours from Aug. 3-18 conducting checks of electrical transmission wires in Guangdong Province, where it also encountered high heat, high humidity and marine conditions. It successfully inspected 110kV, 220kV and 50kV AC-voltage power lines, securing precise coordinates of towers and electric lines as well as shooting high-definition images of insulators, pins, connectors and vibration dampers.

The Z-5 is in service in civil fields such as electricity, agriculture, forestry and resource detection, in addition to military uses. It has a maximum take-off weight of 450 kg, a mission payload of 50-80 kg, a maximum cruising speed of 160 km/h, and flight endurance of 4-6 hr.

Z-5型无人直升机成功完成电力巡检示范飞行作业

8月3日，总参谋部第六十研究所研制的Z-5型无人直升机在广东省进行电力巡检示范飞行作业，共计飞行18架次。Z-5首次在国内搭载了Ku波段卫星通信系统，有效解决了超低空、山区飞行的通信瓶颈。Z-5型无人直升机是一款轻型多用途无人直升机，于2011年完成设计定型，随后在部队、院校和全军各训练基地进行了推广应用，并在电力、农业、林业和资源探测等民用领域成功实现了成果转化应用。

香港航空成为A350XWB宽体机新用户

9月1日，香港航空接收了其首架A350-900飞机，成为全球第15家运营这款双通道飞机的航空公司，该架飞机租赁自AerCap航空租赁公司。香港航空共将运营21架空客A350XWB宽体飞机，其中15架直接向空客订购，其余6架为第三方租赁。

截至目前，空客共有来自45家客户总计848架A350XWB系列飞机确认订单，其中亚太地区航空公司共订购了287架A350XWB宽体飞机，占总订单数的三分之一。

北京航展倾力打造专业化

第十七届北京航展于9月19-22日在国家会议中心举办，据航展主办方之一北京华进有限公司总经理高尔青女士介绍，本届航展以“创新引领 融合共赢”为主题，来自14个国家和地区近300家展商参展，包括俄罗斯、意大利、乌克兰、捷克、澳大利亚、荷兰、加拿大等8个国家展馆。

本届航展展示内容除航空制造与维修、通用航空等核心内容外，增设了机场设备、航空VR/AR技术、空地互联网、军民融合四个板块，标志着北京航展在民航空域和纵深专项技术领域的互动发展迈出了坚实一步。此外，第七届中国国际无人驾驶航空器系统大会暨展览/2017中国无人机系统峰会与北京航展的同期举办，更让装备级无人机成为本届航展一大亮点。

此外，航展同期举办的“第三届中国航空科学大会”、“2017北京航展首届国际航空发动机论坛”以及“中国机场新技术创新与发展大会(2017北京)”3场主论坛以及10场分论坛将使北京航展更加专业化。
站在航空维修业的前沿
把握全球航空维修市场的脉搏
为中国航空维修业界人士提供全方位的信息服务

杂志

- 《航空维修与工程》杂志关注的是航空产品的整个生命周期，包括从设计、制造中的可维护性，到航空产品的适航、使用、维护、直至退役、拆解再利用。多年来，刊物的内容不断丰富，现已成为中国航空维修界的良师益友。

维修能力调查

- 单年出版的《国内维修企业维修能力调查》、双年出版的《国内机务维护企业经营状况调查》更是涵盖了中国国内大部分的航空维修企业，内容详实具体、数据准确可靠，为企业的决策支持提供了得力的数据支持。

MRO China 峰会

- 一年一度的中国航空维修峰会（MRO China）是中国航空维修界的一个高层交流的平台。该峰会现已成为与业内高层领导面对面探讨航空维修业政策法规、市场格局、运营发展等话题的绝佳机会，更是企业间达成商务洽谈、寻找合作商机的入口。

维修专业培训

- 最新推出的培训课程——《飞机DFM选型培训》课程，涵盖的内容有制定选型计划、机载设备技术标准、适航规范、新技术和标准应用介绍、客舱结构等；通过这一课程，帮助航空公司自主控制机队结构，统一控制交付计划，实现航材通用性保障、人员、设备维护等成本的有效控制；同时也为机载和客舱设备供应商提供与航空公司面对面交流的机会。
Russia-China Near Next Step on Heavy Lifter

The long-proposed joint Sino-Chinese Advanced Heavy Lift helicopter may get the go-ahead in the next few months after nearly a decade of studies.

Rostec, Russia’s state hi-tech corporation and the parent of Russian Helicopters, could sign the contract with Aviation Industry Corp. of China (AVIC) before the end of this year, according to Victor Kladov, Director for International Cooperation and Regional Policy of Rostec. He made the announcement at the Fourth China-Russia Expo in Harbin, China, in June. Negotiations on the conceptual model and configuration have been completed and the draft contract between the parties is being prepared, he said.

The Advanced Heavy Lift (AHL) program is a high priority for the two countries, with framework agreements signed during meetings between Russian President Vladimir Putin and Chinese President Xi Jinping. China will fully manage the program including design, assembly of the prototypes, testing, certification, serial production and marketing. Russian Helicopters will develop certain subsystems on contract, but will not build them.

“At least 200 heavy lift helicopters are planned to be built in China. This is an estimated market volume. These helicopters will possibly be exported,” according to Kladov.

The AHL is expected to have a take-off weight of 38 metric tons (83,800 lb.). It could carry 10 metric tons (22,100 lb.) of cargo inside the cabin or 15 metric tons (33,100 lb.) on an external sling, or up to 60 passengers. In 2015 Avicopter said the AHL would have a ceiling of 5,700 meters (18,700 ft.), range of 630 km (392 mi.) and a maximum speed of 300 kph (186 mph).

AVIC Helicopter last week unveiled a new model of its latest concept for the AHL, displaying it at the China Helicopter Exposition in Tianjin.
### Airshow Calendar

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<td>2018 2月6–11日</td>
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<td>ABACE</td>
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