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# SAFRAN IN CHINA

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# SAFRAN IS AN INTERNATIONAL HIGH-TECH GROUP

and tier-1 supplier of systems and equipment in the aerospace and defense markets. Operating worldwide, Safran has more than 58,000 employees and generated sales of 16.5 billion euros in 2017. The Group's international footprint allows it to enhance its competitiveness, build industrial and commercial relationships with the world's leading prime contractors and operators, and provide responsive local service anywhere in the world. Working alone or in partnership, Safran holds world or European leadership positions in its core markets.

In February 2018, Safran took control of Zodiac Aerospace, significantly expanding its aircraft equipment activities. The expanded Group now has more than 91,000 employees, with over 340 facilities in 30 countries, and is the world's third largest aerospace company (excluding aircraft manufacturers).



## Beijing

Safran Group China Representative Office  
Safran China  
Safran Helicopter Engines (Tianjin) Co., Ltd. Beijing Branch  
BSS TurboTech Ltd.

## Tianjin

Safran Helicopter Engines (Tianjin) Co., Ltd.  
Safran Aircraft Engines Suzhou Co., Ltd., Tianjin Branch  
Zodiac Aerospace (Tianjin) Pte Ltd.

## Suzhou

Safran China Suzhou Branch  
Safran Landing Systems Suzhou Co., Ltd.  
Safran Aircraft Engines Suzhou Co., Ltd.  
Suzhou SME-CQ Automotive Safety Technology Co., Ltd.

## Shanghai

Safran China Shanghai Branch  
Safran Aircraft Engines Suzhou Co., Ltd., Shanghai Branch  
Shanghai SAIFEI EWIS Manufacturing Co., Ltd.

## Xi'an

Safran China Xi'an Branch  
Xi'an Savi Nacelles Co., Ltd.  
Xi'an CEA Safran Landing Systems Services Co., Ltd. (XIESA)

## Guiyang

Safran Aircraft Engines (Guiyang) Co., Ltd.

## Chengdu

Safran China Chengdu Branch  
Sichuan Services Aero-engine Maintenance Co., Ltd. (SSAMC)  
Aero Engine Maintenance Training Center (AEMTC)

# SAFRAN AT THE FOREFRONT OF FRANCO-CHINESE COOPERATION



Building on more than a century of relations with China, Safran is now a major player in the Chinese civil aviation market, largely based on a sustained partnership policy and a local presence in all market segments. Over the past 40 years, Safran has formed strong ties with the major players in the Chinese aviation industry and this mutual trust has been rewarded by several strategic partnerships. Safran has

established strong partnerships with CAAC, all major Chinese airlines and key industrial players such as AVIC, AECC and COMAC. Safran not only is largely involved in major Chinese aircraft, helicopter and engine development programs: C919, ARJ21, MA60, MA700, AC311A, AC312, AC352, WZ16, etc, but also has established MRO facilities with major Chinese airlines such as Air China, China Eastern Airlines, etc.



**100+ YEARS**  
of relation with China



**20+ ENTITIES**  
in China



**about 2,500 PEOPLE**  
operating in China<sup>(1)</sup>

<sup>(1)</sup>including over 1000 people at JVs and participation

# MORE THAN 100 YEARS OF STRONG LOCAL PARTNERSHIP

- 1910** - Safran's relationship with China starts with the first visit to France by a Chinese delegation. There, they witness a demonstration flight by a Blériot XI, powered by the Omega rotary engine made by Gnome, one of Safran's predecessor companies.
- 1975** - Turbomeca (now Safran Helicopter Engines) turboshaft engines Turmo IIC6 are sold to China to power 12 Super-Frelon helicopters deployed by the Chinese navy.
- 1980** - Agreement with AVIC for the production of Turbomeca Arriel 1 engines.  
- Sagem (now Safran Electronics & Defense) transfer to AVIC PA155 autopilot technology under license for the Z-9 helicopter.
- 1985** - First CFM56 engines from CFM International (50/50 joint venture between Safran Aircraft Engines & GE) enter service in China with delivery to CAAC on an aircraft B737 for Yunnan Airlines (China Eastern) and Southwest Airlines (Air China).  
- Opening of first Turbomeca office in Beijing.
- 1990** - Beginning of subcontracting in China. Today, a dozen AVIC and AECC plants make aircraft equipment and engine parts for Safran.



- 1996** - Industrial cooperation program for the production of engine parts: contract signed with AVIC for the local realization of the CFM56 parts.  
- Creation of Aero Engine Maintenance Training Center (AEMTC) in Guanghan.
- 1999** - Creation of Sichuan Snecma Aero-Engine Maintenance Co., Ltd (now Sichuan Service Aero engine Maintenance Co., Ltd), SSAMC, engine maintenance joint venture with Safran's participation.
- 2002** - Opening of the Messier-Bugatti-Dowty (now Safran Landing Systems) plant in Suzhou to manufacture medium-sized landing gear parts, subassemblies and assemblies. This site is also a hub for the Asian supply chain.  
- Partnership in education and research between Snecma (now Safran Aircraft Engines), École Centrale de Lyon and several Chinese universities.
- 2005** - Opening of the Snecma plant in Suzhou to make parts for the CFM56-7 low-pressure turbine and to support the company's suppliers in Asia.
- 2006** - Creation of Snecma Xinyi Airfoil Castings Co., Ltd (now Safran Aircraft Engines (Guiyang) Co., Ltd) to produce turbine parts for CFM56 engines.  
- Turbomeca and the Chinese aerospace industry agree to strengthen their partnership by jointly developing the Ardenid 3C/WZ16 engine.



- 2008** - Creation of Turbomeca China (now Safran Helicopter Engines China).  
- Creation of Zodiac Aerospace (Tianjin) Pte Ltd.
- 2009** - CFM International LEAP-1C integrated propulsion system (engine and nacelle) are selected by COMAC for the C919. The first COMAC C919 successfully completes its first flight in 2017.
- 2010** - Creation of Safran China - Safran (Beijing) Enterprise Management Co, Ltd.
- 2011** - Creation of Suzhou SME-CQ Automotive Safety Technology Co., Ltd to design, produce and sell automotive safety systems.  
- Creation of Xi'an SAVI Nacelles Co., Ltd joint venture to assemble nacelle components.
- 2012** - Creation of Shanghai SAIFEI Aviation EWIS Manufacturing Co., Ltd to develop Electrical Wiring Interconnection Systems (EWIS), in particular for the COMAC C919.
- 2016** - Creation of Xi'an CEA Safran Landing Systems Services Co., Ltd (XIESA), a landing gear MRO joint venture dedicated to Airbus A320 and Boeing 737 airplanes. Safran Landing Systems and China Eastern Airlines lay the cornerstone of this new center of excellence in July 2017.
- 2018** - Sichuan Services Aero Engine Maintenance Company (SSAMC) inaugurates a new 43,880-square meter facility, expanding its MRO capability for CFM56 and LEAP engines to 300 engines per year.



# OUR PRESENCE IN CHINA

## LONG-TERM COMMITMENT TO CHINA MARKET AND TO OUR CUSTOMERS



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Safran is heavily involved in Chinese airline operations, mainly as one of the parent companies of CFM International (the 50/50 joint venture between Safran Aircraft Engines and GE) that makes the CFM56® and LEAP® turbofan engines. Safran also calls on local industrial partners to make a variety of engine parts.

With 40 years of cooperation with the Chinese industry in the area of helicopter engines, Safran is the leading helicopter engine

supplier in the country and has over 500 engines in operation in China.

Besides aircraft and helicopter engines, Safran also provides a wide range of systems and equipment for the single-aisle and wide body commercial jets operated by China's leading airlines, including landing and braking systems, nacelles, wiring, flight control systems, power transmission systems, aero systems, aircraft seats and cabin, etc.



© Patrick Penna / Airbus Helicopters (Vitrailles (France))

**7,000+**  
CFM ENGINES  
(including CFM56, LEAP-1A, 1B, 1C)  
on order and intent to order in Great China<sup>(1)</sup>

**50%**  
OF CHINESE-REGISTERED HELICOPTERS  
is equipped with Safran engines or  
its licensed products.

About  
**50%**  
OF CHINA'S COMMERCIAL AIRCRAFT  
are equipped with Safran  
landing gears, wheels and brakes.

**9** SAFRAN COMPANIES  
contribute to the COMAC C919 program

Largely present in all aviation segments in China, Safran provides broad local support to the Chinese civil aviation sector, from sales and marketing to customer support, MRO and engineering services.

<sup>(1)</sup> mainland China, Taiwan, Macao and Hongkong

## MORE THAN 40 YEARS OF COOPERATION WITH AVIC

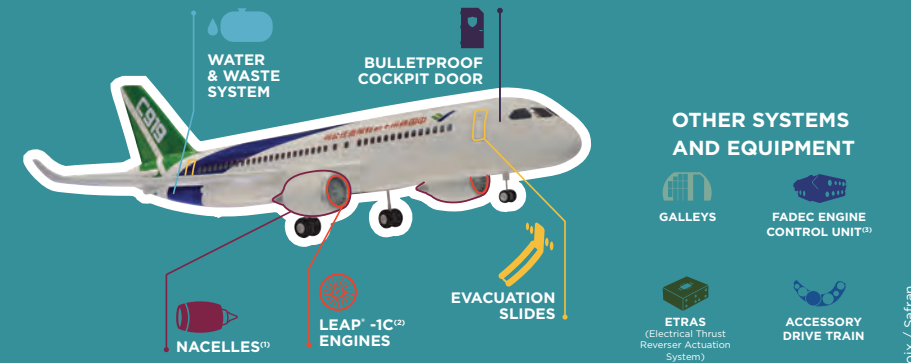
AVIC is an important industrial partner to Safran in China. Safran has worked closely with AVIC for some 40 years, through complete or partial production under license of the Safran's Arriel 1 and Arriel 2C helicopter engines and Safran autopilots for the Z9/H425 helicopter. More than 10 AVIC plants produce aircraft equipment parts for Safran. In 2011, AVIC Aircraft and Safran Nacelles formed a joint venture Xi'an SAVI Nacelles Co., Ltd, to produce all the A320 CFM56 thrust reversers doors. In the future, SAVI Nacelles will also produce nacelle assemblies for COMAC C919 nacelles as part of an IPS (Integrated Propulsion System).

Safran is also a major supplier to AVIC MA700 and MA60 turboprop aircraft. Safran Electrical & Power is a tier-one supplier for the MA700 main and auxiliary generation power systems, and provides Ram Air Turbine (RAT) to the emergency electrical power system made by AVIC Nanjing Engineering Institute of Aircraft System (NEIAS). Safran Landing Systems supports AVIC Xi'an Aviation Brake Technology Company to design and produce the MA700 wheel and brake system. Zodiac Aerospace, which joined Safran in February 2018, is also a tier-one supplier for MA700 airborne equipment. With regards to the MA60 program, Safran Electrical & Power provides the generation power systems.



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## SAFRAN'S CONTRIBUTION TO THE COMAC C919



<sup>(1)</sup> Through Nexcelle, the 50/50 joint venture between Safran Nacelles and GE Aviation's Middle River Aircraft Systems (MRAS).  
<sup>(2)</sup> LEAP<sup>®</sup> engine is the successor to the CFM56<sup>®</sup> engine from CFM International, the 50/50 joint company between Safran Aircraft Engines and GE.  
<sup>(3)</sup> Through FADEC Alliance, the 50/50 joint venture between FADEC International and GE.

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## LONG-TERM PARTNERSHIP OF TRUST WITH COMAC

Safran is also a major supplier to China's aircraft programs. The partnership between Safran and COMAC has lasted for more than ten years until now, starting with the ARJ21 and then followed by the C919. Safran supplies the entire C919 propulsion system, consisting of the LEAP-1C engine from CFM International<sup>(1)</sup>, and the nacelle and thrust reverser built by Nexcelle<sup>(2)</sup>. Safran also supplies the C919's electrical wiring interconnection system (EWIS), via SAIFEI Aviation EWIS Manufacturing Co. Ltd<sup>(3)</sup>. With Zodiac Aerospace<sup>(4)</sup> which supplies water & waste system, bulletproof cockpit door and evacuation slides, in total 9 Safran companies contribute to the COMAC C919 program, which makes Safran a major partner on the C919 and demonstrates the successful collaboration with COMAC and Safran's long-standing commitment to the China aviation industry.

<sup>(1)</sup> CFM International is a 50/50 joint company between Safran Aircraft Engines and GE.  
<sup>(2)</sup> Nexcelle is a joint venture between Safran Nacelles and GE (MRAS).  
<sup>(3)</sup> A joint venture created in 2012 by Safran Electrical & Power and Shanghai Aircraft Manufacturing Co. (COMAC)  
<sup>(4)</sup> Zodiac Aerospace joined Safran in February 2018

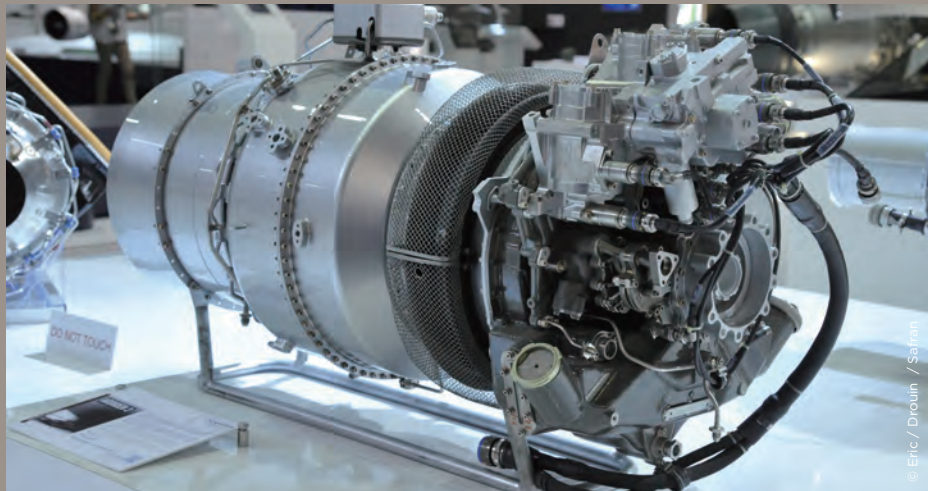
## STRATEGIC PARTNERSHIP WITH AECC

Safran works closely with AECC in the development of helicopter engines. Safran has jointly developed and built the WZ16, also known as the Ardiden 3C (certified by EASA in April 2018), with Dongan and HAPRI of the AECC (Aero Engine Corporation of China) consortium. The engine powers the AC352 helicopter, which first flew in December 2016. The WZ16 should become CAAC certified in 2019. In the field of aircraft engines, AECC factories are also producers of parts for the CFM56 and LEAP engines<sup>(1)</sup>.



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<sup>(1)</sup>CFM56 and LEAP are trademarks of CFM International a 50/50 joint company between Safran Aircraft Engines and GE



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## MRO & SERVICES DELIVERING VALUE TO OUR CUSTOMERS

Leveraging its assets – technological expertise, data management and international reach, Safran is committed to provide reliable, flexible and tailored services to optimize global cost of ownership, enhance performance, and maximize equipment service life, ultimately contributing to critical flight safety, matching aircraft operators' requirements worldwide.

Our world-class maintenance facility for aircraft engine - SSAMC (Sichuan Service Aero-engine Maintenance Co. Ltd.), joint venture between Air China and CFM International, offers a wide range of MRO services for CFM56 and LEAP engines with the capability to 300 engines per year. Since its establishment in 2010, it has serviced for more than 40 customers throughout China and Asia.

One of the largest landing gear maintenance facilities in China, XIESA (Xi'an Eastern Safran Landing Systems Services, Ltd.), the joint venture between Safran Landing Systems and China Eastern Airlines, is a world-class center of excellence in the MRO of landing gear on Airbus A320 and Boeing 737 commercial airplanes.

# A MAJOR ACTOR IN SUPPORTING THE DEVELOPMENT OF AVIATION INDUSTRY IN CHINA



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## TRAINING

Safran's Aero-Engine Maintenance Training Center (AEMTC)<sup>(1)</sup> has trained over 13,000 mechanics from all over Asia in the maintenance and repair of CFM56® engines since its opening in 1996. Safran and AVIC have also teamed up to actively develop training initiatives in both groups.

In September 2011, they signed a Memorandum of Understanding (MoU) on training, extending the strategic partnership first created in 2010, and expanding the scope of collaboration between the two groups to include all of their subsidiaries' business sectors.

<sup>(1)</sup>in partnership with CFM International, GE, China Aviation Supplies (CAS), the Civil Aviation Flying University of China (CAFUC) and the Civil Aviation Administration of China (CAAC).

## SUPPORTING UNIVERSITIES

Safran is involved in education and in-service training programs for engineers, reflecting its ongoing commitment to the development of the Chinese aviation industry. In 2005, Safran was the first industrial partner to join the project to create the Ecole Centrale of Beijing, part of Beihang University. Safran has also signed a partnership agreement with major French and Chinese

aeronautical engineering schools to create the Sino-European Institute of Civil Aviation (SIAE) in Tianjin teaming up with the Civil Aviation Administration of China (CAAC). Safran is also one of the founding members of the SPEIT engineering school (partnership between Paris Tech and Shanghai Jiaotong University) in Shanghai, created in 2013.



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# POWERED BY TRUST

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