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# TAKE A LOOK AT DAHER

There's more to this aerospace giant than the TBM turboprop

By Marino Boric

MANY OF US WHO REGULARLY PILGRIM TO major aviation shows in the U.S. and in Europe have seen the sleek and fast TBM turboprop aircraft. Those who have recently visited the TBM exhibits may have noticed another name in front of TBM, the name DAHER. So who is Daher and what does this new name stand for?

Many still may remember the name Socata as somehow belonging to this same company. For some there may be an unclear understanding of the company and its activities, which has changed deeply in the last decades. This "uncertain" perception pushed me to dig deeper in order to better understand this aerospace giant.

One of first actions was to visit the Daher facility in Tarbes, France where all TBM aircraft are manufactured, followed by a visit to the Daher facility in Pompano Beach, FL. Those visits were for me an impressive boost of knowledge and changed my perception about the TBM and Daher radically.

It was soon obvious to me that the perception of many airmen, media and even mine was wrong, or better to say it was incomplete and even incorrect. In a few words, the TBM is just one small part of activities united under the name of Daher, the company which this year is celebrating its 155th birthday. Daher is today much more than "only" TBM. It's an equipment supplier which already has and is further developing, integrated industrial systems for aerospace and advanced technologies.

## DAHER TODAY

Daher today designs and develops solutions for itself and for its industrial partners by combining its know-how in industrial manufacturing, in product and process engineering, logistics and transport,

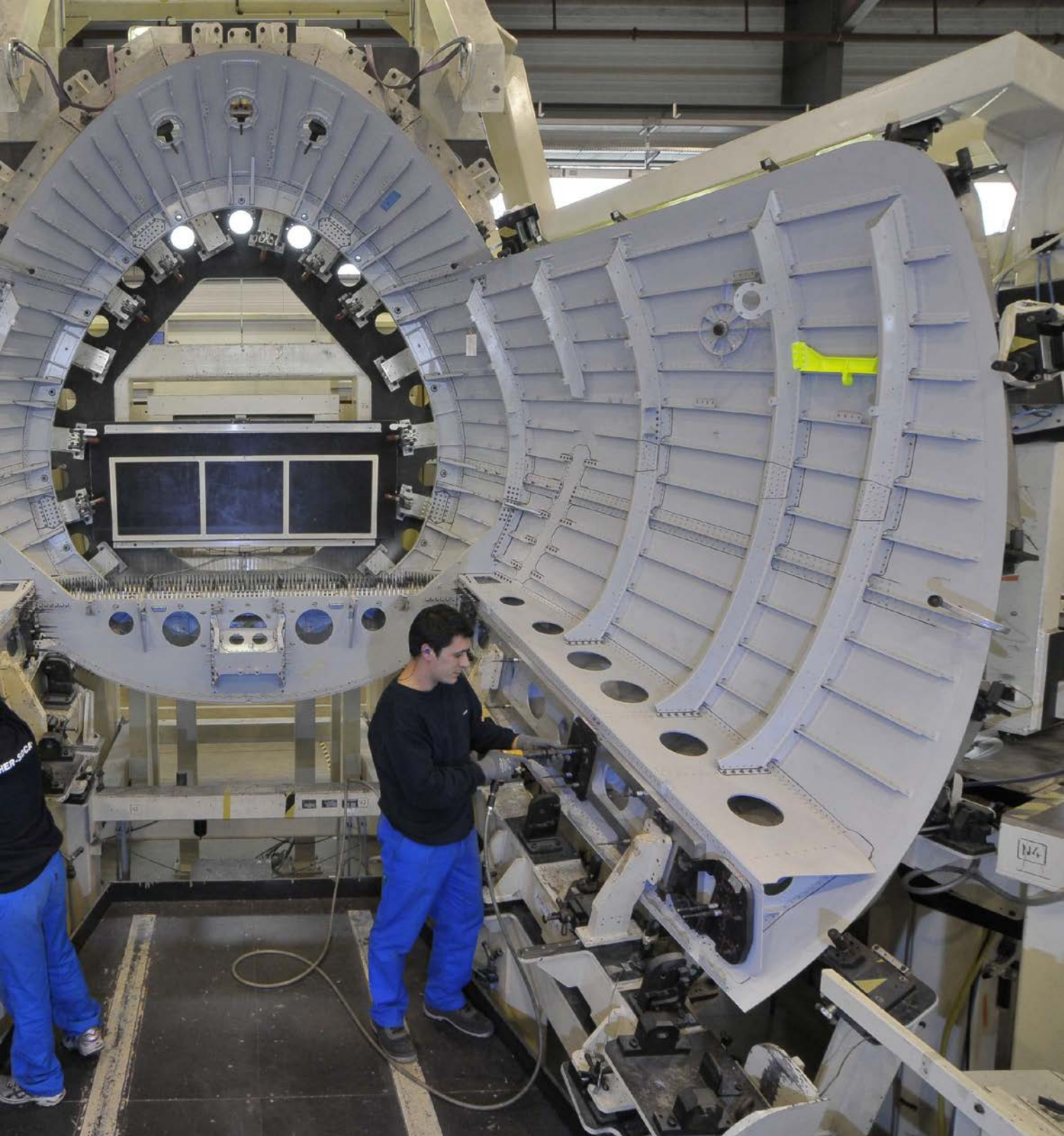


and other industrial services. Daher has grown into a leader in five fields of activity in aircraft manufacturing, aero structures and systems, integrated logistics, nuclear services, and specialized valves, generating a turnover in excess of 1 billion Euros, with an order book corresponding to more than three years of turnover.

Daher is the world's oldest aircraft manufacturer in operation today which has built airplanes for

AIRBUS A380 assembly.  
DAHER





more than a century. It is a builder of the popular single-engine turboprop airplanes named TBM. The roots are in the pioneering Morane-Saulnier aviation company — and more recently in SOCATA.

#### **DAHER TBM FAMILY**

Not many know that the design of the TBM airplane family is connected to the Mooney 301. TBM originated from the initials “TB” for Tarbes and

“M” stands for Mooney. After Mooney’s acquisition by French owners, Mooney and SOCATA were discussing a co-development of a new enlarged turboprop design derived from the earlier 301. This resulted in the formation of a joint venture for developing and manufacturing the envisioned aircraft, designated as the TBM 700. The aircraft was considerably heavier than the original 301 but powered by more than twice the engine power. In





**THE TBM** assembly line at Tarbes, France. TBM DAHER

1987, a joint-venture named TBM International was established with the aim of completing the 700's development and manufacturing. The ownership was divided between Mooney and SOCATA's parent company Aérospatiale. By mid-1990 Mooney withdrew from the joint venture leaving SOCATA as the primary company involved, which had started the production of the TBM 700 in Tarbes, France. The delivery of a TBM 700 started in early 1990 and the first production batch of 40 aircraft were sold out almost instantly paving the success of the TBM aircraft family.

Daher today designs, produces, and maintains the TBM family of aircraft; more than 800 Daher aircraft are in service today. The world of TBM consists of following TBM models: 700, 850, 900, 910, and 930. Daher offers factory TBM Care Program (TCP) as part of the purchase package.

The TBM family relied from the beginning on the Pratt & Whitney PT6 turboprop powerplant, and quickly grew with the introduction of the fully pressurized version 700A in 1992, followed in 1999 by the TBM 700B model with a larger cargo door and an optional pilot entry door. The French Army Aviation took delivery of three B model aircraft, bringing the total number of military aircraft to 28 TBMs 700 in 2000. The reinforced TBM 700C2 was certified in 2003 with increased MTOW and followed in 2006 by a TBM 850 Legacy. The 850

is strictly identical to the TBM 700 airframe but is powered by the 850 shaft horsepower PT6A which gives the TBM 850 jet-like performance with turboprop efficiency.

In 2009 Socata, the descendant of famous aircraft manufacturer Morane Saulnier, joined the Daher group. After more than 500 delivered TBMs in 2009, the TBM 850 was presented. In 2014, an aerodynamically refined version, the TBM 900, was presented. This version with winglets offered greater speed, range, and efficiency than previous TBMs together with improved short field capabilities and lower cabin noise.

The flagship TBM 930 was introduced in 2016 with upgraded interior and avionics, including the Garmin G3000 touchscreen avionics suite. The TBM 930 is currently

the world's fastest single-engine turboprop aircraft. The TBM 930 is now offered alongside the 900 and has not replaced it in the lineup. In 2017 the last TBM variant called 910 was presented with Garmin G1000 NXi all-glass avionics, which is an intermediate (avionics) model between the G1000 cockpit of the 900 and the multi-screen Garmin G3000 in the 930 flagship. The 910 has an upgraded cabin compared to the TBM 900 that's equal to the one in the TBM 930. The TBM MMA (Multi-Mission Aircraft) is based on Daher's TBM 900 and its predecessor versions and is suitable for many security, defense, surveillance, cargo, and medical evacuation missions.

## AEROSTRUCTURES & SYSTEMS

As an aircraft manufacturer, Daher is a partner to the world's biggest aerospace and defense programs of Airbus, Airbus Helicopters, Dassault, and Embraer. Daher builds complex subassemblies relying on know-how and expertise in three key areas: metals, composite materials, and assembly.

## DAHER MANUFACTURES:

- Wings and empennages, delivering to the industry wings subassemblies, empennages, tail booms, and more
- Doors, landing gear, passengers and cargo doors



INSIDE THE TBM maintenance facility at Tarbes, France. MARINO BORIC

- Propulsion and underwing, pylons and nacelle subassemblies, secondary vanes, fan cases
- Airframes, for business aircraft, for helicopters, and subassemblies for commercial aircraft, floor structures
- Fairings, wing to body fairings
- Special products, like ducts and pipes, insulation systems, elementary aircraft parts
- Defense equipment, shelters, containers, ground support equipment
- Valves. Daher designs, manufactures, and assembles a range of high-performance products for the primary and secondary cooling systems serving the nuclear and energy sectors.

**DAHER DELIVERS:**

- **Nuclear services.** After over 30 years of experience in the sector, Daher has established itself as a major player in the global nuclear industry delivering turnkey services covering engineering, project management, and operations.
- **Integrated logistics.** Daher was founded on logistical challenges and they remain an integral part of the company today. This allows Daher to secure and optimize procurement to plants and to some of the world's largest projects. Thus Daher is a transport, logistics, industrial services, lead logistics, and service provider.

**Daher Engineering**

Daher's technical expertise and development know-how includes product development and

**MORANE-SAULNIER, SOCATA HISTORY LESSON**

In 1911 engineer Raymond Saulnier and pilot Léon Morane create one of the first aircraft manufacturing companies in the world: Morane-Saulnier.

Morane-Saulnier became famous with shoulder-wing monoplane aircraft. One crossed the Mediterranean Sea, while another one flew from Key West to Cuba, both in 1913. Later with highwing series nicknamed 'Parasol' it was used initially as scout airplanes and became the first fighter aircraft at the beginning of World War I. Specialized in training and fighter aircraft, always monoplane, 10,000 Morane-Saulnier aircraft were produced by the company or licensed built until WW2. The war brought destruction of the factories in Northern France ... and a new one in the south: Tarbes, which became soon Morane-Saulnier's main production center.

In 1953 Fouga's flagship aircraft, the Fouga Magister is chosen by the French Air Force as its first jet trainer, but the manufacturer doesn't have the structure in place for mass production. So its rival

Morane-Saulnier is called on to build the first 100 airframes and all the wings for this legendary aircraft. This marks the start of the aerostructure manufacturing business.

In 1954 Morane-Saulnier designs and builds the MS 760 Paris, the first business jet in the world.

Robert Morane and Raymond Saulnier launch in 1960 an all-metal, lightweight, single piston powered modern aircraft: the MS 880 Rallye. A total of 3,300 Rallye aircraft in 34 different models came out of the Tarbes plant and were exported to around 65 countries.

Founding fathers retired in 1963 and in 1966 the company was bought by Sud Aviation and became SOCATA.

In 1977, SOCATA, the descendant of Morane-Saulnier, works to create a successor to the Rallye, and launches the TB. Its success enables SOCATA to sustainably break into the American market. More TB models follow and win over private customers and pilot schools around the world.





**DAHER MANUFACTURES** subassemblies for helicopters.

DAHER

modification, industrial design process and assembly line, flight testing of innovative solutions, and in-service fleet support. Visitors to the 2015 Paris Airshow could admire Daher's development of the world's first all-electric series production aircraft.

### MRO

Daher provides and develops in-service support for all type and brands of aircraft and offers maintenance, repair, overhaul, and technical supervision for fleet operators. This is illustrated by the company's support of training aircraft utilized by the French Defense Ministry.

### Retrofit

Daher is capable of modifying all types/brands of aircraft developing and offering tailored solutions for avionics moderniza-

tion and the integration of mission-specific equipment or systems including the necessary flight testing and certification, documentation, and support.

### TARBES, HOME OF TBM & DAHER AEROSTRUCTURES

Visiting Daher at Tarbes on the Pyrenees foothills in the South of France, Philippe de Segovia toured me around the plant which manufactures structural components that go into the Airbus, Airbus Helicopters, Dassault and Embraer airplanes.

Daher Tarbes aeronautic factory is impressive, overwhelming, and in my modest opinion simply unique in the world. It is different from other factories I have visited; different because it has grown over more than a century becoming part of the aviation history not only in Europe but worldwide, and different because it

combines in one place production methods from the earliest days of aviation (tube, fabric, metal) to modern advanced composites manufacturing. In Tarbes you feel history but simultaneously you can see the most modern manufacturing of composite aviation parts and subassemblies made of carbon fiber and honeycomb sandwich, or aluminum and titanium, and/or a combination of both.

The history in Tarbes is omnipresent; the oldest building was built by Morane-Saulnier in 1939 and is still in regular use. Some of the plant's machinery is from the 1940s and is in original state but other machinery like the metalstretching machine was in the meantime updated with modern numeric controls. The oldest equipment is still used to build parts for the still-supported (but not serially produced) TB-series airplanes.

In one new production building, I was shown the composite gear door production for an Airbus A400M, and there is a line dedicated entirely to gear doors for the A350 where most modern composite sandwich structures are bonded and riveted to metallic hinges and locking mechanisms. Many aerospace companies subcontract work to Daher, like doors, control surfaces, and entire subsections. In Tarbes even the front end of the Airbus A380 is built. Composite parts are built in a brand-new building which was purposely developed for robotic production of composite layups. The whole process is highly automated and robotic arms with high precision cut the carbon filaments and place the woven tapes of material in place and apply resin automatically where needed.

The level of automation in Tarbes is high, but there is still an army of highly skilled bench workers which manufacture — in a traditional way — metal parts, finishing them with files and checking bend angles with gauges.

### CENTRE DE MAINTENANCE

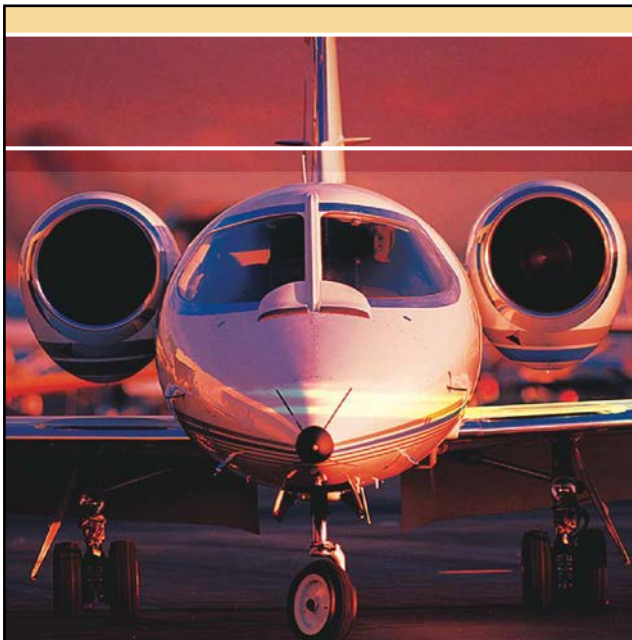
The Daher production complex in Tarbes has a proprietary paint building and a large hangar dedicated to maintenance, repair, and retrofit. In a busy “Centre de Maintenance” I not only observed seasoned technicians but trainees from around the world being trained in aviation MRO skills. Attached to the hangar is even the training facility ... but this is another story. Beside the regular maintenance on TBM products there were other piston aircraft of all genres. Daher activity in

this MRO and retrofit field is much bigger than initially expected. In fact, in front of the hangar sat one of the oldest TBMs around which was waiting for a complete refurbishing. **AMT**



**MARINO BORIC** graduated with a university degree as an aeronautic engineer, and acquired degrees in business development/trade and commerce and in journalism. He is a civil and military pilot and has built experimental aircraft. As a journalist, he

specializes in aviation and propulsion and travels worldwide, flight-testing UL, LSA, Experimental, and certified aircraft. He is writing for U.S., European, and Chinese media companies.



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