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EMBRACING EMBRAER

Its aerospace sector has long been in neighbour Spain's shadow. But Embraer's commitment to Portugal – in the form of an aerostructures plant and programme partnership on the KC-390 airlifter – gives the industry a springboard for success



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(Top) Portugal has committed to the KC-390 as part of an industrial partnership; (above left) a Portuguese consortium exhibited this business jet cabin concept at the Paris air show, aimed at highlighting the country's array of natural materials and design expertise; (above right) TAP's engineering division is one of Europe's leading MRO providers

OVERVIEW

The empire flies back

Embraer – based in Portugal’s one-time colony Brazil – is set to be the saviour of the European country’s small aerospace sector

MURDO MORRISON EVORA

Five hundred years ago, Portuguese pioneers ventured to Brazil to seek fortunes in the young colony. Now Embraer is on a transatlantic mission in the other direction to create its first overseas manufacturing outpost. In the grand sweep of history, Embraer’s move may not rank with the birth of the New World, but for Portugal’s small aerospace industry, the arrival of the Brazilian airframer in the ancient Roman city of Evora two years ago could hardly be more significant.

The factory – where Embraer will build metallic and composite structures, initially wings and horizontal stabilisers for the new Legacy 450 and 500 business jets – follows the company’s first investment in Portuguese industry six years ago. In a part-privatisation, Embraer became majority shareholder, with EADS, in state-owned maintenance, repair and overhaul and aerostructures concern OGMA (see P26).

In December 2011, in a further strengthening of ties between the two Portuguese-speaking nations, Embraer awarded Portuguese engineering firms EEA and OGMA contracts to design and manufacture components for the planned KC-390 airlifter and tanker. The move followed a declaration of intent signed between the Brazilian and Portuguese governments just over a year earlier, in which Lisbon committed to buying KC-390s.

CHANCE TO PROSPER

Although the KC-390 deal was expected, Portugal’s modest band of aerospace companies may be justified in thinking that – with the rest of the economy struggling – Embraer’s commitment finally gives their sector a chance to prosper. The country has long been held back by a lack of a home-grown airframer or systems integrator, believes Sérgio da Cunha Oliveira, who runs the country’s industry association PEMAS.

As a result, Portuguese companies have looked enviously at how their counterparts over the border in Spain have thrived over the past decade on the back of the activities of Airbus Military in Seville and the rest of EADS’s Spanish empire. By contrast, OGMA and the country’s smaller companies have



Structural components of the Embraer Legacy 450 will be built in Evora

had to live off the scraps that small military procurement offset deals have brought, and by fighting on the open market for workshare on civil programmes.

NEW BEGINNING

The sense of a new beginning for Portugal’s aerospace sector is palpable, but Oliveira is keen to point out that workshare further down the supply chain cannot be taken for granted and Portuguese companies will have to earn their way on to them. There is also the likelihood that experienced suppliers in Spain – particularly in the Andalucian cluster just a few hours’ drive from Evora – will be attracted by the scent of new business. “I think it is inevitable that some of the Embraer work will go to Spanish companies,” he says.

Although Embraer has yet to hand out any new contracts on the Legacy work, the two plants at Evora – one for metals, the other for composites – are being built on land the city

authorities hope to turn into a 877,000m² (9,440,000ft²) aerospace park where suppliers to Embraer and others can set up shop. The Brazilian company is committed to nurturing Portuguese firms, despite the fact that only a few have experience of aerospace manufacturing. “We are working hard to develop Portuguese industry to supply the 1,100 parts we will need from third-party suppliers,” says Luiz Fernando Fuchs, president Europe, Middle East & Africa for Embraer. “We may have to go to other countries eventually, but the objective is to develop Portuguese industry.”

In 2008, Embraer announced Evora – 130km south of Lisbon in the region of Alentejo – as the location for its new facility. Construction of the two factories – each the size of three football pitches – will be complete by mid-2012 and both should be fully operational a year later. Fuchs is confident work on further Embraer programmes can be secured – it will not produce parts for other airframers –



Portuguese industry has been offered a programme partnership on the KC-390

» but the Evora site will have to compete with other Embraer facilities and third-party integrators. “Everything is set up for us to be extremely competitive,” he says.

Embraer’s impact on the local economy will be significant. Its investment amounts to almost €150 million (\$195 million) and the factories will eventually have a workforce of 600. Fuchs says that figure will be “multiplied several times” in terms of wider employment. “We believe we will create jobs for 2,000 people indirectly in the region,” he says. For an area largely reliant on agriculture, services and tourism, becoming the hub of Portugal’s emerging aerospace sector was a prize worth fighting for; Fuchs says support from the local mayor and authority has been “tireless”.

Because Portugal has traditionally lacked much of a ‘heavy metal’ manufacturing sector beyond OGMA, its aerospace industry has largely comprised technology and engineer-

“The sector can have a major impact on Portugal’s industrial landscape”

DIAMANTINO COSTA
PEMAS president

ing companies, several of which have looked beyond aviation to the likes of energy, transportation and automotive for business. PEMAS was set up in 2006 – at the time Embraer’s interest in Portugal began – with only nine members. It now represents 33 companies, employing 7,300 people and with total revenue of just over €1 billion, although only 40% of that comes directly from aerospace.

Although the absence of a systems integrator has been a drawback, Portugal has “excellent R&D capabilities and an internationally recognised MRO [maintenance, repair and overhaul set-up] in OGMA”, says Diamantino Costa, PEMAS president and chief executive of Lisbon-based software company Critical Group, whose products include aircraft health monitoring systems and other sensors for the military market. He believes that the arrival of Embraer means “the aeronautical sector has the potential to have a major impact on Portugal’s industrial landscape in years to come”.

Portugal’s relationship with its former colony could be about to go full circle, believes Costa. Just as Embraer has invested on the other side of the Atlantic, Portuguese aerospace and technology companies, including his own, are increasingly looking to do business in Brazil’s burgeoning economy. “With the [football] World Cup and Olympics coming up, there are huge opportunities in homeland security,” he says. “Almost for sure we see Critical having operations in Brazil in the next few years.” ■

MRO AND MANUFACTURING

OGMA gets KC-390 lift

Embraer’s existing subsidiary was a natural choice as a Portuguese partner in the military transport programme

MURDO MORRISON ALVERCA

That Embraer has chosen OGMA – alongside design engineering specialist Empresa de Engenharia Aeronáutica (EAA) – to lead Portugal’s involvement in the KC-390 airlifter programme comes as no great surprise. OGMA is, after all, Portugal’s aerospace champion and the only company to be able to manufacture aircraft parts to any scale.

It has also been – since 2005 – effectively an Embraer subsidiary. The maintenance, repair and overhaul and aerostructures business is held 35% by the Portuguese government and 65% by a shareholding made up of Embraer (70%) and EADS (30%). Embraer’s overall 45.5% stake effectively gives it management control, and its man, Almir Borges, is chief executive. Lisbon, however, remains a “strategic partner” in the once state-owned firm.

Under the deal, OGMA will produce the KC-390’s central fuselage panels, elevators, fairings and landing-gear doors, and will support Embraer during the certification phase that will kick off with production of the first prototype in 2013, followed by first flight a year later. Portugal has committed to five of the aircraft, which is designed to be a replace-

ment for the venerable Lockheed Martin C-130J, and the workshare agreement follows a partnership signed between Lisbon and Brazil in 2010.

Although the contract was expected, it is a welcome piece of business for the 83-year-old company, which saw revenue dip sharply from €146 million (\$190 million) to €120 million in 2010 after four years of steady growth since privatisation. Margins, however, improved with EBIT continuing to grow to just under 10% of turnover – before privatisation the business had lost money. Since then, the shareholders have invested €24 million in capital expenditure, including a new composites manufacturing building opened in 2008.

What first strikes many visitors to OGMA’s 400,000m² (4,310,000ft²) site at Alverca outside Lisbon is its scale and diversity. Sitting in various hangers are an assortment of business jets with military aircraft and helicopters displaying the roundels of air arms around the world. It maintains types such as the Lockheed Martin C-130J, P-3 Orion and F-16, the Airbus Military C-212 and C-295, the EH Industries EH101 and the Embraer ERJ-145 Airborne Early Warning & Control variant.

ONE-STOP SHOP

Although it remains in-house maintenance provider for the Portuguese armed forces, the majority of its MRO defence business comes from overseas, and customers include the armed forces of Belgium, France, India, Pakistan, Spain and Tunisia. Borges acknowledges that OGMA often beats domestic MRO providers in these countries to the business. “Part of the reason is that we are able to provide a one-stop shop on a number of types,” he says.

On the commercial MRO side – a smaller



Seventy per cent of OGMA’s revenues come from MRO

part of the overall business – OGMA’s approvals include the Airbus A320 family, Embraer’s ERJ-145 and E-Jets family as well as business jets from both these airframers and Dassault’s Falcon 50 and 900. The company also offers overhaul capability on the Rolls-Royce T-56, AE 2100 and AE 3007 series, as well as a range of components servicing.

GROWING SHARE

OGMA’s overall revenue is split 70:30 in favour of MRO, but Borges expects the aerostructures element to rise to 45% within the next six years – partly as a result of the Embraer business. A growing share will be made up of composites – currently a quarter of aerostructures turnover. The company’s main contracts are to construct the fuselage of the Pilatus PC-12 business turboprop – it has built more than 1,000 for the Swiss airframer – and the central fuselage on the C-295. It also makes pylons for the Dassault 7X.

Borges believes that as the company gains experience on the aerostructures side and Portugal’s aerospace sector develops, more customers will be prepared to hand over responsibility to OGMA to select and manage individual supply chains. “We have just got responsibility for the C-295,” he says. “Airbus Military used to choose their own suppliers. Now they are happy for us to do it.”

OGMA’s spread of activities and three-shareholder structure is also an advantage for a company that was traditionally regarded as a competent but rather unexciting MRO provider on the edge of Europe. “Diversity is important to stabilise the company against declines in certain areas, and it makes us more flexible,” he says. “And our shareholders open doors for us throughout the world.” ■



OGMA

Portugal cancelled its commitment for three A400Ms in 2003



Airbus Military

A400M MURDO MORRISON LISBON

PORTUGAL’S FAILED SPANISH MARRIAGE

HAD A political decision gone another way almost 10 years ago, the infant Portuguese aerospace industry might have taken a very different path. Long before the arrival of Embraer and the promise of a partnership on the KC-390, Portugal was set to throw in its lot with Airbus Military. Participation on the A400M

programme could have led to Portuguese companies working with their Spanish cousins to feed the Seville-based operation. But Lisbon cancelled its acquisition of three of the military transports in February 2003, months before the formal launch contract was signed, citing lack of funds. Although such a modest order

was never going to provide Portugal with an economy-transforming offset deal, many believe limited industrial participation would have been transformational for a sector with little experience in building aircraft parts.

There is a question, however, over whether Portuguese industry was ready then to contribute in a meaningful way to the A400M supply chain. “Our companies did not have the necessary knowledge,” says José Neves, business development director with technology company GMV, who was involved in the talks. “Only OGMA had the necessary capabilities.” The government’s more Atlanticist outlook was also a factor with Lockheed Martin – Portugal’s air force operates six C-130Hs – exerting influence against the proposed purchase, says Neves.

Not that Portugal has turned its back on Airbus Military; it operates 18 of the manufacturer’s smaller transports, the C-212 and C-295 (see table). The country’s other main current procurement is another EADS-led programme, with 10 NH90 tactical transport helicopters on order.

The KC-390 deal with OGMA now gives Portugal’s small suppliers a second chance to be part of an all-new military transport programme, which may in the long run prove more beneficial for the industry than a tie-up with the airframer next door. ■

PORTUGAL		
PORTUGUESE AIR FORCE		
Type	Active	Ordered
Combat aircraft		
F-16A	29	
Special mission		
C-212 (MPA)	3	
C-295 (MPA)	5	
P-3C (MPA)	5	
Transport		
C-130H	6	
C-212	3	
C-295	7	
KC-390		6*
Combat helicopter		
AW101	12	
SA316	12	
Training aircraft/helicopters		
Alpha jet	19	
EC120B		12*
F-16B	6	
TB30	16	
PORTUGUESE ARMY		
Type	Active	Ordered
Combat helicopter		
NH90		10
PORTUGUESE NAVY		
Type	Active	Ordered
Combat helicopter		
Lynx 95	5	

*Provisional commitments. SOURCE: Flightglobal MILICAS



The business jet cabin concept (above left) was unveiled at the 2011 Le Bourget show; Nortavia hopes to fly its airship in three years

CONCEPTS

Reaching for the sky

Portugal's aerospace companies have been showcasing their capabilities with a range of bold aeronautical design projects

MURDO MORRISON LISBON

Embraer's investments in Portugal may help invigorate the aerospace manufacturing sector, but there is no lack of innovative engineering businesses determined to show what Portugal can offer the world of aviation away from the Brazilian airframer's supply chain.

Three projects recently or currently being developed by Portuguese companies are an airship, an unmanned air vehicle and a concept for a revolutionary business jet cabin. Working to tiny budgets that larger competitors would burn in a matter of days, all three are keen to prove that – despite its lack of an aerospace manufacturing tradition – Portugal has the potential to be taken seriously in European aeronautics.

The centrepiece of Portuguese trade association PEMAS's stand at the 2011 Paris air show was a business jet cabin concept, the result of a collaboration called LIFE – lighter, integrated, friendly and eco-efficient – designed to highlight the capabilities of a range of Portuguese companies, few of which were embedded in the aerospace industry. They included cork materials specialist Amorim; Couro Azul, a leather supplier to the transport industry; and design company Alma Design,

whose experience had mostly been in creating interiors for coaches and railway carriages.

The project kicked off in earnest in 2008 when Embraer was persuaded to become involved on a consultancy basis, says Alma Design partner Jose Marcelino. The Brazilian airframer – whose executives Marcelino had met at a transportation trade exhibition in 2004 – shipped over a composite cross-section for the consortium to work with.

The idea was to anticipate upcoming fashions in business jet cabin design by working with natural materials. "The concept is skin to skin," says Marcelino. "Everything you touch is either cork or leather." The mock-up also included some quirkier touches, including slimline seats and a ball-shaped "work module" where passengers can escape to work.

While there is little chance of the concept making it into a production aircraft any time soon, Marcelino says the project has helped present Portuguese industry "not as suppliers of different things but as a potential solution provider". Initiatives such as these also help companies "approach a problem not from a

technology standpoint but by looking first at the user need".

Another Portuguese consortium – aided by another transatlantic partner, Lockheed Martin, as part of an offset commitment – is also

"Everything you touch in the business jet cabin concept is either cork or leather"

JOSE MARCELINO
Alma Design

behind X AeroSystems, a project to design and bring to market an unmanned air system (UAS) for the civilian market. The effort is headed by PEMAS and involves 13 partners. Two prototypes have been developed – a 35kg (77lb) maximum take-off version, SP-00, with a 3m (9.84ft) wingspan, and a 100kg version with 7m wingspan, SP-01.

The purpose, says PEMAS executive manager and project coordinator Sergio Oliveira, is to "provide national industry with a focal



The SP-01: Portugal's foray into unmanned air systems



Alma Design, Nortavia

AIRLINES

Why TAP is set to turn

It seems likely that 2012 will prove a crucial year for Portugal's troubled flag-carrier and Lisbon's attempts to secure an investor

GRAHAM DUNN LONDON

This year is likely to be a turning point for TAP Portugal, with attempts to secure a strategic partner and investor in the national carrier top of the agenda.

The Star Alliance carrier – which operates a fleet of 55 Airbus aircraft and has a dozen A350-900s on order – is one of the assets cash-strapped Portugal is putting on the privatisation table this year to generate revenue in support of deficit cutting measures.

While the privatisation, and mechanism for the sale of a stake in the airline, is still to be formally launched, there has been no shortage of parties linked with interest in the carrier already.

“Privatisation is our next challenge,” says Fernando Pinto, TAP Portugal’s chief executive, who took the helm of the carrier a decade ago amid Swissair’s aborted move for a 34%

stake in the airline. TAP remains wholly-owned by the government.

Pinto believes the carrier’s dominant market share on routes between Europe and Brazil makes it an attractive proposition for potential buyers and highlights the strategic advantage of its position on “the edge of Europe” to capture the fast-growing Brazilian market. In a decade, the Star Alliance carrier has seen its traffic between Brazil and Portugal jump from 300,000 passengers a year to 1.4 million in 2010, he says. “In my opinion, we are on the best edge of Europe,” Pinto says. “We are the only airline that can do a flight to Brazil and come back on the same day with the same aircraft. Whoever wants to be interested in this market should be interested in TAP.”

Pinto points to reported initial interest from International Airlines Group (IAG) and one or two Gulf carriers – though IAG chief executive Willie Walsh has played down imminent activity, noting any advancement would depend on the Portuguese state and that it is not pursuing any other carrier besides its current move for British Midland.

The outcome of its privatisation will dictate TAP’s long-term alliance position and could see it head into a third alliance camp in a decade. For example, any tie-up with IAG could see TAP Oneworld bound. TAP started the last decade as part of Swissair’s Qualiflyer grouping, before joining Star Alliance in 2005, where it remains now. ■

point for UAS solutions and system development”. Both platforms have undergone initial flight testing and the grouping is now working on the development of onboard systems.

A very different aviation project is under way in the north of Portugal, where Nortavia, a private company in Folgosa, near Porto, has spent five years developing an airship that it believes will be able offer cargo-carrying capabilities at a price competitive with road transport. A 6m-long, 1/10 scale prototype of the helium-filled dirigible – named after the Earth goddess Gaia – has been built, with help from local universities and European research funding. There are plans to have a 100m-long version in flight in about three years.

Nortavia has secured patents for the shape and structure of the airship, which uses a carbon fibre skeleton and a “special secret fabric for the envelope”, says maintenance and engineering manager Hugo Palma. Powered by three vectored propellers and a combination of solar cells (30%) and biofuels, the airship – the brainchild of company owner Cassiano Rodrigues – will be pitched for missions such as surveillance, mineral exploration and forestry. “Its great advantage is that, as an unmanned version, it will be able to stay in the air for up to two weeks and land and take off vertically in areas where no other aircraft can go such as forests and deserts,” says Palma.

Nortavia is now seeking partners to help fund the €40 million (\$52 million) it estimates it will need to bring the project to certification. “We are in contact with potential investors in the Middle East and the USA,” he says. “We have several very interested.” ■

 Flight International editor Murdo Morrison blogs on how the magazine is put together on flightglobal.com/blogs

AEROSTRUCTURES MURDO MORRISON SETUBAL

LAUAK MAKES PROGRESS IN RENAULT’S WAKE

IT MIGHT be a metaphor for the ups and downs of Portugal’s industrial ambitions. Beside a crumbling former Renault plant – shut in the 1990s when eastern Europe began to undercut countries such as Portugal for low-cost car assembly – another French investor is creating manufacturing jobs, this time in aerospace, and with the promise that it is in it for the long haul.

Biarritz-based Lauak (the name is Basque) is one of Portugal’s few aerostructures producers. The company set up the subsidiary in 2003, moving three years ago to its new, spacious purpose-built facility on the former Renault site at Setubal, near Lisbon, now an enterprise zone. The Portuguese plant employs 120 people, including 12 engineers, designing and manufac-

turing a range of metallic structural components including the substructure of the Dassault Falcon 7X, Airbus A320 cockpit racks and the Gulfstream G250’s fuel tank. Embraer is also a customer.

Lauak chose Portugal because labour rates were lower than in France and Lauak had an expatriate Portuguese in its executive team to set up the factory – managing director Armando Gomes. At the time, OGMA was the only Portuguese company manufacturing aircraft parts and Lauak was sure it could offer a second source of parts within the country.

In fact, most of Lauak’s initial workforce came from Portugal’s largest aerospace concern. “It was hard for us at first to find people, but we did get some from OGMA,” says

Gomes. “They trained other people and slowly we were able to increase production.”

Gomes is confident of securing further work from Embraer, on Legacy business jets and the KC-390.

“We are one of only a few aerostructures companies, so we are in a good position when they come in. It would not make sense for Embraer to make these big investments if they did not benefit local industry,” he says.

Although the Portuguese business started as a low-cost satellite of the French operation, Gomes believes it can become an established tier-one partner in its own right. “We are updating our capabilities through lean manufacturing and we want to develop our own supply chain within Portugal,” he says. ■



TAP outsources some maintenance work to Brazil to free up capacity in Lisbon

MRO

Engines of progress

TAP's maintenance arm sees powerplants as a key source of future third-party business and plans to expand its capabilities

MICHAEL GUBISCH LONDON

TAP Maintenance & Engineering plans to expand its engine shop in Lisbon and join forces with other airlines and maintenance, repair and overhaul (MRO) providers to support the Airbus A350 independently from the original equipment manufacturers (OEMs).

Servicing engines will be the main growth area for TAP M&E over the next years. The company specialises in the CFM International CFM56 family and has full overhaul capability from the CFM56-3 series up to the -7B model. Stemming from the days when TAP operated the A310, the MRO provider also supports General Electric CF6-80C2 powerplants and is now evaluating whether to expand this capability to the -80E1 variant for



Servicing engines will be growth maker

the A330. This is to be decided in the next few months, says Jorge Sobral, TAP's board member responsible for the M&E unit.

The overhaul shop has a maximum annual capacity of 120 engines. About 70% of the serviced powerplants are from third-party customers, with the rest coming from the TAP fleet. Even though the facility has not been filled in the past few years, the maintenance company plans to extend capacity by 25% to 150 overhauls in future, through increasing efficiency and expanding the plant.

However, Sobral cautions that building will not begin within the next two years. "We are doing it in phases [because] we have to be careful not to stop working in the current workshop," he says.

TAP is looking at a follow-up model for the CFM56 overhaul line. CFM's successor Leap model would be a "logical step", says Carlos Ruivo, marketing and sales vice-president at TAP M&E. But he says the company has also studied the Pratt & Whitney PW1000G and built contacts with the US manufacturer, and that the geared turbofan is a serious contender for future engagement. A decision will be made in around six months.

EXTERNAL CUSTOMERS

In the airframe MRO business, the third-party work ratio is roughly reversed. TAP fleet provides around 60% of work, the remainder coming from external customers. This is unlikely to change, even after the acquisition of the former Varig's technical arm, VEM, in Rio de Janeiro and Porto Alegre, Brazil, in 2005.

"Airframe maintenance never was a lucrative business," says Sobral. TAP's own fleet growth and increasing aircraft utilisation has largely occupied the MRO division over the past 10 years. Extensive checks on the carrier's long-haul fleet have been transferred to Brazil not just because of lower labour rates but also to free up capacity in Lisbon, as there is no space for expansion there. Sobral says that even though airframe MRO is not a significant

business, hangar bays are needed because the work is a central part of flight hour-based, full-service packages for third-party customers.

COST ADVANTAGES

Airframe maintenance is set to increase at the Brazilian sites as a result of Latin America's airline growth and cost advantages for carriers in North America. The long-term trend, however, is that the labour-intensive airframe maintenance work will decrease with the introduction of new aircraft.

A challenge will be to support the ordered fleet of 12 A350s. While manufacturers have tightened their grip of the MRO market and restrict free access to maintenance documentation, TAP M&E has decided not to become part of an OEM network. "We have had that experience in the past, and we didn't like it," says Sobral.

The parent company has instead joined a group of airlines that are planning to pool their resources and split the maintenance work aircraft between them. With their combined fleet order, the airlines hope to have enough leverage against the OEMs to secure access to the required documentation and be able to develop the respective technical capabilities.

The idea follows previous MRO partnerships, such as the former Atlas and KSSU groups among European airlines between the 1970s and 1990s. The crucial difference is, however, that the carriers today do not want to work together just to share the maintenance burden of their own fleets, but to offer their services also to third-party customers.

The group, which has been meeting for some time, mainly comprises European airlines but also includes some North American operators. Among them are a number of airline-affiliated MRO providers who compete with each other on the open market, reports Sobral. "We want to compete. But we want to compete in a decent way, not in a way that the OEMs like to impose." ■