

Eurofighter

# REVIEW

- Eurofighter Typhoon Base in Zeltweg
- IPA Update
- SELEX Galileo



### Spanish Air Force Air and Ground Operations at Moron Air Base

These photos show ground and Air Operations of Ala-11 Wing formed of 111 and 113 Squadrons based at Moron Air Base in Southern Spain. 113 is the Operational Conversion unit and the first front line Squadron is 111. The photographs show before and after flight servicing. The Eurofighters are fitted with IRIS-T and drop tanks.



Eurofighter in Bangalore

## Above the Rest Aero India



06

Eurofighter Typhoon  
Base in Zeltweg

10

Above the Rest  
Aero India

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Eurofighter GmbH, PR & Communications  
Am Söldnermoos 17, 85399 Hallbergmoos  
Tel: +49 (0) 811-80 1587  
communications@eurofighter.com

**Editorial representative**  
Marco Valerio Bonelli  
Head of PR and Communications

**Photography**  
Eurofighter GmbH, Eurofighter Partner Companies,  
Geoffrey Lee Planefocus,  
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# Contents

03	<b>Editorial</b> Welcome note from Marco Valerio Bonelli, Vice President Communication
04	<b>News</b> Spanish Air Force receives first Tranche 2 Eurofighter aircraft +++ Tranche 2 Deliveries +++ First ASTA Simulator Operational +++ Supplier News +++ Italy's Second Eurofighter Unit Operational +++ 10,000 Flying Hours with the Eurofighter +++ BAE Systems secures £450 million Typhoon availability service contract from MoD +++
06	<b>Austria's Sword in Air Surveillance</b> Eurofighter Typhoon Base in Zeltweg
08	<b>Test the Best!</b> IPA update
10	<b>Above the Rest Aero India</b> Eurofighter Typhoon in Bangalore
14	<b>A Pilots View</b> Aero India
15	<b>Eurofighter Achieves Unique AMRAAM Firing</b> AMRAAM Test
16	<b>SELEX Galileo</b> Eurofighter: State of the art avionics, sensors and an innovative capability
18	<b>The Foundation of a Legacy</b> The change programme has been underway across the Eurofighter Consortium
20	<b>Shareholder MTU Aero Engines celebrates its 75th Birthday</b> EJ200 is one of the world's most advanced engines
22	<b>Spring Brings Changes at Eurofighter Jagdflugzeug GmbH</b> Eurofighter CEO moves on +++ Head of Communications Retires +++ New starts: New Eurofighter CEO Appointed +++ New Lead for PR & Communications
23	<b>Technology Migration</b> Objectum Solutions



Cover picture shows Air Operations  
of Ala-11 Wing formed of 111 and  
113 Squadrons based at Moron Air  
Base in Southern Spain. 113 is the  
Operational Conversion unit and the  
first front line Squadron is 111.

Photography: Geoffrey Lee



**Enzo Casolini**  
CEO Eurofighter GmbH

## Enzo Casolini

### Back in Munich with a mission: To continue the Eurofighter Success

Enzo Casolini, the new Eurofighter GmbH CEO, is back in Munich after 30 years when, as an Italian Air Force officer, he was here in the NAMMA (NATO MRCA Management Agency). Back in Italy, Casolini served with the Air Force until he moved to Industry in late 1980s.

As the Head of Commercial for Military Air Systems at Alenia Aeronautica, he was successful in his role to promote, market, deliver and support the military products of the Italian company, and in this position he was in regular contact with the Partner Companies and the Eurofighter customers. He will now be able to leverage the experience gained to date to the benefit of the Eurofighter programme.

"I'm proud to be at the helm of Eurofighter GmbH. I am looking forward to being part of this exciting, cutting edge programme and working with the Eurofighter community. The aircraft is a beautiful one" Casolini says, "the performances are outstanding and it is rated very highly by the pilots. We have got a highly effective defence system with the Eurofighter Typhoon, but much is still to be done".

"The Eurofighter consortium brings together the hard work and expertise from partner companies, Alenia Aeronautica, BAE Systems, EADS Casa, EADS Deutschland, to deliver a proven ability and performance to our four home markets and export customers. This performance is shown not only in the outstanding abilities of the Eurofighter Typhoon weapon system, but also by the services and capabilities offered to customers by the Eurofighter team throughout the life cycle of the aircraft".

Casolini is aware that the job he is starting it will be a challenging one. "A lot of work has to be done to guarantee the long term future of this programme and a future for the 100,000 jobs and 400 companies that the programme currently sustains in Europe and that have the potential for further growth. The Eurofighter Consortium is an important industrial example of what can be achieved through European collaboration and unity".

"With this in mind, everyone should be aware that the money put in to this program in the past and the money planned for the future are not 'expenses', but real investments that give to the partner nations important returns and a strong trade balance bonus. When I speak about returns I mean tangibles ones, like the invaluable capabilities developed by the partner companies through technology transfer and the huge spin-off we guarantee to other industrial sectors. But I also speak about the intangible ones, like the growth in knowledge, in education, and giving to many people that work with us invaluable personal and professional experiences".

"In the short to long term, our goal within Eurofighter is to maintain our position at the forefront of military aerospace by maximising capability and providing excellent value for our existing customers whilst driving forward to take advantage of future export opportunities. Only by working in this way can we ensure the longevity of the programme which is key to the future and independence of the European aerospace Industry".



**Marco Valerio Bonelli**  
Head of PR and Communications

Dear Friends of Eurofighter Typhoon,

The year 2009 has a lot in store for the programme. Since signature of the umbrella contract for production of 620 aircraft way back in January 1998, media speculated on the future of Tranche 3 and the most critical said "You never get it". These speculations were confirmed when we signed the Tranche 2 production contract in 2004. And here we are now, deep into negotiations with the result that the Eurofighter Typhoon is leading the production figures, if compared to the competing products.

This tells the competition: Eurofighter will be there for years to come! Eurofighter is still the best swing role fighter available on the market. It will be in production for the long term, confirming it as the biggest industrial programme in Europe.

A new CEO was appointed within Eurofighter GmbH in May 2009. Enzo Casolini will lead the Consortium as it delivers new capabilities offered by the Eurofighter Typhoon and continues to explore international markets.

And there is another message: The Eurofighter programme proves the critics wrong that cooperation is too expensive and cannot lead to high class and top-value products. On the contrary, this programme has benefited industry and the Nations on both the procurement and operational side.

The air forces of five Nations praise the system. They prove the superiority of the aircraft in an increasing number of international exercises. And this year will see more of that.

Long range deployments for Eurofighter Typhoon to the USA were frequently performed by the Royal Air Force. Recently the German Air Force joined the club when they flew to Bangalore for Aero India 2009. Supported by an aerial tanker aircraft they logged the longest Eurofighter flights ever, some 8 and a half hours. In Autumn, more squadrons in Europe will have the aircraft in service and the first Saudi Arabian Typhoon will be delivered. So the aircraft will prove its capabilities in another challenging operating environment. We are sure that this will be further proof of the outstanding capability of this leader in European technological capability.

Enjoy the issue

Marco Valerio Bonelli  
Vice President Communication Eurofighter  
GmbH

editorial



Eurofighter Typhoon pilot leaving his plane after a training sortie over Morón

## The first Italian ASTA Simulator for the Eurofighter Typhoon Operational



On the 21st April at the Gioia del Colle, Italian Air Force Base, the first ASTA (Aircrew Synthetic Training Aids) - full Mission Simulator for the Eurofighter Typhoon, was inaugurated.

The Eurofighter Typhoon is radically changing the way of leading and conceiving air operations, and therefore training systems must offer functionality and performance never reached before.

ASTA has been developed with the participation of two Finmeccanica companies, Alenia Aeronautica and SELEX Galileo and is the most ambitious training programme ever launched in Europe. It has led to the development of a highly realistic set of simulators and training systems, to permit pilots' training for all Eurofighter's functionalities and missions.

For more information on the ASTA Simulator, please visit [www.eurofighter.com](http://www.eurofighter.com) and check out our news pages. Eurofighter Typhoon to the base next year. Leuchars will be the second UK based home of Eurofighter Typhoon after RAF Coningsby.

## Spanish Air Force receives first Tranche 2 Eurofighter aircraft

The Spanish Air Force (SpAF) received the first three Eurofighter production aircraft of Tranche 2 on the 11th December 2008. The fourth unit will be delivered in the near future. The delivery follows the Type Acceptance agreement for Block 8 (Tranche 2) achieved on 12th September 2008

Enrique Barrientos, CEO of EADS Defence & Security in Spain, underlined that "the Spanish Air Force is getting more and more benefit from the maturity achieved by the most advanced new-generation combat aircraft in operation. The delivery of these Tranche 2 aircraft steps into the following phase of oper-

ational capabilities for our customers and underlines the continuous technological enhancement of the weapon system".

According to the production umbrella contract, the four Partner Nations committed themselves to the acquisition of 620 Eurofighter aircraft in three Tranches, and Spain participates with 87 units. Deliveries of Tranche 2 aircraft to the customer air forces have started on 10th October 2008 with the handover of BS040 to the Royal Air Force. More than 60 Block 8 (Tranche 2) aircraft are currently in the final assembly lines across the four partner companies.

## Tranche 2 Deliveries

Whilst 2008 saw the start of Tranche 2 deliveries to nations - 16 aircraft delivered in total, 2009 started with GS032 (Germany) delivered on Monday the 12th January and BS043 (UK) handed over on the 14th January.

Just to summarise, the first aircraft delivered to the nations were: BS040 (UK) on 10 October 2008 followed by SS012 (Spain) on 24 October and IS020 (Italy) on 13 November. The first Tranche 2 aircraft for the German Air Force was AS008, handed over on 18 December 2008. With revision of the Austrian contract, nine Tranche 2 aircraft

originally planned for Austria will go to Germany and keep their designation, as the German aircraft in service with the Austrian armed forces.

At this point we think a brief explanation is appropriate, what delivery or handover for us on the industrial side in the Eurofighter consortium really means. After a thorough and detailed check procedure for each individual aircraft a special form is signed by the partner company delivering the aircraft and the air force taking it. With this signature the air force takes ownership of the aircraft.

### Italian Air Force

## 10,000 flight hours surpassed

Alenia Aeronautica recorded with great satisfaction on the 17th April, another important result reached by the Eurofighter programme in Italy: the Air Force's pilots have surpassed 10,000 flight hours on the Eurofighter Typhoon, in service with two squadrons in Italy.

The aircraft, that operates in Italy from Grosseto and Gioia del Colle air bases, started being employed three years ago in missions of air police and quick-reaction alert for the airspace control, having inaugurated such operations during the 2006 Winter Olympic Games.

## Supplier News

Reiser Systemtechnik GmbH has been selected to supply the cockpits and rack hardware of modern pilot training systems of the Typhoon Tranche 2 Block 8 aircraft version. The systems will serve for Pilot and Maintenance personnel training. They comprise full replicas of the original equipment with high level of detail and fidelity.

The cockpits will be combined with a mini-dome and will be interfaced to the Host by CAN bus.

After a demanding short project time, the items are currently being delivered to the customer for integration. They shall be put into service in the second half of this year.

12 Eurofighter Typhoon over Tuscany, celebrating the change of command for 4<sup>o</sup> Stormo



## Italy's Second Eurofighter Unit Operational

At 12:00 on Monday 5th January 2009, Italy's 36th Wing, based in Gioia de Colle, began air defence duties five years after Eurofighter Typhoon was introduced to the four partner nations.

The Eurofighter Typhoon was only supplied to the 36th Wing on 1st October 2007 and both the flight crew and base underwent an intense period of training and achieved the

ambitious goal of a thousand hours of flight to ensure they were ready for January 2009.

The 36th Wing consists of the XII Group flying squadron and will provide air defence 24 hours a day, 365 days a year and will complement the 4th, 5th and 37th Wings who are already defending the air space of the southern Mediterranean.

### German Air Force

## 10,000 Flying Hours with the Eurofighter

On 16 March 2009, the Parliamentary State Secretary to the Federal Minister of Defence Christian Schmidt honoured the 10,000th flying hour of the German Air Force with the EUROFIGHTER weapon system at Fighter Wing 74 in Neuburg on the Danube at the presence of the Chief of Staff, German Air Force, Lieutenant General Klaus-Peter Stieglitz, with an official ceremony. Numerous guests of honor from industry, politics, society and the military attended this ceremony.

The musical framework program of the official ceremony was provided by German Air Force Band 1 from Neuburg, conducted by Lieutenant Colonel Johann Orterer. State Secretary Schmidt and General Stieglitz



From left to right: Group Captain Andreas Pfeiffer, Christian Schmidt Parliamentary State Secretary, Lieutenant Colonel Jürgen Schönhöfer and Lieutenant General Klaus-Peter Stieglitz

handed over a certificate to the pilot of the jubilee aircraft. The jubilee represents another milestone in the process of fielding the weapon system in the German Air Force.

German Air Force Pilot leaving his plane after completing the 10,000<sup>th</sup> flying hour at Neuburg Air Force Base



## BAE Systems secures £450 million Typhoon availability service contract from MoD

BAE Systems was awarded a £450 million contract by the UK Ministry of Defence (MOD) in March under a partnering arrangement that will see the RAF's Typhoon aircraft maintained and supported by the Company. This will not only ensure the availability of the Typhoon fleet to meet its standing and future operational commitments but will also create 150 new jobs within BAE Systems and sustain a further 350 at its peak.

The contract, known as TAS (Typhoon Availability Service), draws on best practice and lessons learnt on previous UK MOD and BAE Systems support arrangement contracts. It underpins the Company's work to deliver service excellence to the armed forces by providing the best services, equipment and support solutions to meet ongoing operational requirements. It is also further evidence of the progress BAE Systems is making to establish a successful through-life business.

Chris Boardman, Managing Director of Typhoon Mission Support & International Programmes at BAE Systems said:

"Signature of the TAS contract is the culmination of 18 months intense work by a joint BAE Systems/UK MOD team. Through-life support is a potential area of growth for BAE Systems and we are already looking to accelerate the deployment of this capability and expertise across our global business."

The Typhoon Integrated Project Team Leader, Air Commodore Chris Bushell, said: "Today's announcement is intended to maximise aircraft availability by using the most cost-effective solution. Typhoon has now been operational in the air defence role for well over a year and a multi-role capability was integrated and declared combat ready by the RAF in July 2008. The signature of the TAS contract builds on this success."

Currently over 200 BAE Systems employees work on the TAS contract across RAF Coningsby and the BAE Systems sites of Samsbury and Warton. This will grow to 500 over the course of the five year contract.



## Eurofighter Typhoon Base in Zeltweg

# Austria's Sword in Air Surveillance



Aloisius Rauen, former CEO of Eurofighter GmbH presents the Eurofighter Sword to Colonel Kowatsch of the Austrian Air Force

Since the first Eurofighter Typhoon for Austria landed in Zeltweg in July 2007, the Austrian fleet has flown more than 700 flying hours, a remarkable achievement when compared to the core nations.

Another significant difference is the infrastructure for the Surveillance Wing (Überwachungsgeschwader) in Zeltweg which has been adapted to operate the new fighter aircraft more stringently than in other nations.

Only 20 months after the handover of 7L WA (the first aircraft for Austria), the unit has demonstrated that they are a worthy partner in the Eurofighter community.

With aircraft on constant Quick Reaction Alert 365 days a year, the Eurofighter Typhoon is the sword of Austria's Air Surveillance System, as Brigadier Rupert Stadlhofer, Austria's Commander Air Surveillance Command, emphasized at an event recently held in Zeltweg. Aloisius Rauen, CEO Eurofighter GmbH and accompanied by a Eurofighter delegation, travelled to the base to present the Eurofighter Sword to the Austrian Unit on 19th March 2009.

Since Type Acceptance was granted on 30th June 2003, all Eurofighter Typhoon units have been presented with their own Eurofighter Sword to symbolise the close cooperation between the partner nations and at the same time highlight the outstanding performance of the weapon system.

Distinguished guests at the ceremony, hosted by Brigadier Stadlhofer and the Wing,

were Lieutenant General Günter Höfler, Commander of the Austrian Armed Forces and representatives of the Austrian Ministry of Defence.

A delegation of the Wing and the Maintenance Unit (Fliegerwerft 2) included a vast array of representatives from all sections including the fire brigade, security, air traffic control, administration and pilots who all gathered in front of Hangar I, where Eurofighter Typhoon operated until the new buildings were finished in early 2009.

Brigadier Stadlhofer, who commands the air surveillance system "Goldhaube" including the air assets, welcomed the guests and stated: "Since 1st July 2008 the neutrality and sovereignty of the Republic of Austria is being protected by the most advanced fighter aircraft - Eurofighter Typhoon. The experience in maintenance and air operation acquired in over 700 flying hours make us very optimistic for the future. Eurofighter is Austria's sword in air surveillance."

Aloisius Rauen former CEO of Eurofighter GmbH commented: "It is an honour for me to present this sword. The unit at Zeltweg has more than earned it. I am also proud that we have secured Austria as the first export customer for Eurofighter Typhoon."

Colonel Doro Kowatsch, a pilot with 4000 flying hours on jet aircraft and Commanding Officer of the wing remarked: "We take this sword with pride. It symbolises that we now belong to a very special group throughout Europe. We have proven that we can do the job."

Also General Höfler expressed his satisfaction with the unit and the system. "We meet the objectives. We are in plan." He stated that the cooperation with the German Air Force works very well, mentioning especially the Fighter Wing 73 and Technical Academy 1 at Kaufbeuren. He also thanked industry for their support.

The Wing operates nine aircraft, four of which have already gone through a 100 hours inspection in the maintenance hangar. The building had been built in 1996 but has been refurbished for Eurofighter operation. It was the first of the Eurofighter building complex, with the simulator building, the wing operation centre and the so called six packs, a building with boxes for up to 12 aircraft.

400 soldiers and civilian personnel look after the fleets (besides Eurofighter Typhoon also Saab J105 and Pilatus PC-7) technically, up to six aircraft at the same time in their hangar. They presently ensure a flying rate of 70 to 90 hours per month. 14 pilots are now available, two more prepare for training at German Air Force Fighter Wing 73 "Steinhoff" at Rostock-Laage.

They fly Eurofighter sorties for normally 45 to 55 minutes. During the recent World Economic Forum at Davos, Eurofighter patrolled for up to two hours without external fuel tanks.

Standard take-off procedure is without use of afterburners, reducing the noise level around the air base considerably, so noise complaints are more than rare.

Flying starts in the Wing Operation Centre with the flying briefing. After that the pilots walk the short distance to the aircraft boxes. There, the aircraft have been prepared by the ground crews. Each of the boxes is equipped with modern information tools, set up in an office type room, where pilots and technicians wait for the scramble at the highest readiness levels. They have access to various types of information such as the weather, on large flat panel screens. The boxes can be opened on both sides, so aircraft can roll in and out without any ground equipment. Refuelling can be done at closed doors with a equipment sucking in all vapours and gases. Temperature is controlled automatically.

In two control rooms the activities in the boxes can be overseen. For scramble the engineer on duty just has to touch some areas on a very large flat panel display and doors open, the Claxton horns are sounding, lighting is managed. These displays also show the status of the aircraft. The aircraft silhouette is surrounded by a green or red line. Visiting aircraft like the Saab J105 trainer aircraft which the Austrian Armed Forces also fly can not only be serviced but they also appear on the screens.

In some of the boxes the aircraft on QRA are waiting for their call. Only a few safety pins have to be withdrawn, a quick check and the aircraft is underway. They are armed with IRIS-T and the gun.

Next to the wing ops building the simulator building houses a full set of ASTA equipment



Austrian Eurofighter Typhoon at Zeltweg Air Base

(Aircrew Synthetic Training Aids). The full mission simulator has already been operative since early 2007. The new infrastructure will be supported by a tower, 45 m high and ready for operation by the end of 2010, along with a new fire department.

Everything in the new buildings is very functional, designed to purpose and designed by the people who have to work in the respective area. All builder companies in the area have been busy for three years with some 500 workers building on site at peak times.

The unit has good reason to be proud of its environment and they are. The Wing Commander Colonel Kowatsch and the Head of the Maintenance Unit Lt Colonel Reinhard Zmug agree with one voice: An Investment in the future 30 to 40 years.

Wolfdietrich.Hoeveler

Eurofighter Sword Handover Ceremony on 19th March 2009 in front of Hangar 1 at Zeltweg Air Base, Austria



## IPA update

# Test the Best!



IPA2 on a test flight over Northern Italy

The Eurofighter Typhoon's fleet of Instrumented Production Aircraft (IPA) forms the final stage in the extensive testing process for the aircraft. This testing starts with early checks of components or detailed parts and builds up to full testing of the weapons system on complex rigs. The IPAs are the test beds for the effective functionality of the design and thus, in the end, certify new capabilities – hardware or software.



IPA 1 with full payload in flight over Lancashire

The seven Eurofighter IPAs took over the flight test task from seven Development Aircraft that had completed their function some years ago. The IPAs, although built and paid for by the Nations, are loaned to the industrial partner companies for flight testing and are covered by a NETMA contract for flight and ground testing until they are released back to the Nations.

Having a comprehensive fleet of test aircraft is essential to the programme as some elements of the design such as the aerodynamic or sensor performance can only truly be tested and verified in flight. Although broadly

similar, each of the IPAs have been tailored for the specific roles they are required for. An example being IPA 6 which is mainly focused on avionics and has a comprehensive avionics monitoring capability but it is not fully equipped with the additional strain gauges required for aerodynamic and structural testing.

All seven aircraft have been active in the last year, and now is a chance to catch up with their progress:

**IPA 1** is a UK owned aircraft, whose first flight was on 15th April 2002 and has recorded over 450 flights totalling almost 450 hours in the air. The aircraft has been contributing to the development of the Flight Control System, namely the release of the different software packages. Recently it has started testing (release and jettison) Phase 1 Enhancement development for Tranche 2.

**IPA 2**, who recorded the earliest first flight of all the IPAs on 5th April 2002, Italian owned, tested the communication and navigation systems. It was also involved in weapons testing and was prominent in the Tranche 2 EJ200 testing. Currently in Caselle, the Alenia site in Turin, IPA 2 started a one year lay-up where it will undergo substantial modifica-



IPA4 undergoing Cold Weather Trials in temperatures as low as -31°C in Vidsele, Sweden.

Aircraft	Fl hrs	First flight	Test activity
<b>IPA 1</b> BAE Systems	449	15 April 2002	<ul style="list-style-type: none"> <li>• Twinseater</li> <li>• Flight Envelope Expansion</li> <li>• Carefree Handling</li> </ul>
<b>IPA 2</b> Alenia	391	5 April 2002	<ul style="list-style-type: none"> <li>• Twin Seater</li> <li>• Com/Nav, weapons</li> <li>• Tranche 2 engine</li> <li>• To be upgraded TR2</li> </ul>
<b>IPA 3</b> Ex-EADS Deutschland	434	8 April 2002	<ul style="list-style-type: none"> <li>• Twin Seater</li> <li>• Since 15 Aug 2008 with German OTC</li> </ul>
<b>IPA 4</b> EADS CASA	434	27 Feb 2004	<ul style="list-style-type: none"> <li>• Single Seater</li> <li>• Environmental testing, Weapons</li> <li>• Communications/MIDS</li> <li>• To be upgraded for TR2</li> </ul>
<b>IPA 5</b> BAE Systems	421	7 June 2004	<ul style="list-style-type: none"> <li>• Single Seater</li> <li>• Avionics</li> <li>• Carefree Handling</li> </ul>
<b>IPA 6</b> BAE Systems	118	1 Nov 2007	<ul style="list-style-type: none"> <li>• Single Seater</li> <li>• TR1 a/c TR2 avionics</li> <li>• P1E</li> </ul>
<b>IPA 7</b> EADS Deutschland	50	16 Jan 2008	<ul style="list-style-type: none"> <li>• Single Seater</li> <li>• 1st TR2 aircraft (Block 8)</li> </ul>
<b>ISPA 1</b> BAE Systems	414	11 May 2004	<ul style="list-style-type: none"> <li>• Twin Seater</li> <li>• DASS</li> <li>• Helmet</li> </ul>

tions to bring the aircraft up to the functionality of a Tranche 2 production aircraft. The lay-up will involve dismantling the aircraft and updating its computers.

**IPA 3**, a German owned Eurofighter Typhoon, had its first flight on 8th April 2002 and was handed back in mid 2008 to the German Operational Test Centre (WTD 61) in Manching. It is now used as one of the Export Campaign aircraft for Germany and has already participated in the Swiss campaign and will shortly be involved in the Indian campaign.

**IPA 4**, the Spanish aircraft, recorded its maiden flight on 27th February 2004 and was the first single seat IPA. Its main tasks are data link and weapons testing. It also conducted early Meteor carriage trials but focussed mainly on air-to-ground weapons testing. The aircraft has started an 11 month lay-up in order to bring the aircraft up to Tranche 2 functionality as with IPA 2.

**IPA 5** is another UK owned aircraft and a single seater. It flew for the first time on 7th June 2004. The aircraft operates out of BAE

Systems at Warton and avionics and care free handling testing are its main task. One of its future tasks is to be used as a target aircraft for IPA 6's avionic and sensor testing.

**IPA 6** which flew for the first time on 1st November 2007 is the primary Tranche 2 avionics test bed. All Tranche 2 Series Production Aircraft (SPA) software products are tested on it. The aircraft, also British owned and based at the BAE Systems Warton site, has a Tranche 1 airframe which was been upgraded to a Tranche 2 equipment standard. In the coming months, IPA 6 will be involved in testing upgrades for the electronic self-defence system Defensive Aids Subsystem (DASS).

**IPA 7** is the first Tranche 2 aircraft and flew for the first time on 16th January 2008 at its home base in Manching, Germany. The

aircraft is currently carrying out Tranche 2 DASS testing and will play an important role with the digital short range missile, IRIS-T. It will also be involved in MAW (Missile Approach Warner) testing.

There is also one more test aircraft in use; ISPA1 (Instrumented Series Production Aircraft). This twin seater is loaned from the Royal Air Force and is operated by BAE Systems in Warton under a 50% contract share with the RAF for testing the DASS and the new helmet.

The IPAs play a vital role in developing future capabilities for Eurofighter Typhoon. They are the end of an extensive process to prove the correctness of design and thus open new chapters in the operational life of Eurofighter Typhoon.

KC



IPA5 on its first flight on 7 June 2004 at Warton, Lancashire

Eurofighter Typhoon in Bangalore

# Above the Rest Aero India



Ground crew make final checks before display flight at Aero India 2009 in Bangalore, India



Pilot Chris Worning, Commanding Officer Andreas Schick, Brigadier General Riedel and pilot Geri Kraehenbuehl at Aero India

With more than 400 exhibiting companies from 33 nations and 100,000 visitors, Aero India 2009 was the nation's largest aerospace exhibition and air show. It took place at Yelahanka Air Station of the Indian Air Force near Bangalore from the 11th to 15th February.

Eurofighter Typhoon was undoubtedly one of the stars at the show. Eurofighter's presence was highlighted by three German aircraft on display, both in flight and at the static aircraft park. The full weapons complement of Eurofighter Typhoon was also presented with the aircraft. A seventy soldiers delegation from the German Air Force contingent of Fighter Wing 73 "Steinhoff" took care of the aircraft throughout the event.

Alongside the twice daily aircraft displays, the Eurofighter Typhoon stand was another major attraction at the show. Distinguished guests were welcomed by Aloysius Rauhen, CEO Eurofighter GmbH, and the Eurofighter

Typhoon team. Amongst the visitors to the Eurofighter stand were Indian Secretary of State for Defence Pullam Ragu, the German Secretary of State for Defence Christian Schmidt and Indian industrialist Ratan Tata.

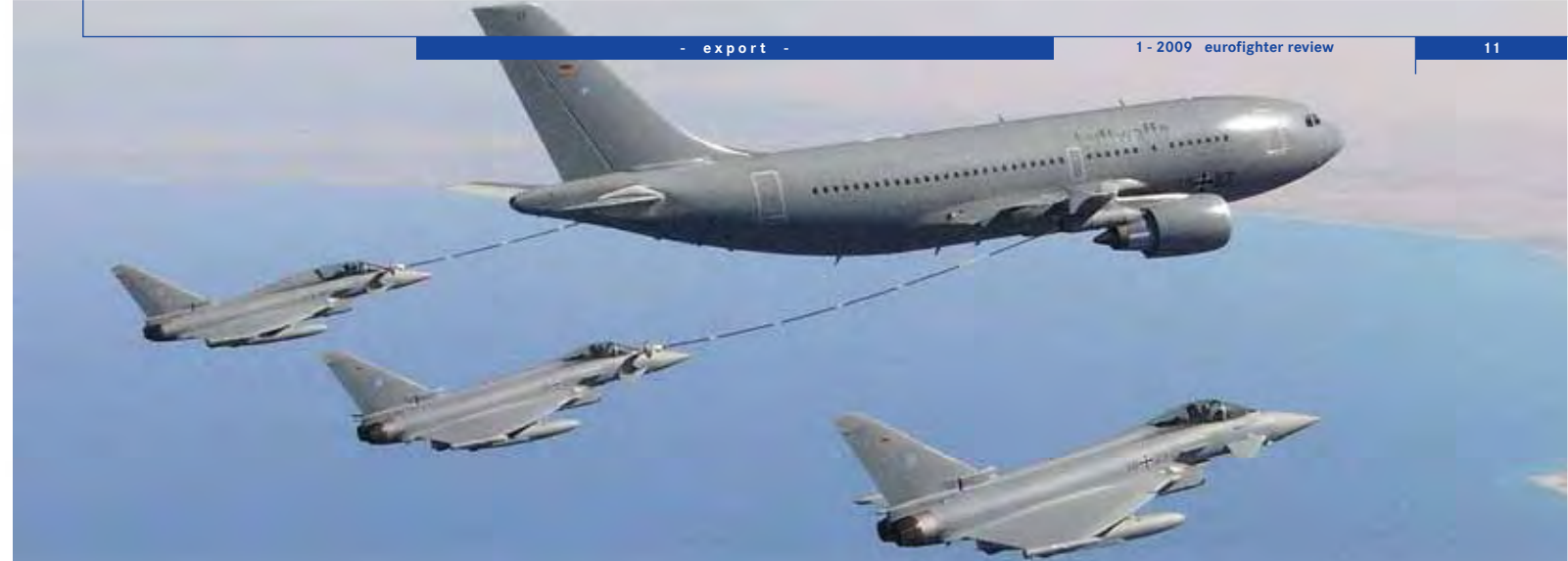
Another highlight at the show was the Eurofighter press conference, which was held together with the Chiefs of Air Staff. German Air Force Lieutenant General Klaus-Peter Stieglitz and Royal Air Force Air Chief Marshal Sir Glenn Torpy took part along side Lieutenant General Aldo Cinelli representing the Italian Air Force and Major General Jesus Pinillos from the Spanish Air Force.



Mr Pullam Ragu, Indian Minister for Defence dons a Eurofighter Baseball Cap

EADS, on behalf of the Eurofighter consortium, leads the export campaign for India that has a requirement for up to 126 Multi-Role Combat Aircraft and where Eurofighter Typhoon is a competitor. Bernhard Gerwert, CEO of Military Air Systems, an integrated Business Unit of EADS Defence & Security, took the opportunity to brief the media on the objectives of the EADS lead campaign and said in Bangalore: "We are ready to provide our operational, support, engineering and development capabilities to the Indian aerospace and defence sector which is growing fast and we want to grow together with this dynamic development."

The German Air Force attended the event for the first time this year, recording the longest ever flight of Eurofighter Typhoon en route over a distance of about 5 000 miles in a continuous flight from Laage, the North East German air force base, to Abu Dhabi. The



flight lasted eight hours and thirty minutes, a new record for the aircraft supported by the first operational air-to-air refuelling with an Airbus A310 MRTT (Multi Role Transport Tanker). The deployment provided broad experience to include both technical and logistical procedures as well as know-how for future activities and operations. Chief of Staff of the German Air Force, Lieutenant General Klaus-Peter Stieglitz, expressed his satisfaction during his visit to India: "This air show is



Geri Kraehenbuehl prepares for take off at Aero India 2009

tremendous and we were able to demonstrate parts of our capabilities very successfully. With Eurofighter and MRTT in operation, the German Air Force will be well prepared for future challenges."

The major attraction especially for the public attending the exhibition and air show was the flying display. Chris Worning, Senior Eurofighter Project Pilot from EADS in Ger-



many shared daily flights with his colleague Gerhardt (Gery) Kraehenbuehl. Commenting after the event, Chris said that the Eurofighter Typhoon, in his opinion, performed better than any other aircraft at the event, especially given the exceptional conditions of heat and altitude in Bangalore. "The aircraft would pull into a tight climb immediately after take off in a shorter and tighter turn than any other jet".

When interviewed by the German Air Force at the event, Chris discussed the Eurofighter Typhoon's outstanding performance and capability. He highlighted that the exceptional power and performance of the aircraft combined with advanced aerodynamics and con-

Thousands of visitors saw the Eurofighter promotional film in the public cinema at the Eurofighter stand, while media, industry and government officials were briefed by air force pilots and industry briefers.

Eurojet also supported the event. The engine consortium is currently delivering the engines for the Tranche 2 aircraft including the export aircraft to Austria and the Kingdom of Saudi Arabia. Over 160 aircraft are operated by the Air Forces of Germany, Italy, Spain, the United Kingdom, and Austria. They amassed over 50,000 flying hours by the end of 2008 and when the test fleet operated by industry, had surpassed the 6000 flying hours mark.

Eurofighter Typhoon taking off for a display flight over Bangalore, India



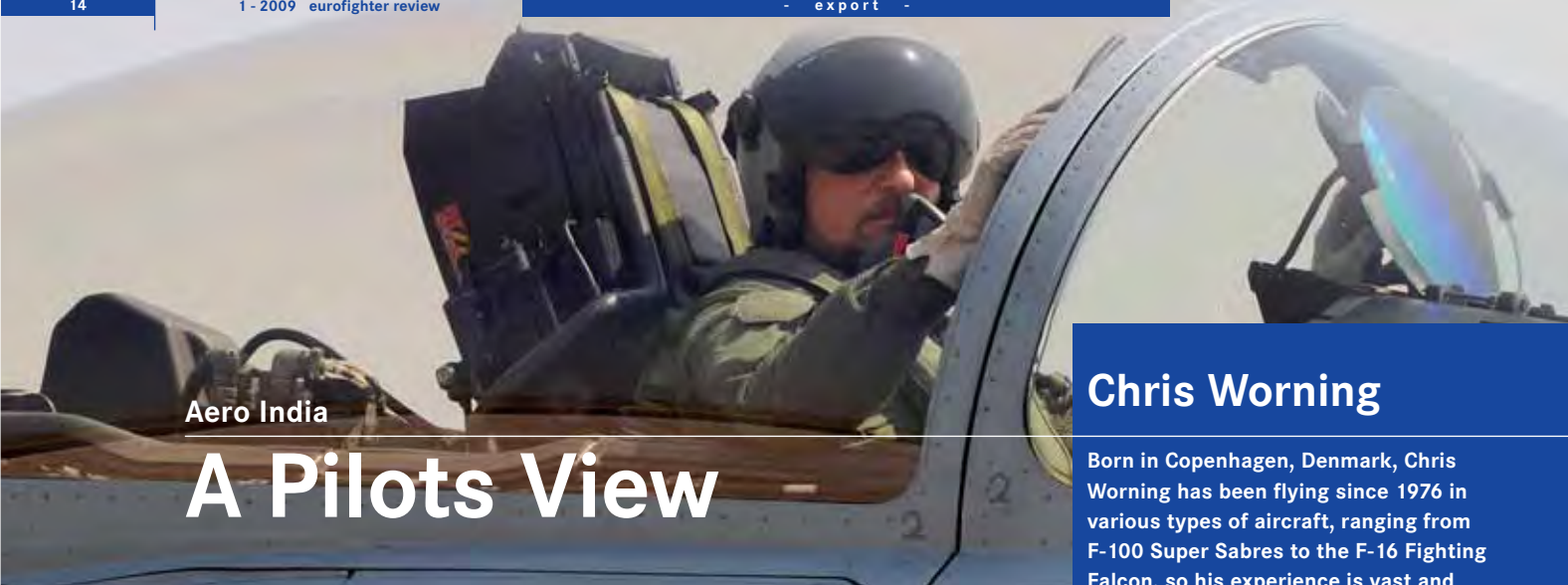
German Eurofighter Typhoon on the taxi way at Yelahanka Air Station Bangalore, India

rol systems make it very agile at all speeds, well into the supersonic spectrum yet it is also extremely easy to handle. In all eleven air displays at the air show, the Eurofighter Typhoon encountered not a single technical problem.

Following the conclusion of the air show, the German Air Force jets took off from Bangalore for the return leg. The Eurofighters and the Airbus A310 (Passenger version) along with an Airbus A310 MRTT (Multi Role Transport Tanker) successfully landed at their respective home bases in Rostock and Cologne late Tuesday 17th February 2009. concluded a challenging yet exceptionally rewarding deployment to Asia.



Eurofighter Typhoon with weapon capability on display at Aero India 2009



Aero India

## A Pilots View

### Chris Worning

Born in Copenhagen, Denmark, Chris Worning has been flying since 1976 in various types of aircraft, ranging from F-100 Super Sabres to the F-16 Fighting Falcon, so his experience is vast and his opinion highly valued.

Chris provides Eurofighter Review with an insight into what an air show means to him, what it takes for a pilot to perform daily and how Eurofighter Typhoon compares to its counterparts.

#### Early Starts

Normally we would depart the hotel between 6.30am and 7.30am to reach the air show for the morning brief at 8.30am. Following the briefing, I would then prepare for the first air display of the day. I usually carried out the morning flights and my colleague Gerhardt Kraehenbuehl (Geri) would fly the afternoon displays.

After getting changed into my flight suit, I would then speak with the German Air Force ground crew to check everything was in order from the previous day's flying as well as check where the aircraft would be parked (this changed daily). It was important to ensure we were properly slotted in with the other aircraft in the air display so the movement around the apron and airfield worked smoothly.

#### Preparation

Importantly, the maintenance of the aircraft was carried out regularly by the ground crew.

I would also check the Engineering Support System, part of the Ground Support System, which manages the support of the aircraft, its configuration and software, collecting problems as they occur. We didn't have any problems with the aircraft all week but the pilots needed to

check it every day and sign it off as safe to fly.

Once we had cleared the aircraft, we would then enter the morning heat on the long walk to where the aircraft was parked on the apron for the flight at around 11am. Following the display, I would change into a clean flying suit and make my way over to the Eurofighter Typhoon stand to provide support. In the conditions of Bangalore and flying in an air display you tend to sweat a lot so I had to ensure I drank a lot of water

#### Performance

The air show was very successful for Eurofighter Typhoon. The aircraft performed exceptionally well in the conditions of Bangalore, out performing other aircraft who suffered from the heat and altitude with slow



#### Camaraderie

manoeuvres and sequences. Our aircraft flew very well, although the six minute sequences became seven minute sequences in the conditions. Bangalore was a lot warmer than the conditions of Manching where the routines were perfected. Being at a higher altitude meant that all manoeuvres were a bit slower.

All the pilots at the air shows get on well, no matter where in the world you are from and which aircraft or company you are flying for. We often spend time together sharing jokes or tips for the show, but never discussing the relative strengths or weaknesses of our own aircraft. There is always a nice atmosphere at the event which makes air shows like Aero India an enjoyable experience.

Above: Chris Worning on a display flight above Bangalore, India  
Below: The daily morning pilots briefing at Aero India 2009



Chris Worning carrying out pre flight check with ground crew



#### AMRAAM Test

## Eurofighter Achieves Unique AMRAAM Firing

The 1st April saw the success of a unique AMRAAM firing trial at Moron Air base in Southern Spain. The trial was the result of close cooperation between the Spanish and British Flight Test Centres of EADS CASA and BAE Systems, under guidance of Eurofighter GmbH, using Eurofighter Typhoons IPA4 and IPA5 - Spanish and British aircraft respectively.

The objective of the testing was to fire the AMRAAM missile from a Eurofighter Typhoon whilst its radar was in passive mode and thus "invisible" for Electronic Support Measures (ESM) Systems. The necessary target data for the missile was acquired by the radar of a second Eurofighter Typhoon and transmitted using the Multi Functional Information Distribution System (MIDS). Both aircraft were separated by quite a distance in range.

This scenario is especially relevant for Eurofighter Typhoon's Beyond Visual Range (BVR) air combat capability against high level threats, including Low Observable aircraft.

Spain's IPA4 led the trial as the "firer", while IPA5 as the "cooperator" illuminated the target with its radar active. This trial is the

first known testing of its kind and is the first missile firing that Spain has participated in as part of the Eurofighter Typhoon programme, building on their previous flight test work which includes Meteor environmental testing and air-to-ground weapon trials.

The complex test was meticulously planned over several months and involved a large team of experts from across all partner nations as well as the US, who provided support for the exercise. The trial took place at a closed range in Southern Spain using a Mirach drone.

IPA5, the supporting British aircraft flew over from Warton in Lancashire on Thursday 12th March to assist in the trials and recorded a flight of two hours and four minutes non-stop, covering over 1000 miles to reach Moron air base on only two external fuel tanks and without Air Refuelling. IPA4 will now begin an 11 month Lay-up in order to bring the aircraft up to Tranche 2 functionality.

## P1 Enhancements for Eurofighter Typhoon Move Forward



The Phase 1 Enhancements (P1E) Development for Tranche 2 Eurofighter Typhoon has made another step forward in its trials programme with the first releases of Enhanced GBU-16 1000lb weapons which confirms the safe separation characteristics. Two drops were performed in January in the south of Spain from Instrumented Production Aircraft (IPA) 4 which then joined the P1E air vehicle flight trials programme.

At the same time, Italian IPA2 performed trials with the 500lb Paveway IV bomb. After completion of Flutter and Environmental trials, the recent activities were focused on confirming the aircraft performance characteristics with the new class of dual mode guided 500lb bombs. With the air vehicle programme for P1E in full swing, the Avionics Development is also gathering pace. Initial software products were being tested at the start of the year on the rigs in order to begin Avionics Flight Trials later in 2009.

In April, another milestone in the P1E Programme was fulfilled when the EGBU-16 Release and Jettison Trials programme was completed with the 5th and final drop of EGBU-16 from IPA4 operating from Moron Airbase in Spain. P1E is providing major capability enhancements in the Air to Ground Role for Eurofighter Typhoon by integrating Enhanced GBU-16 and Paveway IV bombs for availability in 2011.





Eurofighter: State of the art avionics, sensors and an innovative capability

## SELEX Galileo



IRST - Infra Red Search and Track Sensor

SELEX Galileo has been the main Defence Electronics Partner for the Eurofighter Typhoon since the initial definition phase of Eurofighter Typhoon in the late 1980s. Through this partnership, new technology has been introduced and integrated in line with the evolution of the electronics systems and the changing requirements of the defence environment. The Eurofighter's avionics and sensor system is one of the most advanced in the world and SELEX Galileo are proud to be responsible for more than 60% of the aircraft's avionics.

SELEX Galileo incorporates many of the Eurofighter Consortium's original industrial partners including GEC Marconi, Alenia Difesa, Ferranti and Fiar and has made a critical contribution to the development activities of the Eurofighter Programme by applying their expertise to the programme products. The Company is now the Prime contractor for the three primary sensors of the

Eurofighter Typhoon weapon system (Captor Radar, the Electronic Warfare suite and InfraRed Search and Tracker (IRST)) as well as for the key avionic and mission system equipment.

Many new Defence Electronic technologies have been integrated into the Eurofighter programme. The performance of the platform has been convincing since the first aircraft entered into service but for the avionics, it has been a different story.

The early Tranche 1 aircraft were fitted with "basic" avionics and since then have been continuously updated to Main Development Standard. Whereas Tranche 2 Eurofighter Typhoons have quicker computers with higher data capacity from the start, for example the New Enhanced Safety Critical

Armament Computer (NESCAC) which is the basis for the swing role implementation. NESCAC offers a greater data processing capability for the expansion of the combat capabilities.

At the beginning, the Armament System was provided with two computers, the SCAC (Safety Critical Armament Controller) and the NSCAC (Non Safety Critical Armament Controller) operating

jointly. The SCAC's capabilities have been increased by creating the ESCAC (Enhanced SCAC). The two systems have also been integrated into the NESCAC (New Enhanced SCAC). The NESCAC is the core for Future Capabilities, aimed to further enhance the Eurofighter Typhoon's operational envelope.

The programme will cover all the Tranche 2 aircraft including the retrofit of all those already delivered and is split into two phases: Phase 1 Enhancements (P1E) A and B. P1E will provide enhancements in the Human-Machine Interface (HMI), the datalink MIDS (Multiple Information and Distribution System), the Global Positioning System GPS and the Defensive Aid Sub System, as well as in the communication systems.

The electronic sensors that best characterise the Eurofighter Typhoon are the

Praetorian Defensive Aid Sub System (DASS), the Captor Radar and the PIRATE Infrared Search and Track, which for all the three, SELEX Galileo is the Prime Contractor. The Praetorian DASS system, conceived by the EuroDASS consortium, led by SELEX Galileo, includes the Radar Warning Receivers of the Electronic Support System, the Missile Approach Warning System and the Laser Warning System to provide a full 360° spherical coverage. The system is also equipped with Towed Radar Decoys, which can also be used during supersonic flight.

The Captor fire control radar has greater capabilities than any other mechanically scanned radar currently in service. Developed and produced by the Euroradar consortium, led by SELEX Galileo's Radar and Advanced Targeting line of business, the Captor is an X-band (8-12 GHz) Pulse-Doppler Radar incorporating Identification Friend Foe (IFF) with S Mode transponder. The great power, about twice that of competing products, gives the Captor very high resistance to active and passive Electronic Counter Measures (ECM), as well as a long range of action.

Flight tests carried out in March 2007 have proved the feasibility of further enhancements provided by an AESA antenna, incorporating around

1400 Transmit Receive (TR) modules with less maintenance and reduced malfunctions.

The Eurofighter Typhoon is also equipped with the IRST (InfraRed Search & Track)/FLIR PIRATE sensor, developed by EuroFIRST, which allows aircraft to engage targets beyond visual range in a completely passive way. All the collected data is processed and managed by the sensor fusion system and can be shared among eight aircraft, an AWACS and a ground station, thanks to the MIDS system with the Link-16 standard.

Furthermore, the information collected by Radar, DASS and IRST from other Eurofighter Typhoons can be fused with data collected by on board systems and then presented on the multi-function display, enabling increased situational awareness for the pilot.

SELEX Galileo ranks the Eurofighter programme as a keystone of the Company's industrial successes and continues to rank it as a major priority by devoting its knowledge and resources to this programme for a continuous growth in the system's capabilities.

Thanks to its ability to manage complex systems and its effective supply chain management, SELEX Galileo will continue to successfully support the Partner Companies and Air Forces to ensure Eurofighter Typhoon remains a key asset to European Air Defence and across the world.

Eurofighter Typhoon at Morón Air Force Base preparing for training sortie

The change programme has been underway across the Eurofighter Consortium

## The Foundation of a Legacy

### Background

Project Foundation is a change programme that has been underway across the Eurofighter Consortium for over a year and was completed in April. The programme was launched by the Supervisory board in March 2008 in order to address improvements to how we will conduct our development business, following the completion of work on the Main Development Contract (MDC).

The objective is to consistently deliver affordable capability on time to our customers, at a time when budgets are tighter than ever before and the timescale demands of in-service fleets are ever more pressing. By introducing better development processes and process improvements, and by re-defining the future product and programme strategy, better control and predictability will be ensured when responding to new Weapon System requirements and introducing new capabilities - reducing risk, lead time and cost.

Project Foundation was managed by an experienced team of representatives from Eurofighter GmbH as well as Alenia, BAE Systems, EADS CASA and EADS Deutschland. Brian Phillipson led the team, and, following the notable achievements over the last year, completed the hand-over of a range of process improvements to the Eurofighter and Customer Process owners by the end of April. These process owners will then complete implementation of the new initiatives across the businesses during 2009 and the coming years.

The Project Foundation team has systematically reviewed the way in which the project carries out development work, involving not

just Management activities, but also those in the Eurofighter programme at local working level from across NETMA, the Nations and the Partner Companies - and even in some cases our key suppliers.

By adopting the Foundation proposed improvements, the Eurofighter project is in a position to offer better value to the customer, and the Air Forces will be better equipped to support the growing and maturing fleets now in operation across the Nations. This will ensure that operational demands can be better satisfied than would otherwise have been the case.

### Achievements

The Foundation Project has been extremely successful over the last year, gaining Industry agreement and senior level customer support for process improvements and changes to our contracting approach.

An example of the achievements of Foundation over the last year is the improvements made to the schedules of the Phase 1 Enhancements (P1E) project, extending operational capabilities through the P1Ea and P1Eb planned service releases. The Foundation team identified a need to bring these programmes forward by cutting out activities that provided little value added, without compromising flight safety or end functionality and capability. By taking a step back and also challenging the high risk and overly complex parts of the work, they were able to make a significant positive impact to the programme, and enable the re-generation of Customer trust.

Other examples of improvements brought in by the Foundation programme have been the introduction of a new process to ensure a higher probability of excellent programme performance. This includes a new process for ensuring customer requirements are accurately captured and understood, and not allowed to become overly complicated, before moving ahead with the development programme. Similarly, a new management review process at weapon system level has been introduced and already trialled within the business. This process is based on measuring overall Weapon System maturity to give man-

agement a better understanding of the detailed status of the programme and forces engineers to regularly assess and confirm the status, outlook and risks of their part of the development. Foundation has also encouraged the customer to become more involved in the work being carried out as well as agreeing a move to biennial incremental capability releases and contract updates.

### Transformation

The initiatives of Project Foundation aim to underpin the work of Programme Transformation in the area of Development. Transformation is an allied change programme introduced to address the current contractual aspect of the Eurofighter programme, including Support. Whilst Foundation has been primarily focused on technology, future business and development activities, Transformation is concerned with the broader commercial elements of Eurofighter Typhoon, addressing the increased importance of 'through life' requirements and focusing on updating the current contracts and In-Service support. This has been kept fully in line with the approach proposed by Project Foundation.

Both Foundation and Transformation were launched following a set of workshops held in Neuburg in Germany at the beginning of 2008, which looked at the current aircraft support provided by Eurofighter Typhoon and demanded ways to introduce greater efficiency across the programme. The workshops involved representatives from NETMA, the Nations, the Partner Companies as well as Eurofighter GmbH and addressed various work-streams across the entire support environment, including Capability enhancement.

The fundamentals of Transformation have been to challenge the way the consortium works together across the business by reducing the current number of contracts which cover the entire life cycle down to a few simplified versions, and by driving out unnecessary



Spanish Eurofighter Typhoon equipped with two IRIS-T missiles and drop tank maneuvering over the Spanish coastline

bureaucracy and cost. An example of this has been to rethink the future NETMA contracts to offer greater visibility and thus control of the process; making them less complex, time consuming and expensive to administer. While the final transition from the current contracts to the new contracting structure is only planned after January 2010, work is well underway on the early stages of the changes and a schedule is in place for completion by 2011.

### The Legacy

It is hoped that the lasting legacy of Foundation will be the principles that have been established by the programme becoming ingrained into daily life across the business.

Given that a number of initiatives were adapted from Partner Nation processes already in place, it is hoped that some of the lessons learnt will be fed back into the partner companies to encourage a culture of best practise sharing for the mutual benefit of all. What is clear is that the biggest challenge facing both Project Foundation and Programme Transformation has been not only identifying where changes can be made, but getting them successfully accepted and implemented in the Eurofighter Typhoon business in such a way that business results are consistently delivered in the long term.

## Brian Phillipson Leaves the Programme



After eight years as a key member of the programme, **Brian Phillipson** departed Eurofighter GmbH in April.

A Cambridge University Engineering Graduate, Brian devoted over 30 years to BAE Systems in the UK, working across the company in roles vary-

ing from Director of Projects for Military Aircraft in the early 1990's and Director of Strategy and Planning in Head Office to Group Managing Director for Sea Systems ten years later.

From within BAE Systems, Brian had significant influence on the programme and even more so internationally within the Eurofighter programme organisation. In 1998 Brian signed the umbrella contract with NETMA as Managing Director of Eurofight-

er GmbH and in the same year also agreed the production contract for Tranche 1. The Eurofighter programme has lately benefited from him in key roles including Programme Director and Chief Operating Officer (Programmes). He has concluded his time with the programme with the innovative work of Project Foundation and will leave a lasting legacy in terms of achievements and impact on the team and programme.

Two Spanish Eurofighter Typhoon flying over Southern Spain

EJ200 is one of the world's most advanced engines

# EUROJET – Shareholder MTU Aero Engines celebrates its 75th Birthday

MTU Aero Engines, Germany's leading aircraft engine manufacturer and a global player in the market, develops, manufactures, markets and supports commercial and military aircraft engines. The company, active in the aircraft arena since 1934, ably demonstrates its full engine competence offering a product mix of complementary modules that spans the entire engine and also offers a repair service for industrial gas turbines. This year, MTU celebrates its 75th year in the aircraft industry.

## EUROJET



### MTU Aero Engines – Today

MTU Aero Engines is a globally oriented company with affiliates in Germany (Berlin-Brandenburg and Hannover), Poland, North America, Malaysia and China with a workforce of some 7,100 people worldwide. In the 2007 fiscal year, it chalked up 2.6 billion euros in consolidated sales. MTU Maintenance is the world's largest independent provider of commercial engine maintenance services. A worldwide leader in the technological industry, MTU Aero Engines has established foremost positions in low-pressure turbine and high-pressure compressor technologies and manufacturing and repair techniques.

In the military sector, the company is the Bundeswehr's (German Army) major industrial partner for practically all of its operational aircraft engine types. MTU provides a full range of services, from maturing enabling technologies through developing and manufacturing engines and engine components, to providing maintenance and customer training. In major European engine programs, MTU is the German partner, with a significant role

in the following multinational projects: EJ200 engine to power the Eurofighter Typhoon, TP400-D6 for the emerging A400M military transport, the RB199 for the Tornado and the MTR390 for the French-German Tiger attack-escort helicopter. The company also has stakes in military engines built by General Electric.

### MTU headquarters in Munich, Germany



### EJ200 – The Power behind Eurofighter Typhoon

The EJ200 engine powering the Eurofighter Typhoon is one of the world's most advanced engines in its class with an order book of more than 1,500 engines. A joint European project, the EJ200 is being developed and built by four companies – MTU, Italy's Avio, Spain's ITP and the United Kingdom's Rolls-Royce – under the roof of the EUROJET engine consortium.

Of these four nations, MTU's EJ200 share is 33 percent. The German manufacturer contributes the low-pressure compressor and high-pressure compressor and the electronic engine control unit to the EJ200; in addition, MTU is responsible for assembly and testing of all EJ200 engines produced in Germany.

From Tranche 2 (the second production batch of Eurofighter Typhoon, which entered production in 2006) onwards, the EJ200 en-

gines come with a new fully integrated digital engine control and monitoring unit, the DECMU, which is mainly developed by MTU.

### Cooperative Model

The Bundeswehr and MTU are blazing new trails with their cooperative model of joint industry-military maintenance, an example of which is the collaboration that exists for the maintenance of the Eurofighter Typhoon and its equipment. In essence, the cooperative

Federal Office of Defense Technology and Procurement (BWB) agreed to include the RB199 (Tornado), J79 (Phantom) and RR250-C20 (PAH1 Helicopter) engines in this scheme. The J79 and EJ200 are repaired at MTU's Munich facility, the RB199 and RR250-C20 in an MTU shop at the Air Base in Erding. MTU's Erding facility is the first civilian-run repair line inside a Luftwaffe installation. The MTR390, which powers the Tiger helicopter, has also been included in the cooperative model.

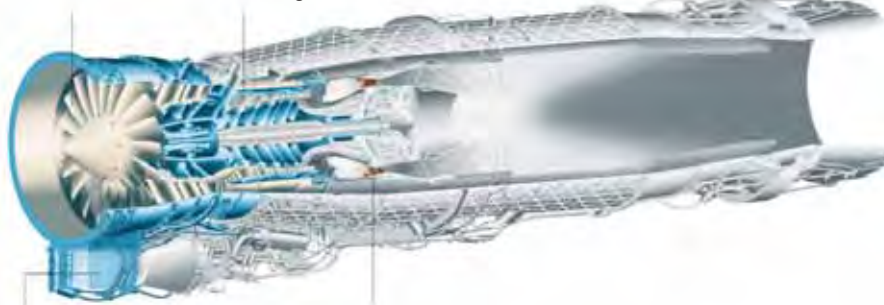
### MTU's 75th birthday in 2009

MTU Aero Engines is a long-standing company, rich in tradition and promise for the future. Its predecessor companies equipped the first powered airplanes at the beginning of the 20th century, resulting in the foundation of BMW Flugmotorenbau GmbH, MTU's legal predecessor, in 1934. This year, Germany's leading engine manufacturer celebrates its 75th anniversary. Today, the company is a firmly established player in the engine industry and is working on the technologies of tomorrow.

On time for its 75th anniversary, the company's museum reopened its doors in 2008. Well worth a visit, it hosts 30 exhibits in an area of 850 square meters, all of which reflect the history of powered aviation. The collection includes restored historic aero engines, of which only a few copies have survived, today's aircraft engines and components, and technologies that anticipate the future of aviation. It is justly considered to be one of the finest collections of its type worldwide.

### High-pressure ratio compressors

- LP compressor
- 3 stages, all blisk
- No IGVs
- HP compressor
- 5 stages, 3 blisks
- 1 stage VIGV



### DECMU

- Advanced Full Authority Digital Control and Monitoring Unit (FADEC)
- Full carefree handling
- Built-in fault diagnosis/testability
- Built-in engine life monitoring

### Blades and vanes

- Manufactured by MTU in cooperation with Rolls-Royce

model co-locates EJ200 repairs at a single site, MTU's Munich facility, where repairs have taken place since 2003. This prevents dual capacities, leverages resources to best effect, and saves time and cost. MTU manages and assumes responsibility for the maintenance effort, however, the Luftwaffe (German Air Force) remains directly involved in the overall process.

Having demonstrated just how successful such a cooperative model can be, it is now being extended to other engines as well: in mid-November 2005, MTU and the German

In the final assembly and repair of the EJ200 engine, MTU and the German Luftwaffe are finding new ways to cooperate with each other.



# Spring Brings Changes at Eurofighter Jagdflugzeug GmbH

## Eurofighter CEO Moves On

**Aloysius (Ays) Rauhen**, CEO of Eurofighter for some 5 years, left Eurofighter at the end of April 2009. Prior to joining Eurofighter, Mr. Rauhen was President and CEO of EADS Military Aircraft and has remained a member of its Supervisory

Board since 2005. A graduate in Aeronautical Engineering, Ays Rauhen has worked in the defence and aerospace industry throughout his career, and became a fellow of the Royal Aeronautical Society in 1997. Mr Rauhen left Eurofighter GmbH in order to take on a new set of challenges as Chairman of the Management Board of Demag Crane AG.

Ays Rauhen led Eurofighter GmbH through an extremely challenging, but successful period. During his tenure, the Eurofighter Tranche 2 order was secured, the aircraft completed its entry into service with the four Core Nation Air Forces and assumed Quick Reaction Alert duties, as well as demonstrating its multi-role capability. He also played a leading role in securing the Austrian export contract and in overseeing its implementation. In his final months at Eurofighter, he led the effort to secure a Tranche 3 order, the contract for which was ready for signature by the time of his departure. We express our gratitude for his leadership over a sustained period and wish him well in his new role.

## Head of Communications Retires



**Wolfdietrich Hoever**, Vice President of Communications at Eurofighter GmbH over the past four and a half years, retired from the team and the Company in April

after forty years of working within Aerospace and Defence. Wolfdietrich was a member of the German Air Force in his early career, retiring as Major after 20 years, establishing himself as an experienced press officer. Following his departure from the Luftwaffe in 1988, he took up roles as editor and editor in chief in various publications within the defence sector – most notably a successful stint as Editor in Chief of the respected German publication Flug Revue.

Joining Eurofighter GmbH and Daimler Chrysler Aerospace (later to become EADS) in the late 1990's, Wolfdietrich took up the role as Head of Communications in Military Aircraft, then in 2004 moved to Eurofighter to head up PR & Communications in what has now become his final professional role. Wolfdietrich's extensive experience, knowledge and passion for the programme will be sadly missed, both within Industry and by his many friends and colleagues in the media.

## NEW STARTS

### New Eurofighter CEO Appointed



Eurofighter GmbH with effect from 1 May 2009. Mr Casolini takes over from Aloysius Rauhen, who left the company on 30 April.

Born in 1945, Mr. Casolini began his career as an officer in the Italian Air Force, and it was in this capacity that he first lived and worked in Germany. In 1978, he joined NAMMA

(NATO MRCA Management Agency) in Munich, and was responsible for aircraft equipment qualification.

Mr Casolini left the Italian Air Force in 1987 and in 1989 joined Aeritalia (later Alenia Aeronautica), where he was assigned to the company's National Marketing and Sales Division. In 2002, he was appointed Senior Vice President and Head of Commercial for Military Air Systems, the position from which he now joins Eurofighter. Mr Casolini has a long and deep association with the company and was until this appointment a member of its Supervisory Board since 2005. Enzo Casolini is married and has one son.

## New Lead for PR and Communications



As the new Head of PR and Communications, **Valerio Bonelli** joins the Programme from Partner Company Alenia Aeronautica in Italy. As an experienced press

officer and journalist, Valerio moved from his role as Head of Media and International Communications in April to take up the position in Eurofighter GmbH. Mr Bonelli brings with him extensive knowledge of the Defence and Aerospace Industry, following time at Finmeccanica and AIR PRESS in Rome. Valerio Bonelli replaces Wolfdietrich Hoever who retired in April.

For all media enquiries, please contact [communications@eurofighter.com](mailto:communications@eurofighter.com) or visit the Eurofighter Typhoon website [www.eurofighter.com](http://www.eurofighter.com)



## Objectum Solutions

# Technology Migration

## Objektum Solutions Delivers Eurofighter Specific Training and Migration Services

Organisations involved with the Eurofighter Typhoon commit to financial and technical investment in software systems that are critical to the success of the project. Over time external influences such as hardware, platform or skills obsolescence create a substantial risk to a company's ongoing involvement with Eurofighter.

Objektum Solutions has a proven track record in helping organisations to keep pace with technology changes throughout the Eurofighter software lifecycle by providing specific training programmes to ensure that engineers have the required knowledge to work with the latest tools and processes.

Founded in the 1990's, Objektum Solutions boasts a 25 year involvement with the Eurofighter project through key staff members, who have been involved with software development on the project since its inception. Its method involves the delivery of courses and workshops which include actual project requirements, allowing the delegates to immediately apply their new knowledge in the work place.

## Knowledge Transfer

Experience demonstrates that ensuring all members of a software team work to the same processes in order to mitigate risk as well as reduce the cost of development and future maintenance.

The Objektum Solutions Eurofighter training programme is designed to provide delegates with an understanding of the tools and techniques used in the specification and design of software for Eurofighter LRIs.

Working closely with industry partners (BAE SYSTEMS, EADS, CASA and Alenia), Objektum Solutions ensures that its training material is always in step with the current trends in Eurofighter software development.

The programme covers the following subjects:

- Ada83 and Ada95
- Controlled requirements Expression (CoRE)
- Hierarchical Object-Oriented Design (HOOD)
- Requirements Management and Traceability (RM&T) using DOORS
- Interface Definition using the ICD Tool
- Enhanced LPS Development Process (ELDP)
- Unified Modeling Language (UML)
- State-based Modelling

## Mitigating Obsolescence

In addition to their training services, Objektum Solutions also provides tools to assist in the migration from legacy technologies to modern tools and techniques.

Most military and aerospace Ada software has been designed and developed using the Hierarchical Object Oriented Design (HOOD) methodology, which is rapidly becoming obsolete. A software design can be represented using a more modern notation, such as the Unified Modeling Language (UML), but there is no standard mapping between UML and Ada.

Ada, HOOD and the UML profile have a formal structure, allowing Objektum Solutions' LegacyBridge tool to analyse the HOOD model, Ada source code and automatically generate UML class and activity models using the appropriate profile element.

The LegacyBridge provides the facility to analyse either the HOOD detailed design document and/or Ada source code allowing engineers to:

- View the results and check for errors in the design detailed
- Report differences between the HOOD design and Ada source code
- Merge the Ada code with existing HOOD design information
- Generate a UML model of the legacy design

When a UML model is generated, structure (objects/packages, constants, types, data and operations) can be created as well as a model of the behaviour (i.e. the implementation of each operation).

Once the design has been migrated, engineers can then exploit the richness of the UML notation to further develop projects and even forward generate code.

As the Eurofighter project continues to evolve to meet the requirements of modern air forces, Objektum Solutions will remain at the forefront of its software development in order to assist organisations effectively work with the changes demanded of them.

Further details can be obtained from the Objektum Solutions website:

[www.objektum-solutions.com](http://www.objektum-solutions.com)

