

DECEMBER 2004

FLIGHT

AIRWORTHINESS

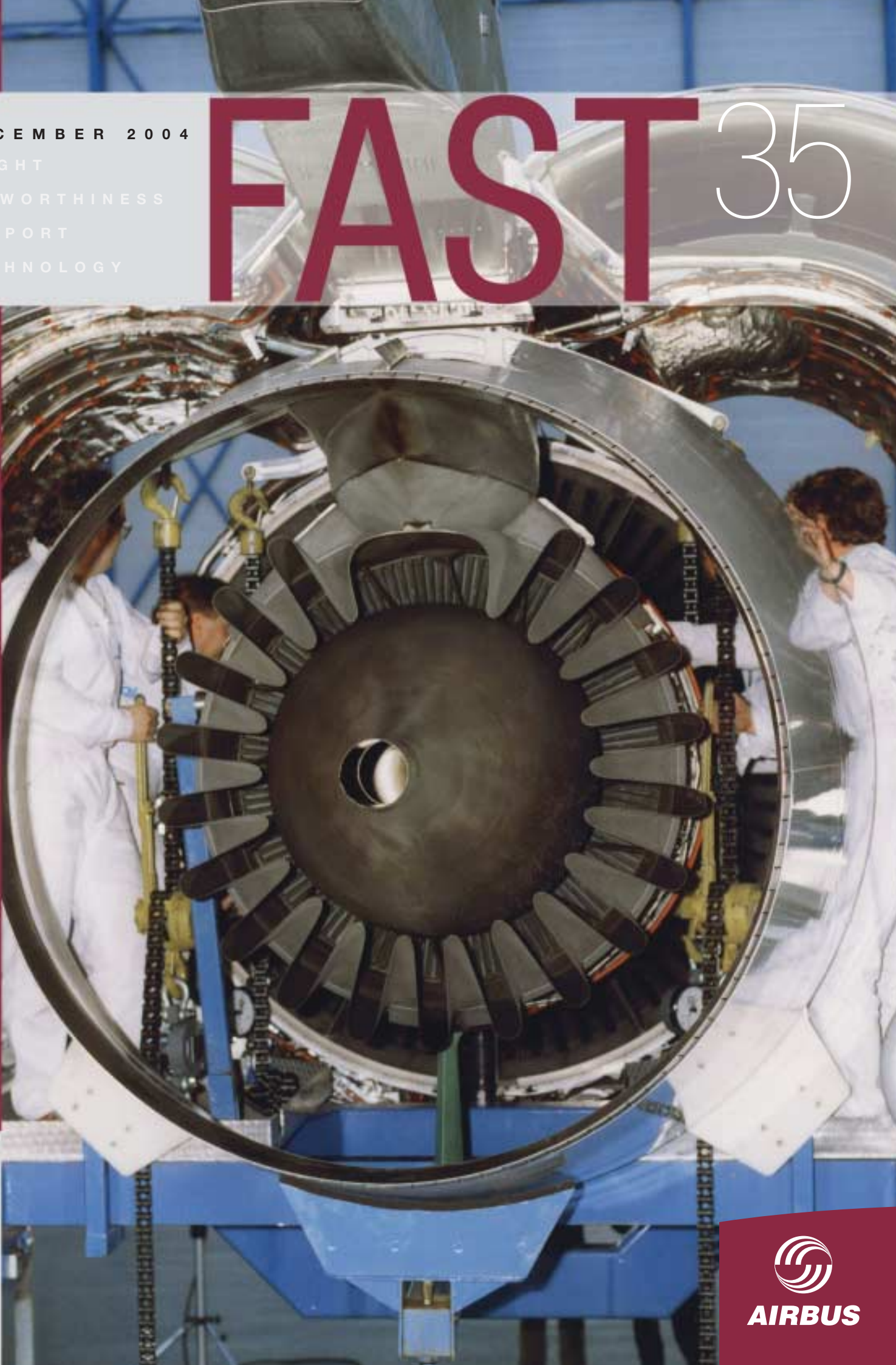
SUPPORT

TECHNOLOGY

FAST 35

A I R B U S T E C H N I C A L M A G A Z I N E

F A S T 3 5



AIRBUS



Customer Services events

Just happened

HUMAN FACTORS SYMPOSIUM

New Delhi, India, 14-16 September 2004

Seoul, Korea, 23-25 November 2004

Airbus continued the dialogue with its operators at this forum, discussing human factors aspects with practical and operational perspectives.

AIRBUS SPARES & SUPPLIER SERVICES

REGIONAL SYMPOSIUM

Puerto Vallarta, Mexico, 25-28 October 2004

This event focused on the latest developments related to spares support and services for all Airbus customers of the Americas. The conference followed the theme 'Reducing cost through supply chain partnerships'.

AIRBUS WARRANTY CONFERENCE

Toulouse, France, 30 November-2 December 2004

This was the second event concerning Airbus Warranty processes. Customers made great contributions to the event and, in addition, a significant number of suppliers participated and made contributions.

The main Warranty topics were addressed by alternating presentations with questions and answers, workshops and face to face meetings. All these dialogues resulted in positive exchanges to the benefit of all parties involved.

7TH TRAINING SYMPOSIUM

Bangkok, Thailand, 6-10 December 2004

This event targeted and ran in parallel, the three main streams of Airbus Training: Flight Crew, Maintenance and Cabin Crew. The symposium is the best forum available, providing a unique opportunity for briefings on all Airbus training programmes, developments and facilities, including the A380, as well as various training devices used by our customer base. Operator training experts will also present additional training technologies, methods and solutions.

Coming soon

13TH PERFORMANCE & OPS CONFERENCE

Bangkok, Thailand, 4-8 April 2005

Flight crews, operations and performance specialists are invited to attend and actively participate in the four-day conference, which will offer numerous opportunities to constructively exchange views and information, and increase mutual co-operation and communication. More than 80 subjects will be addressed, including EFB, flight operations, performance, CNS/ATM, A380 operation and new documentation. Along with the different sessions, numerous booths will be available daily in order to discuss issues and view demonstrations of the newly developed Airbus Flight Operations software.

TECHNICAL DATA SUPPORT & SERVICES SYMPOSIUM

Athens, Greece, 25-29 April 2005

Airbus will continue the dialogue with operators, concerning the changing face of technical data. This event will focus on the:

- Maturity, functionalities & benefits of Airbus' digital data application & tools
- Optimisation of products, data availability and quality
- Customer Satisfaction Program (CSIP) outcome, measures & results
- Current and scheduled developments/projects.

The preliminary agenda and the formal invitation will be sent out in December 2004.

A320 FAMILY TECHNICAL SYMPOSIUM

Rhodes, Greece, 23-27 May 2005

The next A320 Family Symposium, will take place in Rhodes, in the Greek islands. It will include actual in-service issues covering the A320 programme and general interest subjects concerning, or affecting, the A320 Family. It will be a forum for all customers and operators fleet managers of the A320 family to exchange experience.

FAST

M A G A Z I N E
A I R B U S
T E C H N I C A L
S U P P O R T

FLIGHT
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the A300B2 entered into service with Air France

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Around the clock... Around the world



This issue of FAST has been printed on paper produced without using chlorine, to reduce waste and help conserve natural resources.
Every little helps!





Additional Center Tanks

Upgrading your Airbus fleet for enhanced operational flexibility

To add an extra dimension to the operational flexibility of Airbus aircraft, Airbus has developed tailored modifications to enable installation of removable additional fuel tank capacity. This additional fuel capacity enables operators to fly longer range, low capacity routes (long-thin routes), which otherwise would require a larger aircraft.

Originally developed in the 1980s for the A310-300 aircraft, the concept has since been developed for the A340 and A320 Families of aircraft. To maximise the extra fuel capacity, modification to the aircraft design weights and associated modifications may be required or recommended. Some aircraft may not be candidates for ACT installation depending on their configuration, and are subject to case by case feasibility study.



Sonia Bouchardie
 Technical Project Manager
 Upgrade Operations - Systems
 Customer Services

The extra fuel capacity is normally installed in the forward part of the aft cargo hold in containers called Additional Centre Tanks (ACTs), which take the place of normal cargo containers. For the A320 Family, ACT holds 2,992 liters of fuel, while it holds 7,200 liters for the A310 and A340-300. Most models can accommodate up to two ACTs when the cargo hold is configured for either standard bulk (A320 Family only) or cargo loading system, while maintaining room within this area for cargo and baggage transportation under specific loading restrictions. The A340-600 can hold one ACT in the aft section of the forward cargo hold. The A319 Corporate Jet (A319CJ) can be fitted with up to six ACTs, four in the aft cargo hold and two in the forward cargo hold.

The transfer of fuel from ACTs is always to the centre tank and is normally achieved by pressurisation of the ACT using cabin air. In the event of a failure of the pressurisation system a back-up electrical pump, installed on the rear wall of the ACT, ensures the fuel transfer. Refuel of the ACT is normally automatic and adds between 5 and 10 minutes to the overall refuel time of the aircraft, meaning that an A320 Family or A310 aircraft fitted with two ACTs can be refuelled in under half an hour and an A340 aircraft within 40 minutes. These refuelling times, taking into account the added ACTs, remain within the turnaround time necessary between flights.

The option to have one or more ACTs installed is broken down into two work packages:

- Structural and system provisions
- ACT installation.

STRUCTURAL AND SYSTEM PROVISIONS

The structural provisions are covered by a Service Bulletin and consist of reinforcement of the cargo hold and loading system to enable

it to withstand the forces exerted by the fully laden ACT.

The system provisions include:

- fuel transfer and ventilation pipe work between the ACT and centre tanks,
- pressure regulation equipment fitted in the cargo bay,
- drain lines between the ACT and associated pipe work to the drain mast,
- cockpit and refuel control panels and associated wiring for ACT operation.

The pressurisation system ensures that the ACT and centre tank are not over pressurised.

When the system and structural provisions are in place, an ACT can be positioned and restrained by the cargo latches and connected to the refuel/vent/shroud pipes, drainage and air pressurisation system as well as the fuel quantity indicating system. An ACT can normally be installed or removed in one eight hour shift, including system functional checks.

High-standard safety requirements such as impact walls to protect the ACT from damage or overheating are also set upon installation.

ACT INSTALLATION

The initial installation of an ACT is done by Service Bulletin, which enables its installation and removal as required. When the ACT is removed, the provisions remain on the aircraft and a kit is provided to blank and isolate connections. This provides flexibility of ACT usage and maximum efficiency in its use by allowing operators to optimise ACT installation to their day to day needs.

ACTs are machined (to minimise weight) light alloy containers, the full width of the cargo bay, and have a flexible bladder tank attached to all internal surfaces. The weight of the tank dry is 400kgs for A320



1



2



3

The three main steps in installing an ACT.



Rails for the ACT



ACT fuel pipes installations

Family and 615kgs for A310 and A340-300. The ACT for the A340-300 is also common to the A310-300. Likewise, the ACT for the A319 (excluding the A319CJ), can also be used on the A320 and A321.

The ACT also includes:

- two water drain valves,
- two fuel quantity indicating probes,
- a drain system with leak monitor,
- over/under pressure protection devices.

The fuel probes for the A340-300 differ from the A310-300 and the A321 differs from the A320 and A319. So they need to be changed when the ACT is switched between these models.

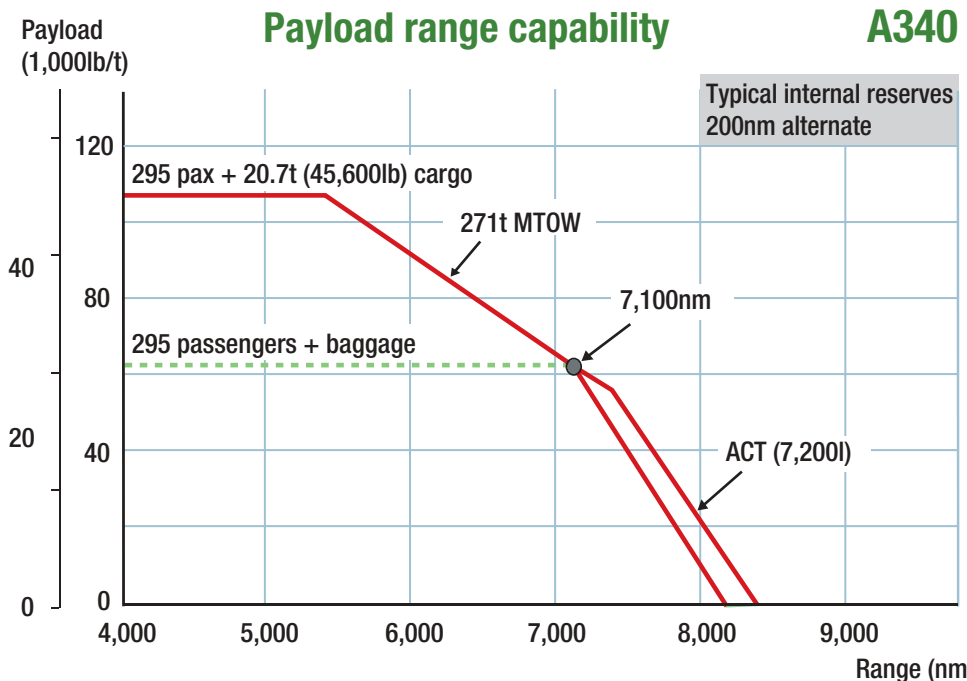
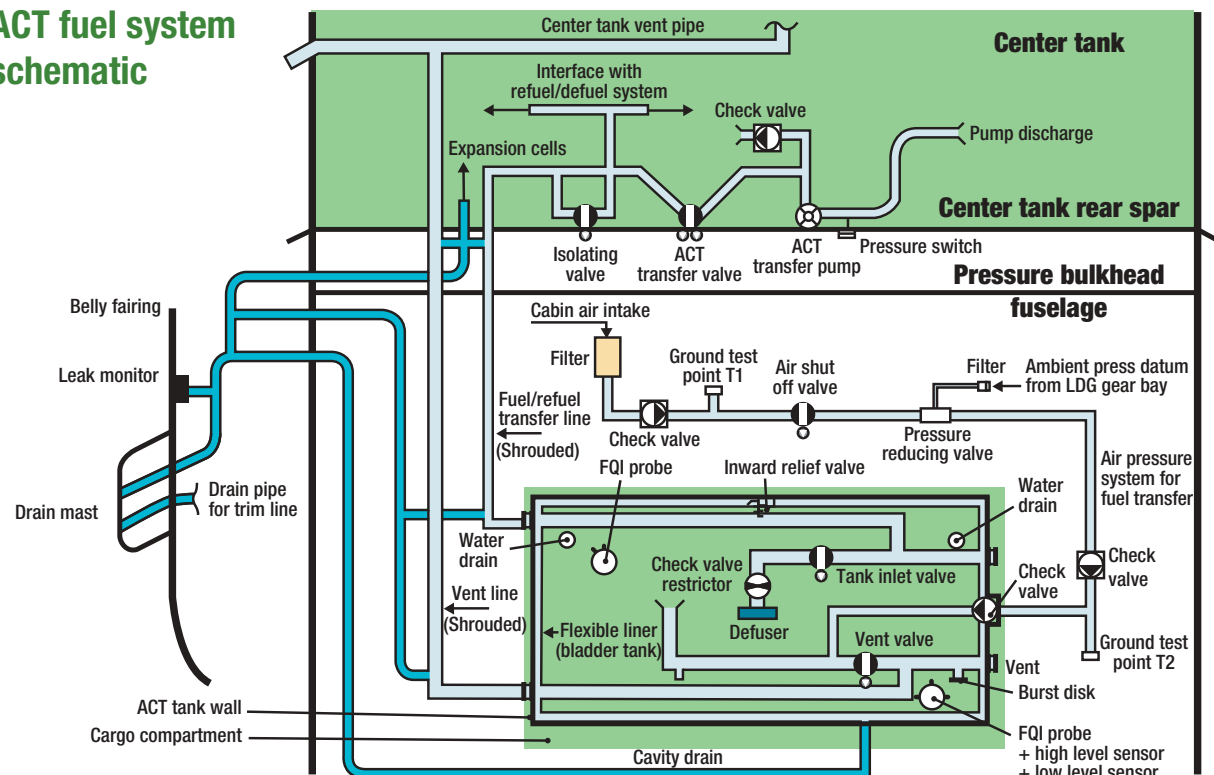
The installation of an ACT is currently an option in production for the A310, A319, A320, A321 and A340. Some Service Bulletins are available to retrofit the system and structural provisions (not all aircraft can be retrofitted due to structural constraints) and install the ACTs. This additional tankage available for Airbus aircraft provides operators

with an increased fuel capacity giving enhanced operational flexibility. The ACT gives them the ability to extend the range at both average and low payload conditions or increase payload significantly at fuel-limiting ranges, therefore enabling them to use the MTOW (Maximum Take Off Weight) increase more efficiently. Furthermore, the ULD (Unit Load Device) container shape of the ACT gives the operator great handling facility, particularly when the aircraft is equipped with a semi-automatic cargo loading system. The cargo loading system allows quick and easy installation, or removal, of the ACT without the need for any tooling.

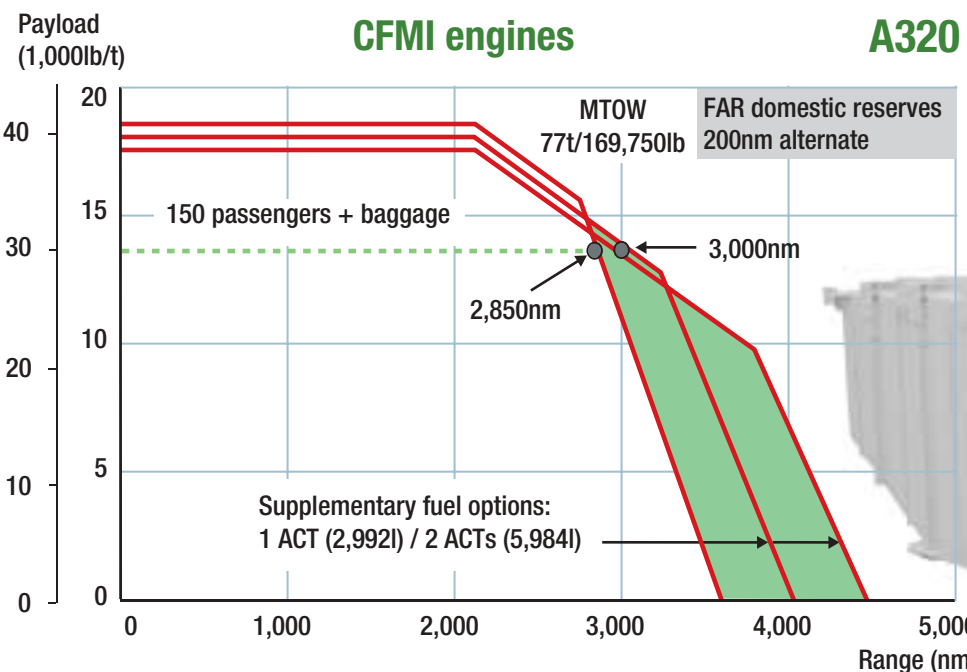
With the current passenger to freighter conversions, operators may also benefit from the aircraft downtime to embody the ACTs option on the A310-300 or A300-600 to further enhance the aircraft operational performance.

VIP cabin conversions for all types of aircraft may also be an opportunity to benefit from ACT installation during the aircraft downtime.

ACT fuel system schematic



The ACT is an optional feature for the A340. Installing an ACT could be an attractive operational feature for high-yield scheduled airlines with average payload



Conclusion

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Taking advantage of the high degree of commonality offered by the Airbus Family, ACTs are a flexible solution for operators to adapt to demand changes in their markets.

Some operators have chosen this option and retrofitted provisions and installation of one or two ACTs on A320 and A321 aircraft. Some

of these have been retrofitted, or will be retrofitted between 2004 and 2007, including 2 VIP aircraft.

The ACT option is available and can be subject to a Retrofit Modification Offer upon request to Airbus Upgrade Services. The option has been added into Airbus Upgrade Services Catalogue.





APT

Airbus Pilot Transition The new flight crew type rating course



EFFICIENCY

The new Airbus Pilot Transition (APT) course is an innovative approach to type rating that trains pilots using the latest interactive learning tools and has been welcomed by airline crews.



MOBILITY

With the intensive use very early in the ground course of the Maintenance/Flight Training Device (M/FTD), the first of its kind integrating tutorial mode in a 3D environment with high fidelity simulation software, Airbus again sets training standards for the future through:



FLEXIBILITY

- increased training *efficiency*, quality of the ground school phase
- optimised training time
- greater *mobility* and *flexibility* and
- high versatility and fidelity of the selected new training devices.



Catherine Neu
Synthetic Flight instructor
Flight Crew Training Policy
Training & Flight Operations Support and Services

TRAINING DEFINITION THE KEY ELEMENTS

APT has been developed by applying the following principles:

SYSTEMATIC APPROACH TO INSTRUCTION

Airbus training programmes are defined to achieve precise training objectives and to bring flight crew up to proficiency in the most efficient way, in a learning and time sense.

The training objectives are determined through a complete task analysis. The instructional system is approached as a whole, where the training methods, course contents and training equipment are selected for their ability to best fit the required final objectives.

LEARNING BY DOING

Practical training is progressively introduced very early in the learning process, with training on Standard Operating Procedures (SOP), crew concept and task sharing.

Computer Based Training (CBT) learning sessions start right from the beginning of the course and are combined daily with realistic hands-on sessions on Airbus's new state-of-the-art training device – The Maintenance/Flight Training Device (M/FTD)

TRAINING TO PROFICIENCY

At the end of the training programme, each crew member shall be capable of carrying out their tasks safely and efficiently, in accordance with the training objectives. Therefore, the training sequence does not permit a trainee to move up from one phase to the next until they have acquired the skills necessary to complete the objectives of their current phase.

RIGOROUS DEFINITION OF THE TRAINEE PREREQUISITES

Good definition of the entry level of trainees is a success factor for training programme specification. To be effective, a training pro-

APT is based on the following prerequisites

CAPTAIN

- Valid and current Airline Transport Pilot License (ATPL)
- Previous command experience
- Fluency in English. Able to write, read and communicate at an adequately understandable level in English language
- 200 hours experience as airline, corporate or military transport pilot
- Jet experience
- Flight time:
 - . 1,500 hours as pilot
 - . 1,000 hours on JAR/FAR/CS 25 aircraft

FIRST OFFICER

- Previously qualified on JAR/FAR/CS 25
- Aircraft and commercial operations valid and current CPL (Commercial Pilot License) with instrument rating
- Fluency in English. Able to write, read and communicate at an adequately understandable level in English language
- Jet experience
- Flight time:
 - . 500 hours as pilot
 - . 300 hours on JAR/FAR/CS, 25 aircraft
 - . 200 hours experience as airline, corporate or military transport pilot

gramme must start from already acquired knowledge, avoiding creating gaps never filled, or timeless repetition of well known items.

TRAINING CURRICULUM ORGANISATION

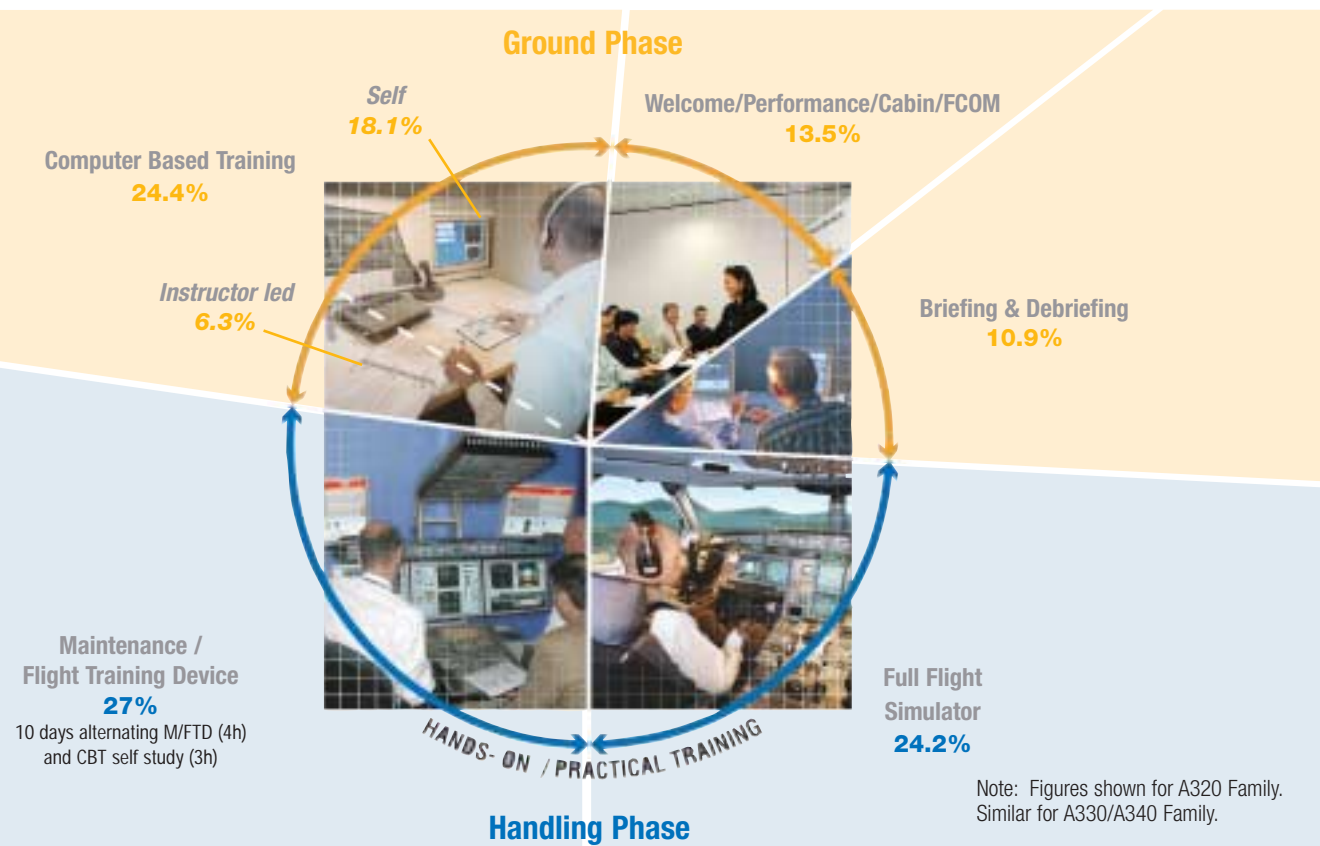
The training is organised around a two-step learning process – a ground phase enabling learning about systems and operational procedures and a 'handling' phase using a Full-Flight Simulator (FFS).

The ground phase is performed using CBT for system knowledge on a laptop provided to each trainee, it also includes self-paced learning on the M/FTD.

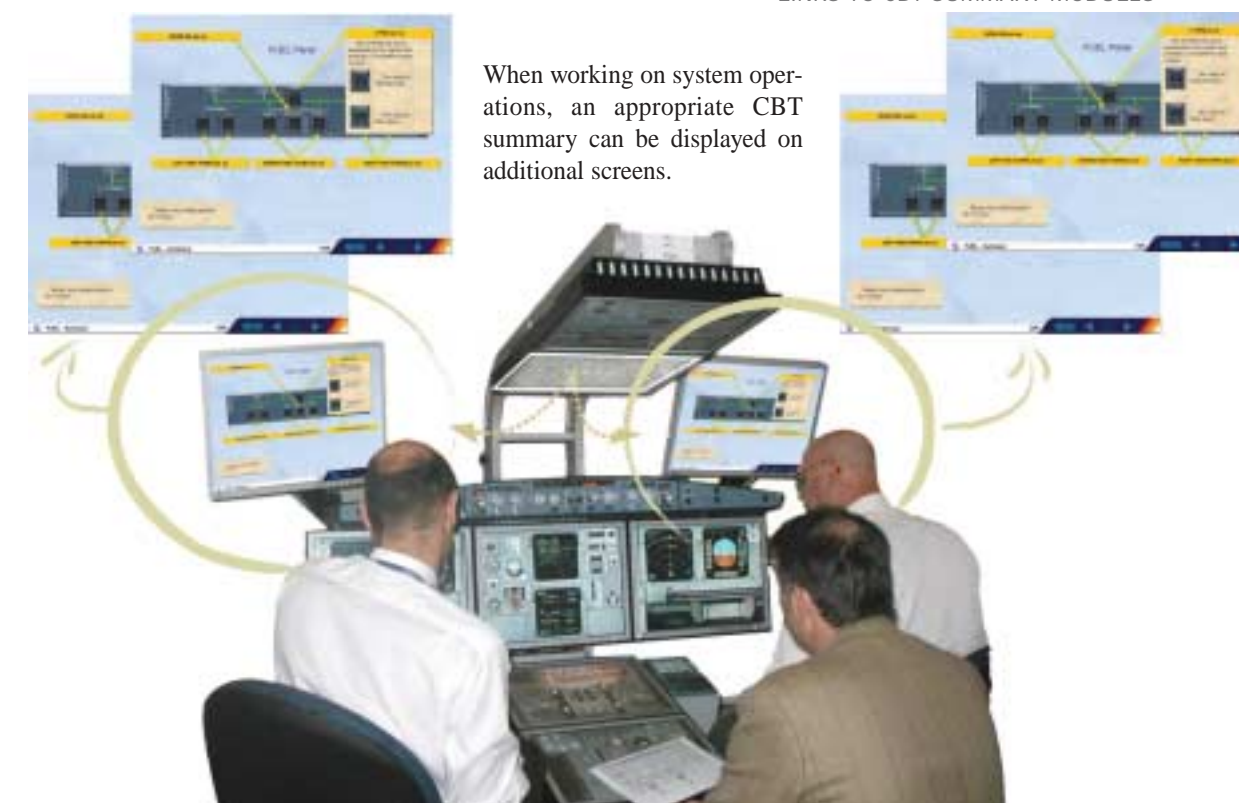
Thanks to the M/FTD, trainees become familiar with operations in the cockpit from the fifth day of training and benefit from an interactive learning of aircraft procedures. Each crew is supported by a dedicated instructor.

In addition, the M/FTD offers the advantage of being a transportable tool, so the ground phase can be completed at an Airbus training centre or at the operator's home base.

COURSE BREAKDOWN IN PERCENTAGE BY TYPE OF TRAINING DEVICES



USE OF THE M/FTD DURING GROUND PHASE



DETAILED CURRICULUM

CBT in classroom is restricted to systems presentation. Self paced CBT for normal and abnormal operations to prepare the M/FTD sessions.

(1) LOFT PHASE

A LOFT (Line Oriented Flight Training) session is defined to summarise all the exercises learned throughout the course and to give the trainee experience in operating the aircraft in real time scenarios.

(2) AIRCRAFT BASE TRAINING

According to regulation requirements and airline request, two options are provided to the customer:

- either: Aircraft base training – 45 minutes per pilot, or
- Zero Flight Time Training (ZFTT) – 4 hours per crew in the FFS

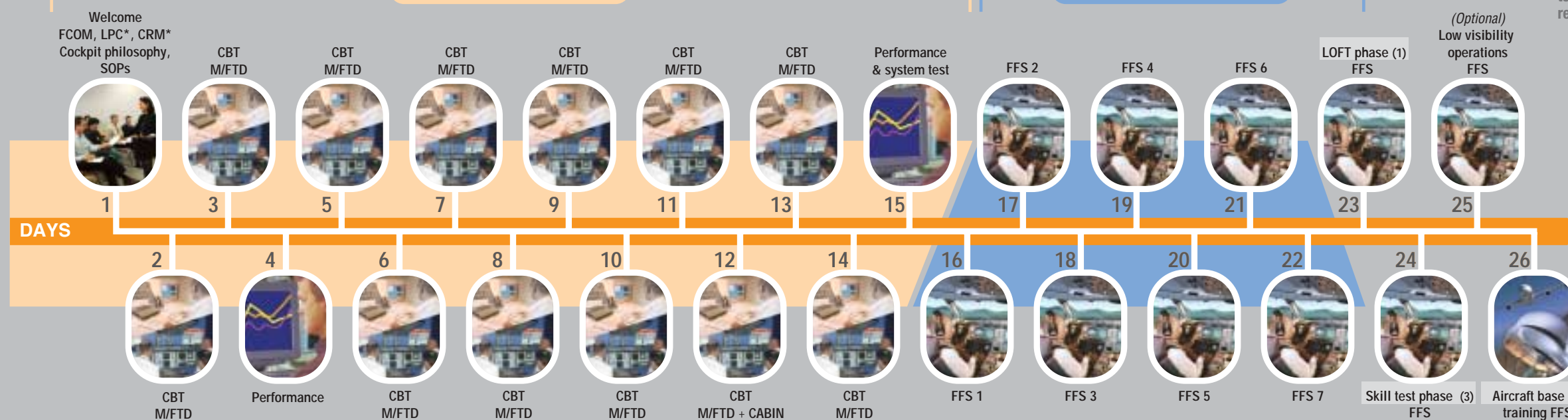
(3) SKILL TEST PHASE

According to the JAR – FCL recommendations, the skill test syllabi have been designed in a commercial air transport environment. They consist of:

- 1st part: a real time sector with some specific events
- 2nd part: additional part to deal with the remaining items to be performed by the trainee in order to fully satisfy the JAR – FCL requirement.

GROUND PHASE

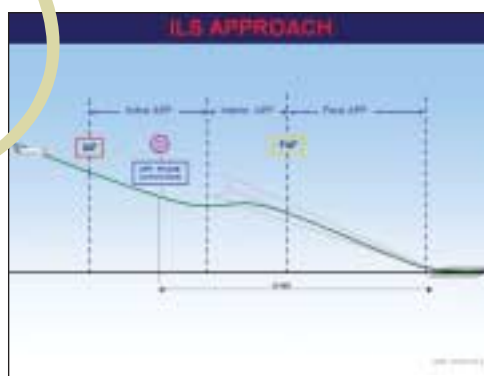
HANDLING PHASE



Training is fully integrated. No part task training and progressive introduction of:

- Flight Management System (FMS) functions,
- Systems knowledge
- Standard Operating Procedures (SOP) in normal and abnormal operations
- Crew Resource Management (CRM) including task sharing.

* LPC: Less Paper Cockpit - CRM: Crew Resource Management



MODE 2
TUTORIAL MODE

The objective of this mode 2 is to train the procedures:

- sequence of actions
- appropriate call out
- task sharing.

The Tutorial mode included in the M/FTD provides the instructor with the appropriate initialisations when a specific lesson is selected on the M/FTD instructor panel, i.e. the M/FTD is automatically initialised in the correct configuration for the lesson (time saving). The M/FTD also provides some visual materials (drawing on screen).

The tutorial mode is a major contributor to training standardisation, especially for non-Airbus instructors.

MODE 3
STANDARD FREE PLAY
SIMULATION

In mode 3 trainees can use the M/FTD in the same way and with the same level of system simulation as in a full flight simulator.



Conclusion

CONTACT DETAILS

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The first A320 APT courses were carried out at the Toulouse training centre in mid-September 2004 with crews from two recent Airbus customers. Typical remarks on the course from these customer crews were:

'The M/FTD tutorial sessions are very impressive because we can sequence the entire flight and divide the flight into phases. The instructor can teach us task sharing and the actions to be taken in different flight situations.'
'The structure of the course allowed crews to practice the procedural aspect of their learning on the M/FTD.'

The APT course dramatically enhances the quality and efficiency of flight crew training and has been welcomed by the first crews trained.

Today, all Airbus A320 crews trained in the Toulouse training centre are benefiting from the APT programme. Deployment of A320 APT training in the other Airbus and CAE training centres is scheduled for early in 2005.

APT training will be implemented in March 2005 for type rating on the Airbus A330/A340 aircraft and, later on, on the A380.

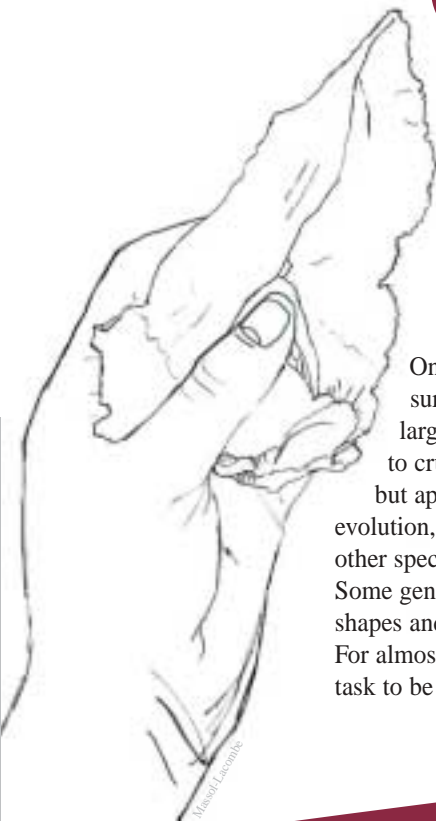




Tools and Ground Support Equipment

The complete story

In the beginning...



On the East African plain 2.5 million years ago, driven by starvation and its desire for survival, desperate to feed on a whitened skeleton of what had already been the supper of large predators and hosts of scavengers, a small Australopithecus chose a large flat stone to crush the larger bones and suck out the nourishing marrow. Little did that creature know, but apart from guaranteeing survival of its species and propelling it far forward into evolution, it had invented the 'Tool', a tool which allowed it unlimited access to food that no other species could reach.

Some generations later, its offspring would be designing and manufacturing stone tools of all shapes and sizes for a wide range of tasks, from cutting and crushing to ploughing and building. For almost each conceivable application, mankind would design tools to ease or often allow the task to be done: *The Specific Tool was born.*



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 Ground Support Equipment/Tools
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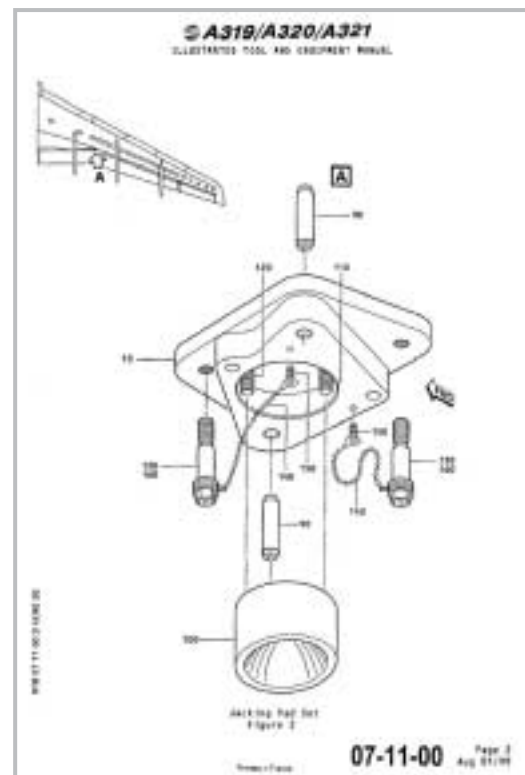


Whether one believes in the Theory of Evolution or not, one can only accept that the design, manufacture and use of tools is probably one of mankind's most ancient and also most current activities. From the dining table to the aircraft maintenance hangar, tools are present and required everywhere, by everyone, all the time. It is therefore a surprise that the world of aircraft maintenance tools and ground support equipment is so little known by so many in the industry; a fact that this article would like change.

TERMS AND DEFINITIONS

Although the 'World Airlines Technical Operations Glossary' (WATOG) definition of Ground Support Equipment (GSE) is: 'Equipment required on the ground to support the operation and maintenance of the aircraft and all its airborne equipment', the industry usually divides Ground Support Equipment into two categories: **Tools** and **GSE**.

Example of a tool as shown in the TEM



Tools, which include test equipment, can again be split into two categories: 'standard tools and test equipment' and 'specific tools and test equipment'.

Standard tools and test equipment are usually hand tools and instruments such as spanners, sockets, micrometers, dial gauges, torque wrenches or ohmmeters. Each one of them can be used for a wide variety of applications, systems and aircraft types whatever the manufacturer.

Specific tools and test equipment, are designed with a very specific task in mind, either a given maintenance task (e.g. removal/installation as per Aircraft Maintenance Manual (AMM) or a one-time modification task (e.g. Service Bulletin (SB) modification). Often, this task is unique to the particular aircraft type or system, for example removal and installation of the flaps, each flap of each aircraft type being unique and requiring a specifically designed and manufactured sling.

GSE in contrast to the WATOG definition of GSE - is ground support equipment which is not designed for a specific aircraft type, but which could be used on a number of different aircraft types, such as wheel change jacks, tripod maintenance jacks, ground power carts, access platforms, or towbars etc. Such GSE is available in a wide range of shapes, colours and sizes from a host of GSE suppliers worldwide.

Whether referring to maintenance specific tools, standard tools and to some extent GSE, there are two main 'environments' in which they can be used:

- for 'on-aircraft maintenance' tasks as called up in the AMM and Trouble Shooting Manual (TSM), or
- for 'workshop' tasks as called up in Component Maintenance Manuals (CMMs).

A set of standard tools



Similarly, modification tools can be used for on-aircraft applications (Airbus modification SBs) or workshop applications (e.g. component vendor SBs).

ORGANISATION AND STRUCTURE

The Airbus tool and GSE world is split between the GSE and tool engineering group (transnational activity), which covers all the technical responsibilities, and the GSE and tool supply group, which deals with all the commercial responsibilities.

FOR THE TECHNICAL PART

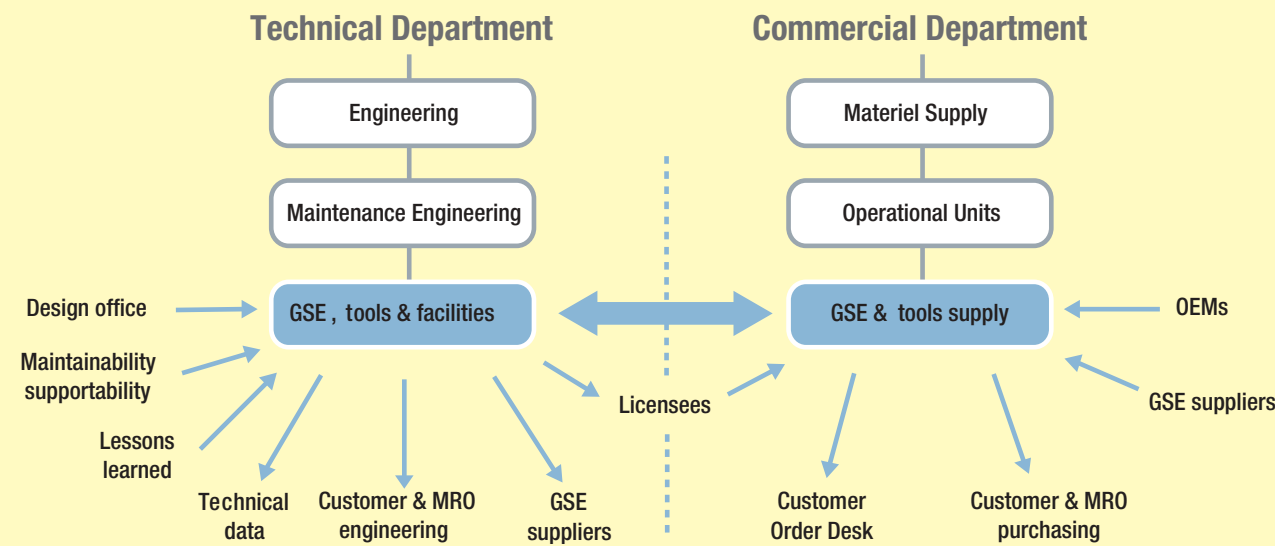
- The 'providers' to the GSE and tool engineering group are:
- the aircraft systems and structure design office
 - the maintainability/supportability department who work with digital mock-ups of the aircraft, tools and users
 - lessons learned from thirty years of Airbus maintenance tool design and customer feedback.

- The 'users' of GSE and tool engineering group's work are:
- the technical data department who distribute the group's tool drawings and Tool Equipment Bulletins (TEBs) and use this data to generate the aircraft maintenance documentation and the Tool and Equipment Manual (TEM)
 - customer and MRO (Maintenance Repair and Overhaul) organisations who use information for tool provision purposes and to solve daily technical queries
 - GSE suppliers who receive GSE and tool engineering group aircraft specifications for GSE design
 - Airbus tool manufacturing licensees who receive GSE and tool engineering group daily support for tool manufacturing
 - The GSE and tool supply group for technical support.

FOR THE COMMERCIAL PART

- The 'providers' to the GSE and tool supply group, are:
- Airbus tool manufacturing licensees who receive tool orders from the group and deliver tools to it
 - GSE suppliers who deliver GSE to the group
 - Original Equipment Manufacturers (OEMs) who deliver tools to the group.

- The 'users' of the GSE and tool supply group's work are:
- the Airbus customer order desk who receive orders and RFQs (Request For Quotation) for tools daily
 - customers and MROs purchasing who use the group for tool delivery, re-certification or repair, loan etc.



Organisation chart

TECHNICAL RESPONSIBILITIES

Aircraft, like all complex machines, require tools to enable them to be designed and built known as design and production tools. Aircraft also require tools to be maintained in operating condition, which are known as maintenance tools.

Within Airbus, the overall technical responsibility for maintenance tools and the maintenance environment (facilities) lies in Airbus Customer Services in Toulouse, France (see organisation chart).

GSE and tools engineering group department is responsible for:

...DEFINING THE SPECIFICATION OF GSE
As stated in 'terms and definitions', GSE and tools are applicable to various aircraft types and are therefore usually readily available on the market. However, before entry into service of a new aircraft type, the GSE

and tools engineering group must ensure that the specifications relative to the new aircraft type are provided to the Airbus technical data department for inclusion into Airbus manuals such as the AMM and Maintenance Facility Planning Manual, and also to GSE vendors, aircraft operators and MROs to allow them to identify which GSE they currently hold that could be used on the new aircraft, or which new GSE has to be procured - or designed and manufactured in the case of GSE vendors.

...DEFINING, DESIGNING AND PHYSICALLY VALIDATING NEW MAINTENANCE TOOLS used for the three main applications which are:

- maintenance of new aircraft types or systems
- aircraft modification SBs
- aircraft repairs as per the Aircraft Recovery Manual, Structural Repair Manual or repair instructions.

Whatever the origin of the tool requirement, a formal process exists from initial requirement to final validation.

Each of the GSE and tool design offices follow the same stringent tool design procedures and directives which, amongst other things, instruct to keep the tools safe, but as simple as possible for local manufacture whenever feasible.

Before tool release into service, a prototype is manufactured and validated on aircraft as suitable for the task it is intended for. This can lead to final adjustments or modifications to the tool design, after which it is formally validated by releasing a GCA (GSE Certificate of Acceptance) which is the green light for the Airbus technical data department to incorporate it into the relevant documentation, e.g. AMM and TEM.

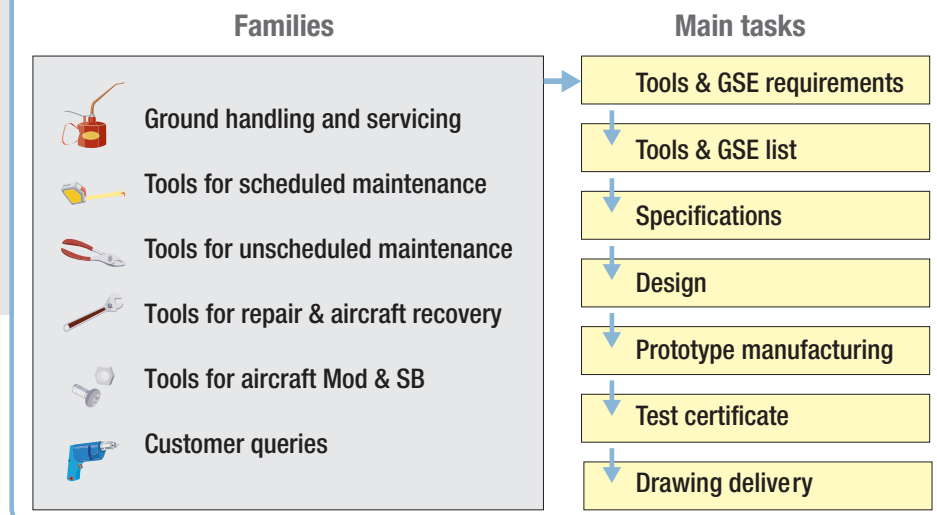
...PROVIDING IN-SERVICE TECHNICAL SUPPORT FOR TOOL USERS AND MANUFACTURERS

As for aircraft systems and structures, Airbus Customer Services Programmes and Technical Support & Services provides a customer interface department for GSE and tools, which is the 'single point of contact' for customers, MROs and GSE and tool vendors. The customer interface department's day-to-day business is to provide technical assistance and support concerning specific tool design, manufacturing and utilisation, GSE or equipment specifications and possible vendor contacts. It also provides technical tool recommendations for provisioning purposes and assistance on maintenance facilities and workshops issues.

...PROVIDING CUSTOMISED TOOL PROVISIONING RECOMMENDATIONS

This task, which includes also commercial discussion, is conducted with the GSE and tools supply department and is described in the 'combined mission' paragraph.

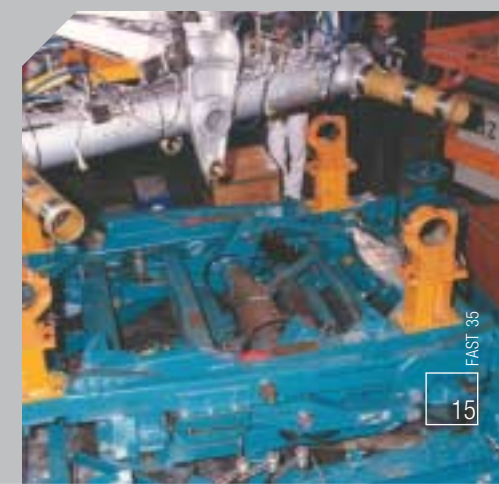
Formal process from initial requirement to final validation



...PROVIDING TECHNICAL ASSISTANCE FOR FACILITIES MATTERS

The customer interface department also provides technical assistance for all matters related to maintenance facilities. Its recommendations and assistance possibilities include:

- providing general dimensions for hangars or workshops, or improved layout or modification recommendations for existing buildings
- listing all recommended equipment and built-in systems for each type of facility along with a list of possible vendors
- carrying out on-site facilities reviews and evaluations in the case of customers receiving new aircraft types, customers or MROs wishing to develop or expand their maintenance activities or as specialised 'consultants' in the framework of 'best industry practices' or JAR145 reviews led by other departments
- reviewing and suggesting improved workflow processes for workshops
- providing specialised technical assistance for sales campaigns to review existing facilities and to evaluate any changes required and their financial implications





- in specific cases, to work with specialised architects and civil engineers, to propose detailed modifications to existing facilities, or entire programme plans and drawings for the development of new MRO facilities from the hangars and workshops to personnel canteens or prayer rooms.
- staggered investment based on Airbus experience and customer's planning and capabilities
- purchase/loan analysis
- supplier evaluation and sourcing
- tool handling advice
- forwarder recommendation
- warranty administration
- tool repair and calibration service.

COMMERCIAL RESPONSIBILITIES

The GSE and tool supply group is responsible to:

- provide tools and GSE for loan and sale to all customer airlines and MROs for different maintenance and repair purposes
- support Airbus customers with special tools and tool kits on sale and loan basis for embodiment of SBs
- support Airbus customers, based on technical and commercial considerations, in optimising their investment in tools and GSE and help them reduce their maintenance costs.

In addition, the GSE and tools supply group also offers:

Tools and GSE can be procured from various sources such as:

- Airbus for all equipment (purchase and loan)
- Airbus licensees for Airbus proprietary tools (ref Service Information Letter 00-031 for details)
- OEMs
- local sub-contractors.

The advantages of tools and GSE supply from Airbus are the following:

- single point of administration and shipment
- special package price/tailored method of payment
- special cost saving solutions for long lead time items, e.g. interim loan

- warranty of 36 months
- superior quality:
 - *Vendor tools* are from OEMs only and Airbus *proprietary tools* are from Airbus licensees which are quality approved and regularly audited.
 - *Quality check* is complete on all parts shipped layout and FAA *compliance of the certificates* are homogeneous.

COMBINED MISSION

The combined mission of the GSE and tool engineering and supply groups is to establish tool provisioning recommendation lists to optimise investments at airlines and MROs by providing them with technical and commercial expertise:

- tool commonality study between Airbus aircraft types and others
- evaluation of existing tools
- definition of alternate equipment
- equivalence for standard hand tools, specific to type tools, hangar and ramp GSE, facilities: access, maintenance platforms...

for investment reduction and saving as well as delivery lead times.

Tool provisioning recommendation is performed in two phases, initial provisioning and customised recommendations following a specific request from a customer.

INITIAL PROVISIONING

It is a recommendation covering tooling requirements based on the results of the general pre-provisioning meeting held with a customer to define the entry-into-service of an aircraft. During this phase a document called 'W File issue 0', established in accordance with SPEC 2000, is issued by the GSE and tools supply group.

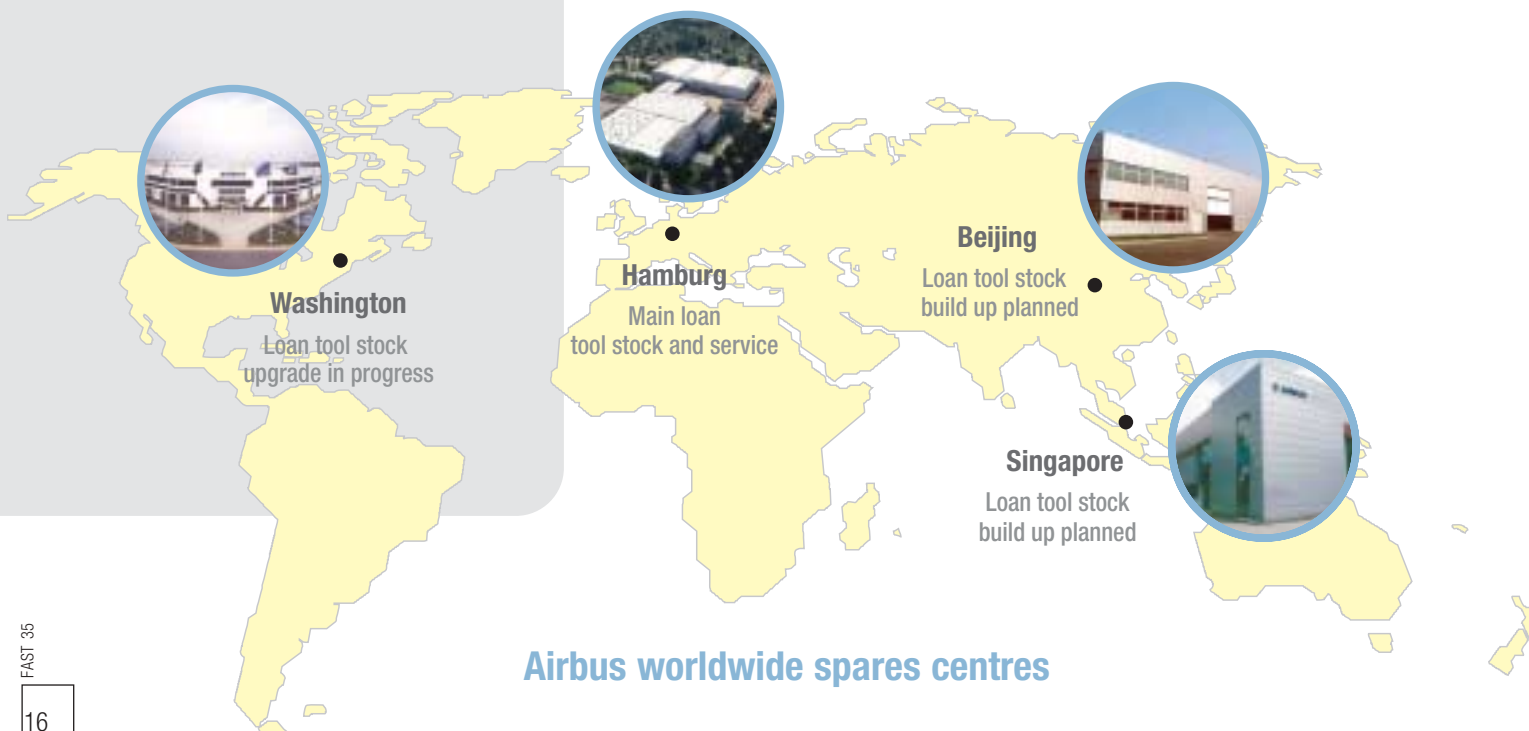
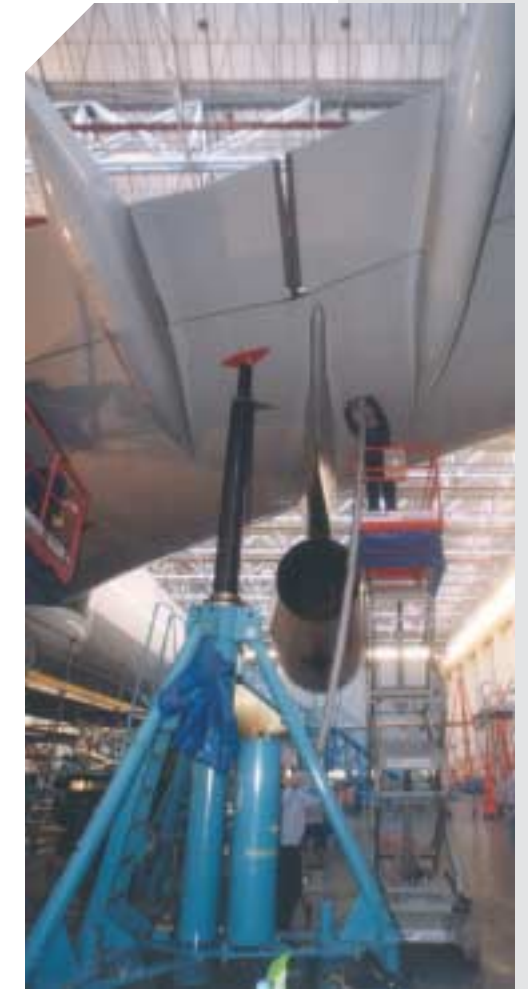
CUSTOMISED RECOMMENDATIONS

Working hand-in-hand with Airbus Spares Support and Services organisation, the GSE and tools engineering group provides technical tool recommendations for customer provisioning purposes.

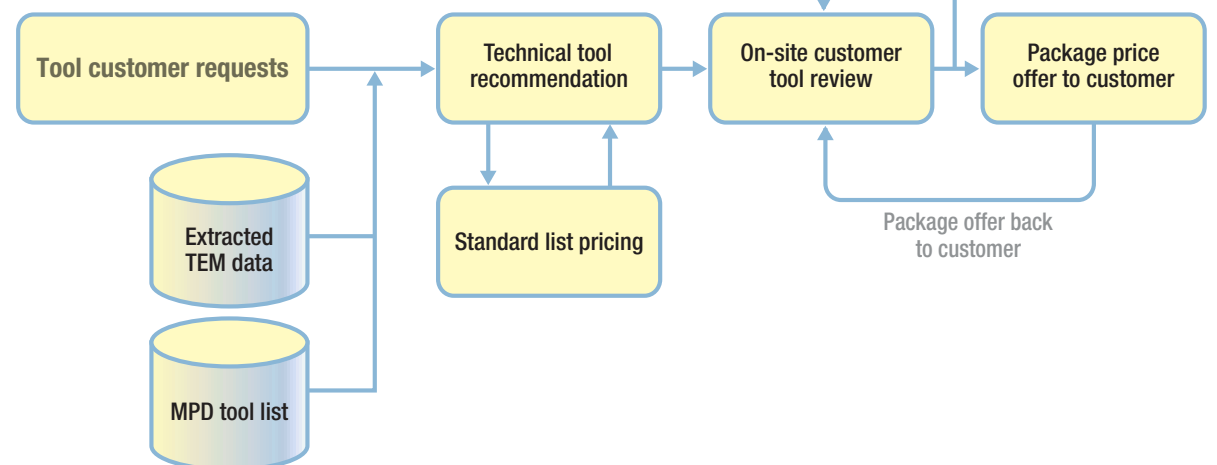
Following the established process described below, technical tool recommendations are priced by the GSE and tools supply group and then discussed in detail with the customer.

The starting point is the customised technical tool recommendation list which is established by the GSE and tools engineering group based on standard data, such as:

- extracted TEM data i.e. the list of on-aircraft specific maintenance tools applicable to any given aircraft type and model
- MPD tool list, also known as the list of tools for scheduled tasks,



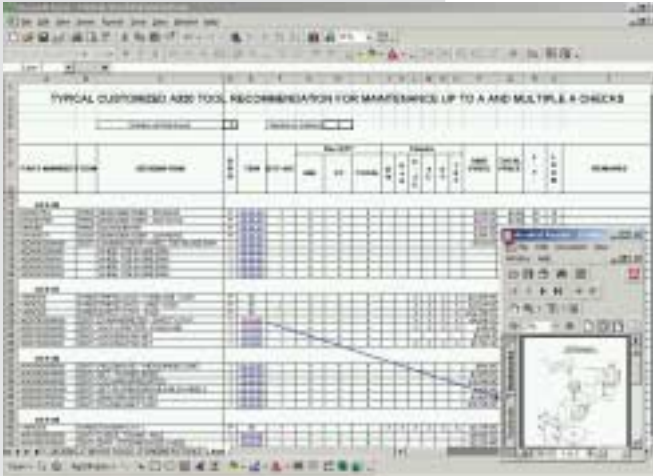
Airbus worldwide spares centres



Tool provisioning recommendation process

Selected tools list left with customer

Package offer back to customer



Example of a technical tool recommendation

which is manually built up by the GSE and tools engineering group based on the latest MPD revision and the associated AMM tasks and subtasks

After possible evaluation of the customer's existing facilities and tools, a tool selection meeting is held between the GSE and tools engineering and supply groups and the customer to enable them to decide on the tools they require.

... and customised data such as:

- aircraft type and associated options the customer has selected
- number of aircraft to be maintained and delivery schedule
- level of maintenance intended by the customer and its possible maintenance providers
- number of main bases and line stations where the customer has planned maintenance events.

The customer personnel met usually include the responsible engineering and maintenance staff, tool/GSE specialists and responsible procurement/provisioning staff.

These discussions allow the customer to select the tools required, based on the GSE and tools engineering group's technical explanations, their own in-service experience, the tools they already hold, or other local procurement or loan possibilities and the GSE and tools supply group's loan stock contents.

The technical tool recommendation is then supplied by the GSE and tools engineering group to the GSE and tools supply group for:

- pricing in accordance with latest price data
- lead time of each tool
- loan availability of tool through Airbus.

This leads to a global budgetary investment figure for the customer, based on tool unit prices, followed by a package price offer provided by the GSE and tools supply group.

Conclusion

As the reader may now well appreciate, tools, GSE and maintenance facilities are not an afterthought, but are an integral part of aircraft and component maintenance activities which must be anticipated, both in terms of availability and investment. Within Airbus Customer Services, the GSE and tools engineering group is the engineering department whose responsibility it is to ensure that all the tools and equipment which will be needed by the customer exist, and also to minimise the investment required by customers by providing customised tool provisioning recommendations and tailored facility and equipment advice. Obviously, the GSE and tools engineering group works

hand in hand with the GSE and tools supply group, who ensure physical availability of all possible tools and equipment through buying, selling and loaning, and also with the technical data department who incorporate all the tools into the documentation and distribute the manufacturing drawings to customers.

So, the next time you pick-up a tool, be it a hammer in your garage or a nut-cracker from your dining table, maybe you will give a little thought to the design process which led to its existence, and more globally to all similar processes which began a mere 2,500,000 years ago in East Africa.

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AirN@v

Seamless one-stop access for maintenance documentation

AirN@v is evolving

In the first AirN@v article in FAST 31 in December 2002, it was explained why and how Airbus was working on the necessary foundations for today's digital Technical Data products and services. In April 2004, ADRES and CAATS, (Airbus Document REtrieval System and Computer Assisted Aircraft Troubleshooting) were retired, and after a yearlong worldwide deployment fully replaced by the new consultation tool, AirN@v. Since then, Airbus has been constantly assessing initial reactions to this powerful new documentation browser and taking note of feedback as we continue to enhance the capabilities of AirN@v and continue to develop digital services.

A major change to the initial AirN@v version has been the integration of the wiring and web server options into the AirN@v version 2.1 basic package. This has been done to ensure all customers and operators will benefit from AirN@v's full potential. This article will explain how the inclusion of the wiring manuals, when added to the existing Aircraft Maintenance Manual (AMM), Illustrated Parts Catalog (IPC) Trouble Shooting Manual (TSM) and trouble shooting tool, moves AirN@v closer to becoming the total '*seamless one-stop access*' for aircraft maintenance documentation.



Anthony Poole
Communications & Business Support Manager
Technical Data Support & Services



AirN@v (V2.1) ENHANCEMENTS (STARTING JANUARY 2005)

SUITE OF WIRING MANUALS NOW INCLUDED AS BASIC

With the revision following January 2005, the AirN@v Catalogue Page (Refer to figure 1) now includes the aircraft wiring manuals. Full hyper-linking is ensured between the existing AMM, TSM, IPC and the additional wiring manuals.

Some of the basic functions that demonstrate the advantages of AirN@v when the wiring manuals are included, are explained as follows.

What must be remembered is that with AirN@v, there are many different methods of finding the required information. The best method is the one that works for the user and they feel comfortable with. This article will focus on the predefined dropdown menus that have been designed especially for users.

PREDEFINED WIRING MANUAL SEARCHES

Experienced AirN@v users will have realised that the traditional table of contents is no longer the most efficient method of finding information. The use of the 'full text' and 'predefined form' search functions has been proven to be more efficient and considerably reduced information search times. As defined for the AMM, IPC and TSM, there is included a full set of 'predefined form' search menus designed especially for the Aircraft Schematics Manual (ASM), Aircraft Wiring Manual (AWM) and Aircraft Wiring List (AWL). These drop-down menus are accessed from the main top bar menu (Refer to figure 2). Just select the appropriate search you require and the appropriate 'search form' will appear.

The following example will show how to hyperlink between manuals, it will also focus on the use of these predefined manual searches.

EXAMPLE OF PREDEFINED WIRING MANUAL SEARCH

In the example that follows, the TSM Fault Isolation Procedure includes the statement 'Do a check and repair the wiring from the SDAC 2 to the first terminal block: pins AB/8C, 8D of the SDAC 2' (Refer to ASM 29-31/05 or to figure 3).

Clicking on the link ASM 29-31/05 takes you directly to the referenced ASM schematic 29-31-00 schematic 05. This schematic will give an overview of the electrical circuit to check. To assist when consulting the wiring manuals the supplied magnifier is very useful to help identify components, wiring and references etc.

The TSM fault isolation procedure mentioned 'to the first terminal block', so to identify this, you will

need to refer to the appropriate AWM sheet.

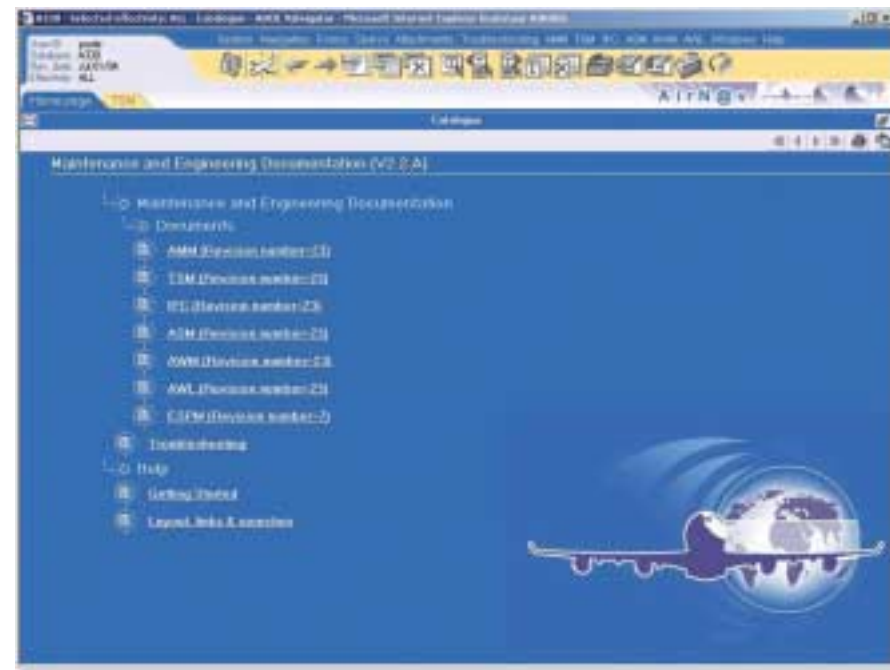
From the AWM dropdown menu (Refer to figure 4), select 'Figure by FIN Connector, Pin'; the Functional Item Number (FIN) connector pin search form is displayed. Enter the FIN of the SDAC, '1WV2' and connector 'AB' that you obtained from the ASM, into the search form. Enter OK to open the search results and select the correct wiring sheet (in this case two schemes are applicable and cover all connections to connector AB).

On the aircraft, using the wiring diagram information, a broken contact (open circuit) is identified at terminal block 2801VT, Module 45, Contact K (Refer to figure 4). To make the repair the terminal block contact will need replacing and re-crimping to the existing



Although each ASM schematic will always carry a reference to the related AWM diagram(s), the quickest method to go directly to the AWM sheet, is to use the AWM 'predefined form' search function (Refer to figure 4).

Figure 1 - AirN@v catalogue page



ASM, AWM, AWL and ESPM are now included as 'basic'

Figure 2 - AirN@v predefined search menus

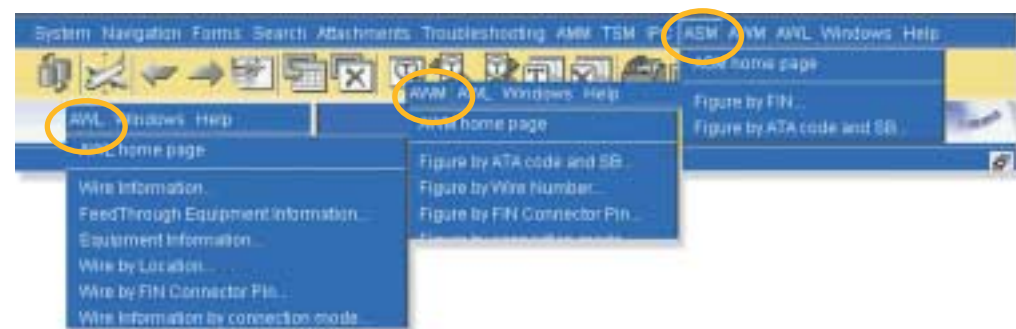
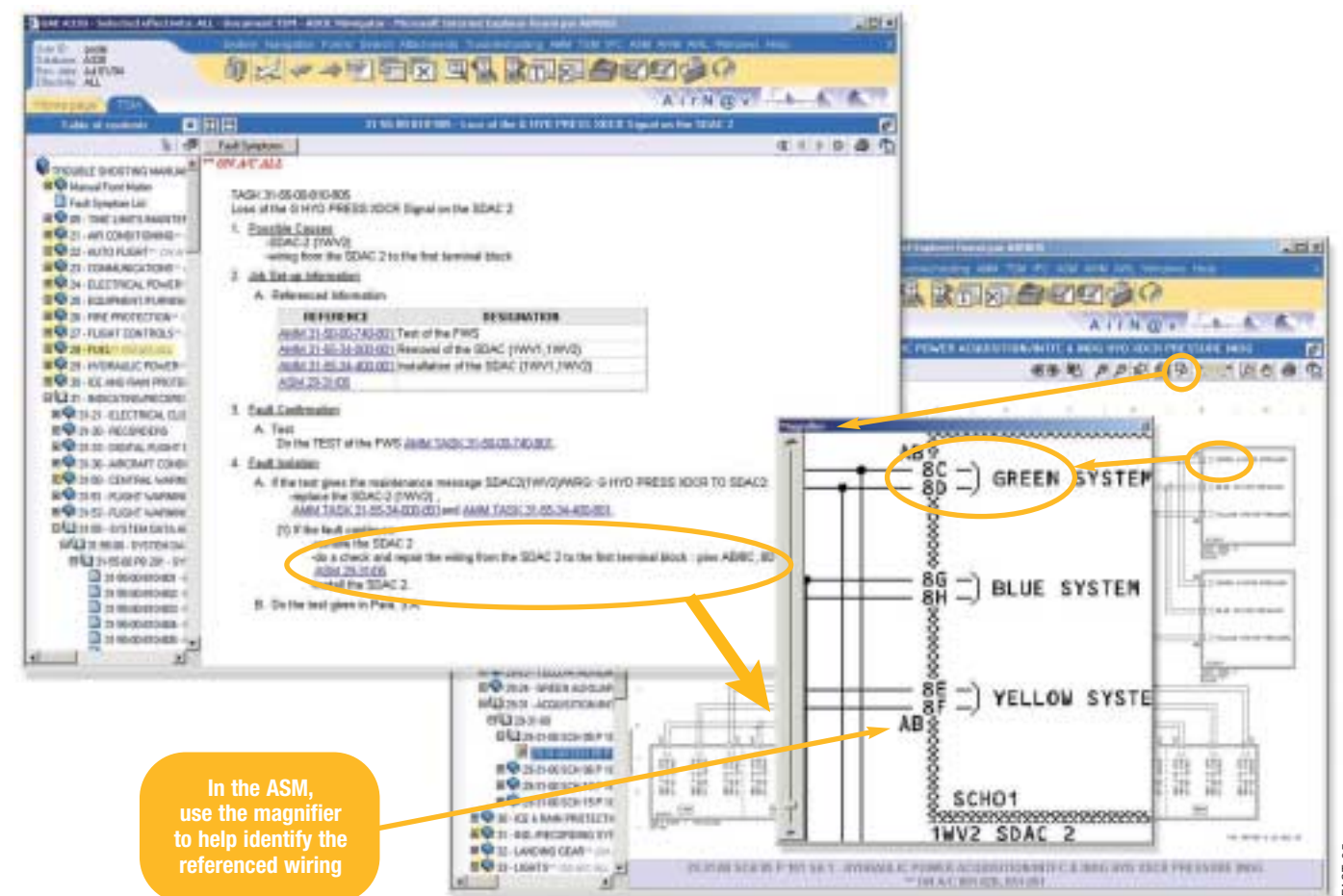
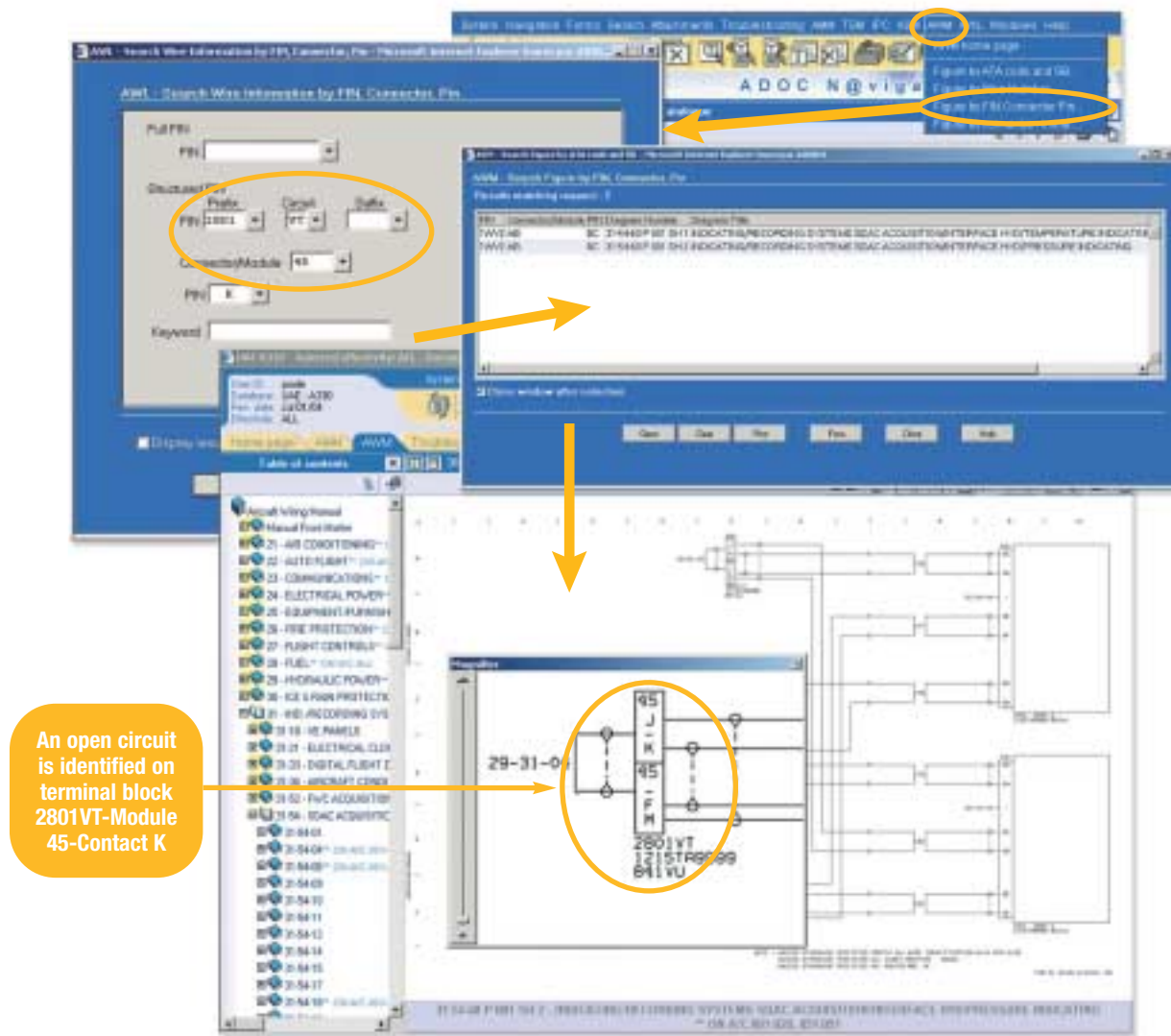


Figure 3 - TSM linked to Wiring Manuals



In the ASM, use the magnifier to help identify the referenced wiring

Figure 4 - AirN@v AWM predefined search menus



An open circuit is identified on terminal block 2801VT-Module 45-Contact K

cable. So next the AWL needs to be consulted for the contact Part Number (PN) and then the Electrical Standard Practices Manual (ESPM) referred to.

First select the AWL predefined dropdown menu (Refer to figure 5), select 'Figure by Connector Pin.' and enter the terminal block FIN, '2801VT' and contact information obtained from the AWM, into the AWM 'FIN connector pin' search form that is displayed. Enter 'OK' to open wiring information contained in the 'Extended AWL'.

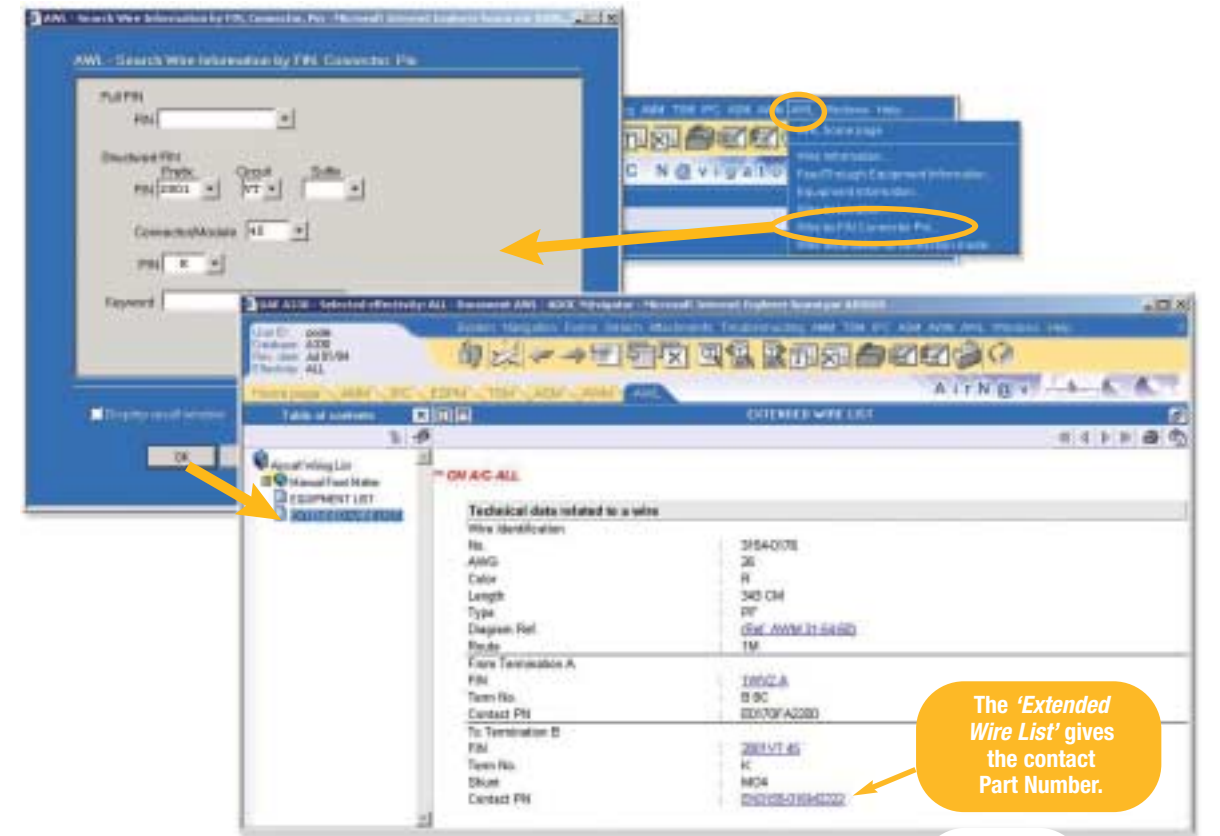
The contact part number EN3155-016M2222 (termination B) is a European Norm standard (EN). In

this case when the PN is clicked it links directly to the ESPM 'Equivalence Table' which gives the NSA PN equivalent to the EN PN and also a direct link to the related ESPM topic. All procedures and tooling required are included in this ESPM topic or related hyperlinks are provided (Refer to Figure 7).

The ESPM will provide the following information to enable you to carry out the repair:

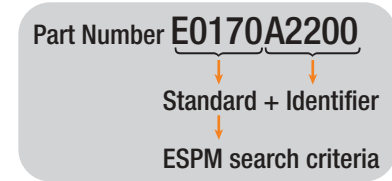
- contact insertion and extraction tools
- connection procedure
- sealing (if required)
- crimping procedure and tools
- sleeve information (if required)
- wire stripping procedure.

Figure 5 - AirN@v AWM predefined search menus



The 'Extended Wire List' gives the contact Part Number.

Figure 6 - AirN@v PN to electrical standard



SOME USEFUL AirN@v TIPS

- Make full use of the FIN together with key words when using the 'predefined form search menus' and the 'full text search' e.g. enter 'Remove IWW2'.
- When entering information into any of the search forms, type the minimum and select from the resulting list. If the list is too long, simply return to the search form and refine your search criteria.
- When entering information into any of the search forms, use of the 'wild card' or asterisk '*' also eases the input required in the search forms.
- When consulting any Line Replaceable Unit (LRU) removal/installation procedure, use the 'SEE IPC' button to go

- directly to the correct page of the IPC detailed figure for the PN.
- When consulting any IPC detailed figure, use the 'SEE AMM' button to go directly to the correct LRU removal/installation procedure page of the AMM.
- When consulting wiring diagrams, use the built-in magnifier to help identify diagram details.
- Use the ESPM alphabetical index to navigate to topics e.g. Cable repair (Ref. 20-53-20) or Repair cable (Ref. 20-53-20).

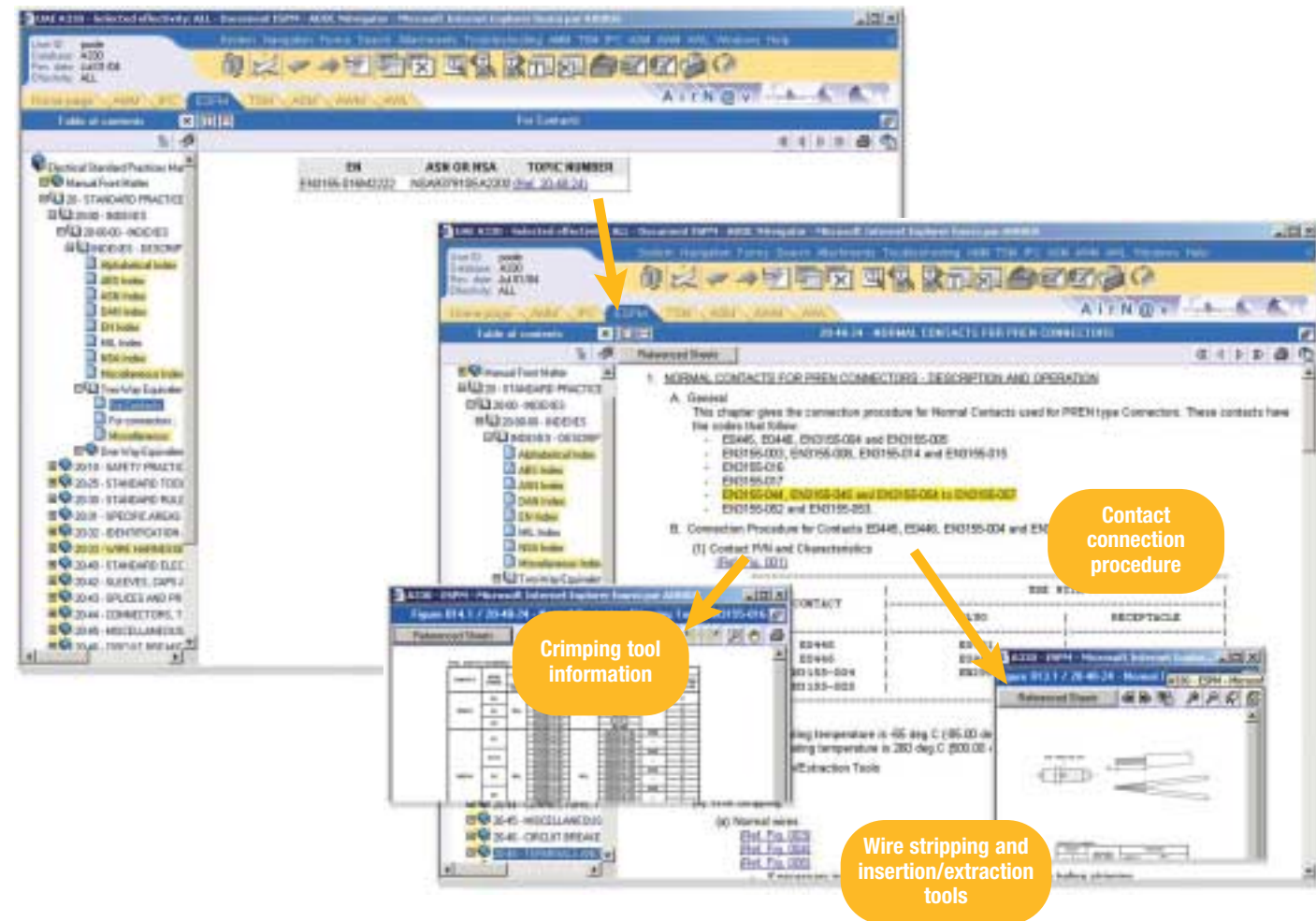
IMPROVED HELP FUNCTION

On the AirN@v V2.1 DVD PowerPoint training presentations that illustrate usage and include practical examples are included.



In figure 5 the contact part number for termination A, 'E0170A2200' is not hyperlinked. Reference to the ESPM is normally by the applicable Electrical Standard and not by PN. Therefore it will be necessary to convert the PN to a standard (Refer to figure 6). Then the 'Standard' is used in 'text search' to find the related ESPM information.

Figure 7 - AirN@v navigation in the ESPM



AirN@v WEB SERVER NOW INCLUDED AS BASIC

The AirN@v Web Server gives customers the ability to install AirN@v onto their own Intranet, Extranet or even to use AirN@v on the Internet. The Web Server will, from January 2005, be included in the basic AirN@v package, giving Airbus operators the ability to quickly and easily make the latest revisions available throughout an airline organisation.

ADDITIONAL AIRBUS ON-LINE SERVICES (AOLS) TECHNICAL DATA DOWNLOAD SERVICE

Since June 2004, Airbus has progressively been loading digital Temporary Revisions (TR)s and Technical Follow Ups (TFU)s onto the AOLS Technical Data Download Service page (Refer to figure 8). These are accessible for

consultation and download in real-time. As a result, the TR and TFU CD-ROMs that are being distributed, can in future be considered as a back up to the AOLS on-line service. The digital TRs and TFUs on the AOLS Technical Data Download Service page, are provided within a ZIP package that includes:

- the TFUs in Rich Text Format or the TRs in PDF to be anchored within AirN@v
- an anchoring file that correctly attaches the TFU or TR within the AirN@v application or, within other Standard Generalised Markup Language based technical documentation consultation systems (using the interface document provided).

Further details are included in the PDF guide available on each AirN@v TFU and TR CD-ROM.

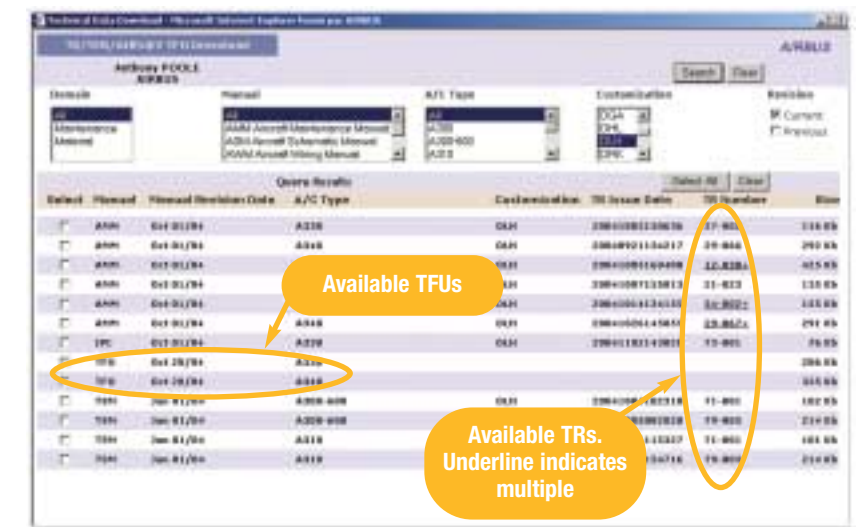
To further assist airlines, AirN@v end-users who have been named as 'administrators' (airline administrator function) will, on request, be notified by e-mail when a new TR or TFU becomes available for download via the AOLS Technical Download Service. This e-mail will include a hyperlink to the new data on the Technical Data Download Service.

NEW ADDITIONAL MANUALS

By mid 2005, the Standards Manual (SM) and the Consumable Material List (CML) will be integrated into the basic AirN@v package.

Both manuals will be added to the regular AirN@v DVD as additional database's and offer customers new and useful hyperlinks between the IPC and the SM, also between the AMM and the CML directly from the consumable material reference in an AMM task to the SM material specification.

Figure 8 - AOLS TR/TEB/AirN@v/TFU download



Useful references

OIT* number	Date	Description
SD 999.0112/04/MA	06 Oct 2004	Supply of an enhanced AirN@v version in Jan/Feb 2005
SD 999.0096/04/BB	16 Aug 2004	Launch of AirN@v for A310 and A300-600 fleet
SD 999.0052/04/MA	29 Apr 2004	Introduction of new digital technical data download service
SD 999.0162/03/MA	23 Dec 2003	Airbus digital data products and solutions

*Operator Information Telex

Conclusion

Replacement of the out-dated CAATS and ADRES by the new technology AirN@v provides a necessary foundation for today's Airbus digital Technical Data products and services. The initial AirN@v provided maintenance documentation consultation for the AMM, IPC and TSM and included a troubleshooting tool. AirN@v user feedback and experience is assessed continuously by Airbus and enhancements and additions developed and implemented. This policy of continuous improvement led to inclusion of the complete suite of wiring manuals, making all the principle Airbus maintenance documentation available in the AirN@v version to be issued from the beginning of 2005. This AirN@v version also includes additional functionalities, such as the Web Server. The Web Server enables Airbus operators to install AirN@v on their own Intranet, Extranet or

use it on the Internet, giving them the ability to quickly and easily make the latest AirN@v technical data revisions available throughout their organisation. Enhancements to Airbus On Line Services (AOLS) Technical Data Download Service enables customers to download digital Temporary Revisions and Technical Follow Ups, giving quicker and more efficient delivery of these documents. The Standards Manual and Consumable Material List will also be added to AirN@v in mid 2005, further increasing technical data availability and consultation efficiency.

With these enhancements and additions AirN@v has now become a seamless one-stop access for technical data consultation, acquisition and distribution for Airbus operators.

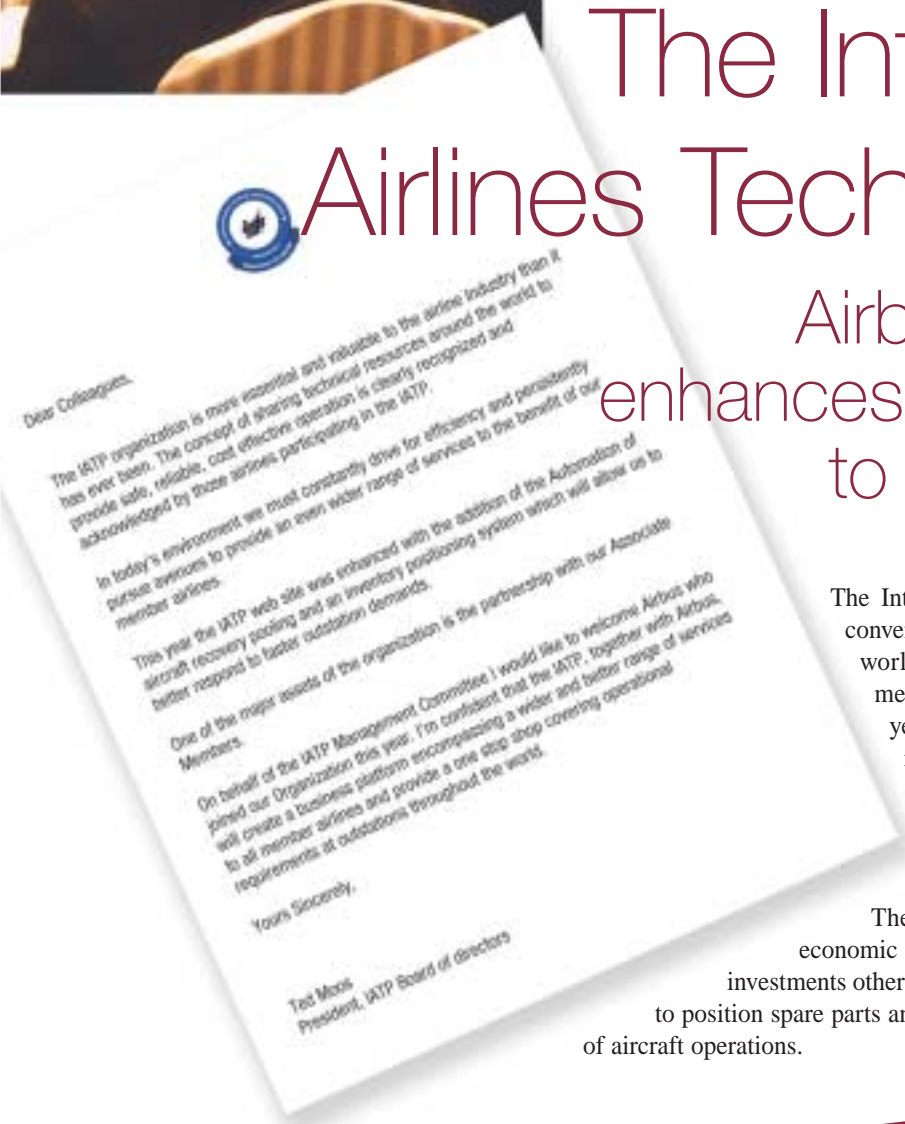
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The International Airlines Technical Pool

Airbus membership enhances airlines' access to spares services



The International Airlines Technical Pool (IATP) is a convention of airlines consisting of over 100 members worldwide. In the spirit of cooperation, these members of the aviation industry gather twice yearly to discuss the sharing of resources and cost reduction issues, as well as how to improve operational efficiency. Under the auspices of the IATP, members share aircraft recovery equipment, aircraft parts and tooling, ground handling equipment and manpower/facilities.

The primary goal of the IATP is to generate economic savings to participating airlines by minimising investments otherwise required for the purchase of equipment, and to position spare parts and other equipment at various stations in support of aircraft operations.



Peter Buchfeld
VP Operations
Spares Support and Services

With more than 300 global delegates, the organisation is a truly diverse, multi-cultural community. Each member is encouraged to advance their ideas, suggestions and opinions without any political prejudice in the spirit of a 'Global Village', thereby promoting goodwill among all members.

The organisation characterises itself by its objectives and mission statement:

IATP OBJECTIVES

- ▶ To maintain a high degree of technical performance in aircraft operations.
- ▶ To maintain a spirit of cooperation in the airline community.
- ▶ To formulate and enforce simplified procedures that lower administration costs.
- ▶ To establish cost sharing formulas, which are acceptable to all members.
- ▶ To monitor and ensure there are no monopolies or commercial restraints.

IATP MISSION STATEMENT

The IATP is a convention of airlines sharing technical resources to generate economic savings and to achieve on time dispatch reliability and safe operation at their line stations.

The IATP is a non-profit, independent, non-political global organisation based on a democratic culture with equal opportunities for all member airlines and their delegates.

Throughout its 56-year history, the IATP has contributed significantly to the aviation industry, as we know it today, by forging strong bonds among airlines around the world.

IATP A BRIEF HISTORY

- 1948**
A few airlines started sharing aircraft materials, equipment and manpower resources by gentleman's agreement.
- 1950**
More international airlines joined the group and formulas were introduced to provide financial settlement.
- 1967**
Name change to 'International Airlines Technical Pool'.
- 2004**
Associate Members (Original Equipment Manufacturers - OEMs) allowed to join.

THE IATP PRINCIPLE OF POOLING SPARE PARTS, GROUND SUPPORT EQUIPMENT/TOOLS AND OTHER SERVICES

HOW DOES IT WORK?

Basically the idea is simple: An airline having a large network and operating to a number of line stations is asked by one or more airlines operating to a limited number of these stations if they could pool spares and services at these stations to cover operations.

Alternatively, a number of airlines get together to pool spares and services at stations where they have common operations.

If an airline agrees to put spares and/or services into such a station it becomes the pool provider airline. The other airlines wanting to access those spares and/or services are the participating airlines. In case of need, participating airlines have the right to access the pooled spares and/or services. All the agreements governing the pooled spares and services are calculated according to the IATP Blue Book (see following explanation).

Over time, the IATP members have created formulas to cover pool costs

Associate members (September 2004)

- Aero Technologies
- Airbus
- Atis Aviation
- Aviation Concepts
- CASL
- First Wave
- Goodrich
- HAECO
- Honeywell
- Lufthansa Technik
- Mach 2
- Midnite Express
- Nayak Aircraft Services
- Nordam Group
- Perform Air
- Sabena Technics
- SR Technics
- Sterling Courier
- TAECO

- IATP member airlines
- ▶ operate 9,500 aircraft
 - ▶ represent 650 main/line stations
 - ▶ and share 1.2 Billion USD spares



and invoicing. The elements are unit pool cost, cost of ownership, number of participants, number of users, number of hours operated, amortisation factor, number of days borrowed, number of days pool is in effect, quantity of items pooled and many more depending on the pool.

The agreements last for a season (April to October and November to March) and can be renewed or changed.

Airbus has requested IATP to open the A-pool for A380 and to separate all other Airbus aircraft from DC10/MD11. IATP is reviewing this request and will come back shortly with a solution.

Pool Groups

- D - Ground handling equipment
- E - Ground maintenance equipment & aircraft recovery
- F - Technical facilities and services
- G - Avionics, common Units & L1011 and tools
- K - 727,737,707 aircraft units and tools
- L - Line maintenance services?
- M - 747 aircraft units and tools
- P - DC9, MD-80 & 90 series aircraft units and tools
- Q - DC10/MD11 + all Airbus models units and tools
- S - 757/767 aircraft units and tools
- T - 777 aircraft units and tools
- Aircraft recovery

POOLING OF LINE MAINTENANCE SERVICES AND ACTIVITIES

Pooling of line, maintenance services and activities includes:

- Sharing manpower and technical facilities
- Covering all activities up to and including A checks, as well as trouble shooting & defect rectification, to prevent AOG (Aircraft On Ground) risks at line stations, by using standardised contracts

ORGANISATION OF IATP CONFERENCES

IATP conferences are organised as follows:

- Pool group training
- Pool group meetings
- Bilateral meetings
- Ground equipment, aircraft recovery
- Line maintenance (flight line)
- All parts pool group meetings
- Exchange meetings (probably the most important meeting for airlines. Opportunities for direct contacts and market place. Delegates can be approached to establish other member outstation requirements)

AIRBUS BECOMES AN ASSOCIATE MEMBER OF IATP WHY?

Airbus joined IATP in March 2004 for the following main reasons:

- Learn members concerns and new ideas from the conference discussions
- Present issues concerning Airbus Spares Support and Services and solicit feedback from the forum of 100 major airlines
- Have working sessions with airline supply decision makers to discuss optimum, cost effective solutions, ideas and cooperation
- Be the contact point in the conference for any airlines with spares and support issues

- Integrate all these aspects of Airbus participation into Airbus policies to provide better, more efficient and more cost effective service for customers

OTHER AIRBUS CONTRIBUTIONS TO IATP

Further working groups and committees exist in which Airbus is also participating and contributing inputs, as follows:

PROJECT GROUPS

- Authorities requirements
- Introduction A340-500/600
- Introduction A380 (Airbus elected as Co-chair)

PROJECT COMMITTEES

- Aircraft recovery
- Supplier services (Airbus member)
- Maintenance pooling agreements
- On line data development
- Station restrictions

THE BLUE BOOK

The 'Blue Book' has been prepared as an operating manual and functional guide for all parties to the IATP agreement. It contains all the rules and regulations the IATP functions on. It is constantly updated subject to IATP members' approval.

IATP's new on-line access (<https://www.iatpool.com>) for

The current IATP management committee

Ted Moos
Cargolux Airlines
President
IATP Board of Directors
Larry Cook
United Parcel Services
Vice-President
IATP Board of Directors
Financial Affairs
San Lucktong
Thai Airways
IATP Board of Directors
Facilities
Peter Babunek
Austrian Airlines
IATP Board of Directors
Corporate Development

Horst Schrader
Lufthansa
IATP Board of Directors
Product Development
Yoshihiro Yawata
All Nippon Airways
IATP Management
Committee Member
Cellaletin Durak
Turkish Airways
IATP Management
Committee Member
Marsha Drescher
IATP
Business Manager



members enables 'real time visibility' for all of the active pool groups. It is no longer necessary to submit all the changes via the electronic data processing agency. This has improved the communication speed remarkably.

The web page contains all necessary documentation like the Blue Book, all pool forms, minutes of meetings, member contacts etc.

Conclusion

Due to the rapid development of the aviation industry, the IATP is more valuable than ever before. It will enhance the services platform for airlines while maintaining the ideals the organisation was built on. IATP is the basis to exchange ideas with organisations around the world for the benefit of its members, to keep up to date with market developments and requirements.

Airbus participation and contributions to the IATP community will support cooperation among the participating airlines, MROs and suppliers, plus enable Airbus to learn airlines concerns and ideas and adapt Airbus policies to provide increasingly better spares and services support to customers.

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A380

Airports are preparing for commercial operations

More than 60 airports worldwide are preparing for A380 commercial operations which commence in 2nd quarter 2006. With its extra capacity enabling it to make the most efficient use of scarce infrastructure resource combined with unparalleled environmental characteristics (it will generate half the noise energy of existing large aircraft), airports recognise that the A380 represents the most socially responsible solution to cater for air traffic growth.

The A380 has been designed from the start with existing and future airport infrastructure in mind. The required level of airport airside infrastructure (taxiway and runway widths and separations etc) can be specified in two different ways.

GENERIC AIRPORT DESIGN STANDARDS AND RECOMMENDATIONS

These are requirements in which aircraft are grouped by their wingspan and main landing gear width into generic categories and are applicable to the design and construction of a new airport, or a new part of an existing airport. Each group has a corresponding infrastructure requirement. At the ICAO (International Civil Aviation Organisation) level, guidance is found in Annex 14 where the groups are defined by code letters A to F. Individual States publish their own recommendations, usually based on Annex 14.

An example is the US Federal Aviation Agency Advisory Circular (FAA AC) 150/5300, which classes aircraft in Groups I to VI. The A380 falls into the ICAO Code F and FAA Group VI categories. It is important to note though that the infrastructure dimensions corresponding to each group are based on the maximum aircraft dimensions within it.

This can mean that the infrastructure recommended for a certain generic group may be in excess of what is required to safely accommodate a specific aircraft (as is the case for the A380).

AIRCRAFT SPECIFIC OPERATIONAL RECOMMENDATIONS

These requirements allow airport infrastructure to be tailored to a specific type of aircraft based on its exact characteristics. They can cater for situations where a New Large Aircraft (NLA) needs to operate to an existing airport that is not designed to the corresponding generic design recommendations. This process is recognised by ICAO and the FAA, who both allow a specific aircraft to be evaluated, and corresponding tailored infrastructure to be developed provided the application is supported by an 'Aeronautical Study' which ensures the desired level of safety is achieved. This system of approval has been used for many years, for example, over 80% of B747 operations in the US are from airports which do not meet the full US generic design standard for the type, known as 'Group V', and therefore have been granted waivers under this process. A similar situation exists at several other large international airports that do not meet the full ICAO Code E generic design standards.

A380 SITUATION

Since the mid 1990's and the days of the A3XX, Airbus has included and actively sought the comments of regulatory authorities, airport and airline operators in the design process of the aircraft. These inputs have massively optimised the aircraft with respect to airport compatibility.

Taking into account the specific characteristics of the A380, a pan-European group of civil aviation authorities and airport operators, known as the A380 Airport

Compatibility Group (AACG), has developed a set of specific operational recommendations to permit A380 operations at existing airports with a minimum of infrastructure change. A major European airport has found that this would reduce the projected upgrading costs to full Code F generic design standards by 70% and that in total, preparing for the A380 would only represent 1.4% of the investment planned for their proposed new runway and terminal. These figures are typical of other airports worldwide.

Airbus has also actively supported ICAO, who recently published (in June 2004) Circular 305 entitled 'Operation of NLA at Existing Aerodromes'. With this circular, ICAO recognises that generic aerodrome infrastructure recommendations as defined in Annex 14 are not the sole and unique means for safely accommodating specific aircraft types at airports. Contained within the Circular are references to a number of aeronautical studies that have been, or are being, undertaken by States such as the US, Australia and others. To assist other States and aerodrome operators that could potentially see NLA operations in the future, all the studies are being uploaded on a step by step basis on the ECAC (European Civil Aviation Conference) website, <http://www.ecac-ceac.org/nla-forum>, managed by leading European Civil Aviation Authorities.

Following on from Circular 305 and in recognition of the differences between airport design and operational needs, ICAO is in the process of creating an Aerodrome Panel, whose main task is intended to be separating these distinct areas. The reference for airport design will remain Annex 14 but requirements for airport operations should be covered by so-called PANS (Procedures for Air Navigation Services). PANS are expected to build on the concepts and applicable measures already available in Circular 305.

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Conclusion

By working closely with ICAO, national aviation authorities and airports, Airbus has optimised the design of the A380 for airport compatibility. Most major airports around the world are preparing for A380 commercial operations using a specifically tailored solution that, in conjunction with the aircraft design itself, will minimise disruption and cost at airports.

AIRBUS

Thirty years ago... the A300B2 entered into service with Air France



The B2 was a derivative of the A300B, Airbus first aircraft and the template for the companies successful widebody fleet, which was launched at the Paris Air Show in 1969. The first widebody twin-engine jet, the A300B was capable of carrying 226 passengers in a two-class lay-out.

REGISTRE INDIVIDUEL DE CONTROLE

DE L'AVION AIRBUS A.300. TYPE B2.1

Recognising its potential, Air France ordered a stretched 250-seat version, which became the A300B2. After achieving certification on schedule in March 1974, the B2 went into full-scale production and entered service with the French flag carrier on May 23 the same year on the Paris-London route.

The operational capability of the B2 was increased with the introduction of subsequent versions and this short-range series was followed by the medium-range B4 that had an additional fuel tank in its centre wing box. Production of the A300B4 ceased in May 1984 when the A300-600 went into production. The A300-600F remains a benchmark freighter aircraft today.

Appareil n°	5
Immatriculation	F-BVGA
version	AF.1
Date	20.5.1974





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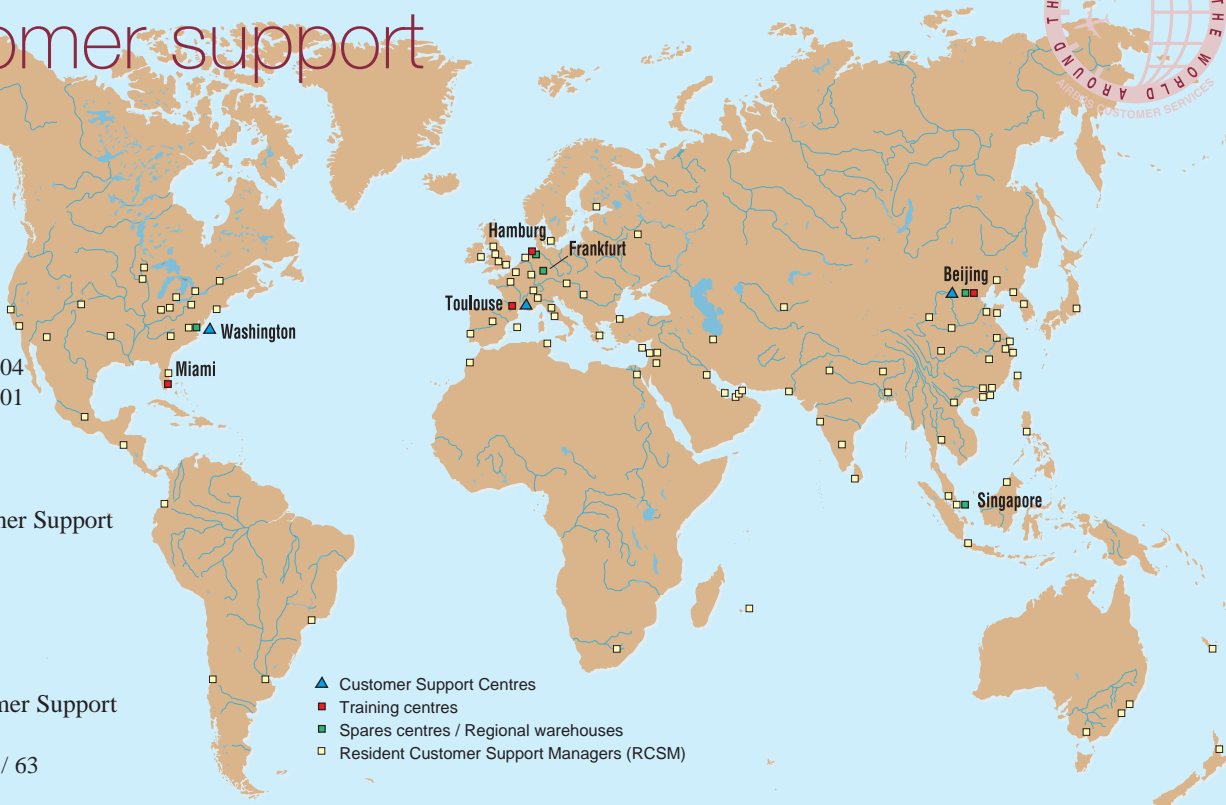
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RCSM location

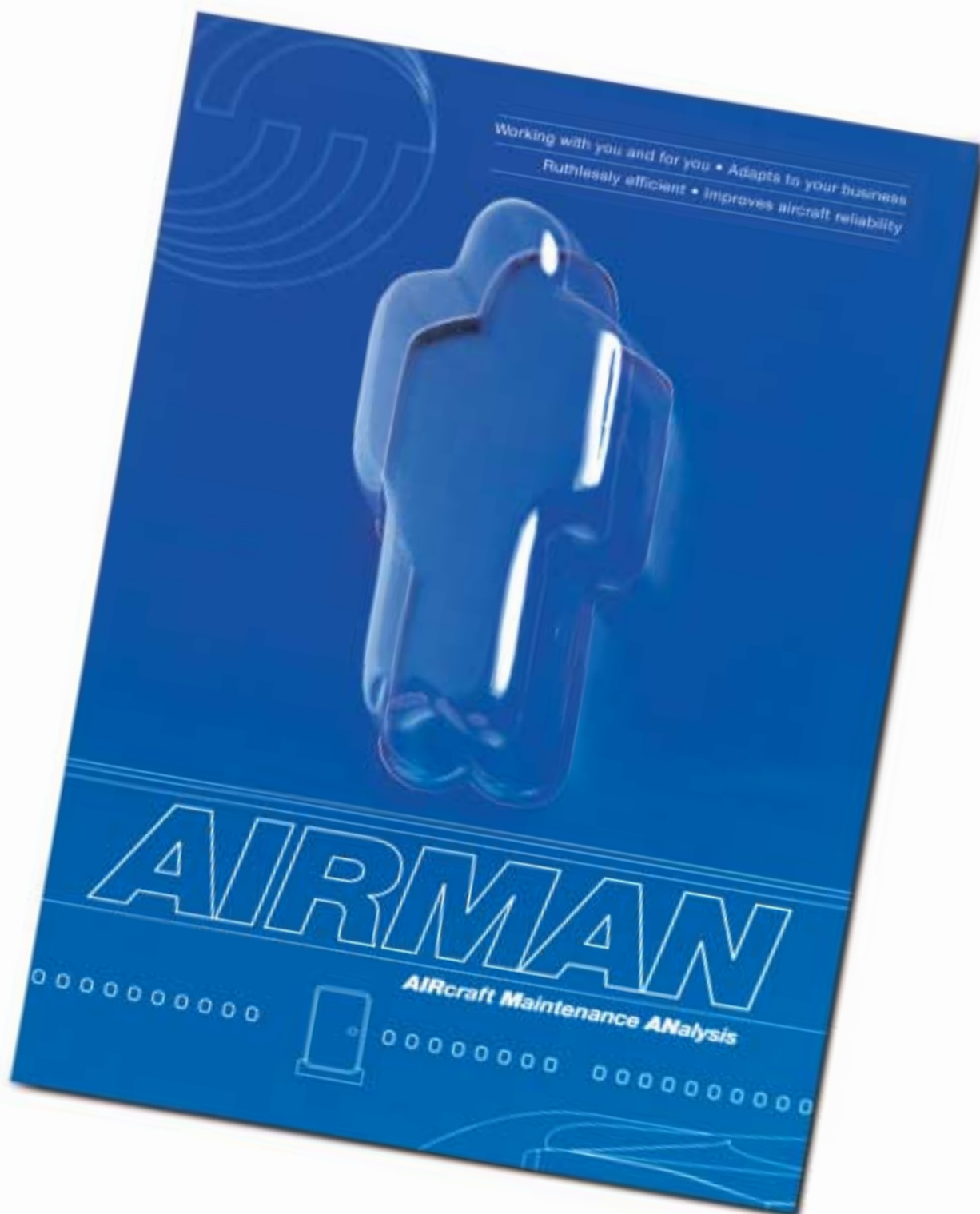
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