E-RECORDS

Heading towards a Paperless operation

SWARAN SIDHU - HEAD OF FLEET TECHNICAL MANAGEMENT

europe by easyJet

something about us...

> What we do:

We are low-cost European point-to-point short-haul airline.

> Where we do it:

Intra-European short-haul network.

> Our ambition:

Is to be Europe's preferred short-haul airline, delivering market leading returns.

> Our cause:

Is to make travel easy and affordable.

279	73.1m	800+	26
aircraft	passengers	routes	bases

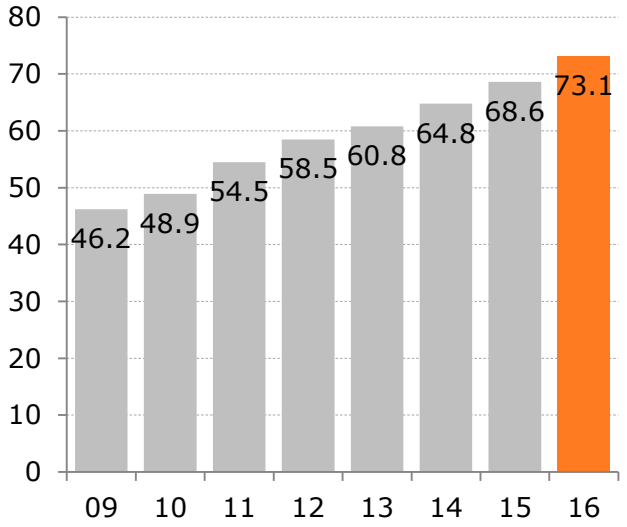
something about us...

> WE ARE GROWING!

Number of passengers

million

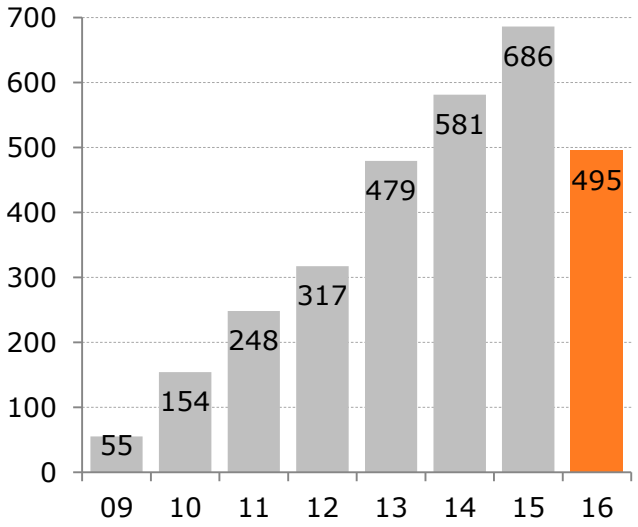
73.1



Profit before tax

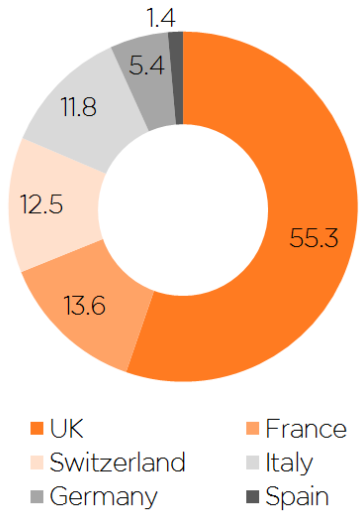
£ million

495



Capacity growth per country

%



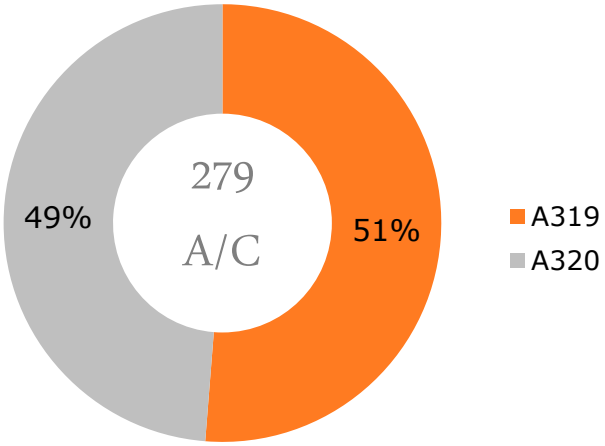
> Our values

SAFETY	SIMPLICITY	ONE TEAM	INTEGRITY	PASSION	PIONEERING

SAFETY UNDERPINS EVERYTHING WE DO

our aircraft

> 279 aircraft... and growing!



> Average age: 7.1 years

> 7,100,000+ hours flown with Airbus

> 4,460,000+ flights flown with Airbus

> Entry 2018

> Entry 2017

> Entry 2009

> Entry 2003

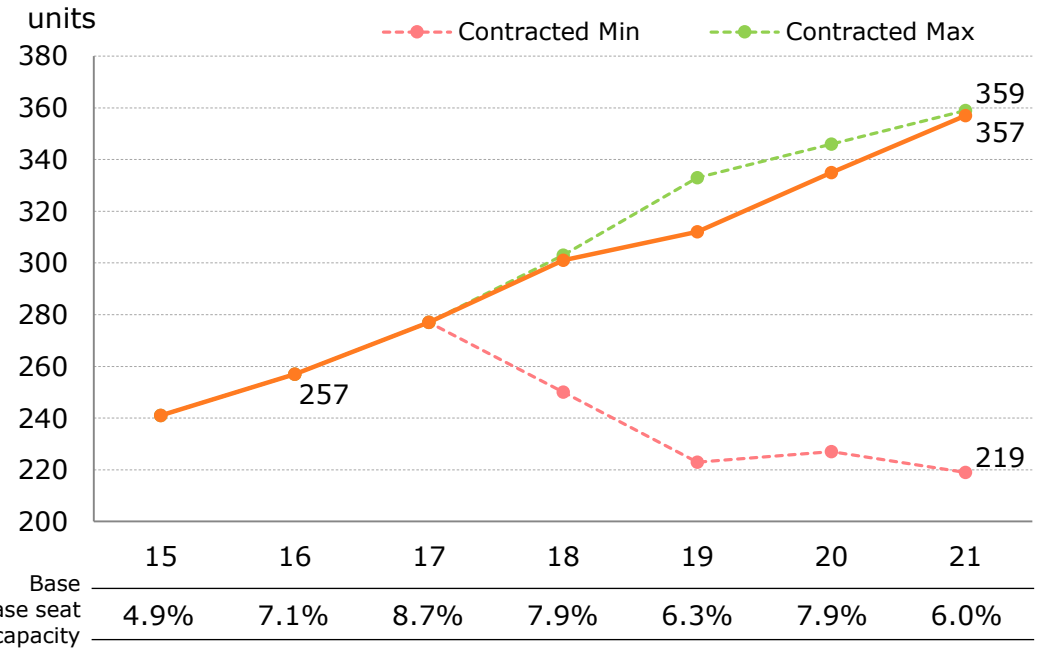
> Entry 1995 / Exit 2011

our FUTURE aircraft

INNOVATIVE MINDSET

> More growth is coming!

Number of aircraft



> Entry 2017

> Delivery of first A320 NEO in Jun'17

> Delivery of first A321 NEO in Jul'18

> Delivery of A320 CEOs until 2018

> 26% of the fleet will be A320 NEO by 2022

Engineering & maintenance

overview

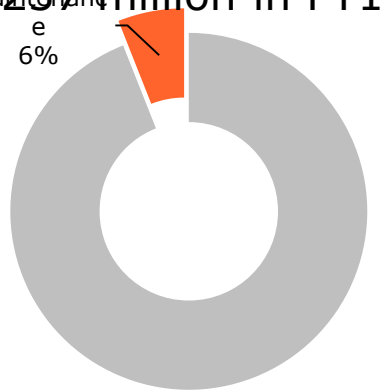
> Support 279 Airbus A320 family aircraft at present.

- Single type operator
- A320 NEO aircraft with CFM LEAP engines from 2017

> Employ 279 staff.

- 55% Part M and Part 21
- 45% Part 145

> Maintenance spend of £237 million in FY16 (£2.97 per seat flown).

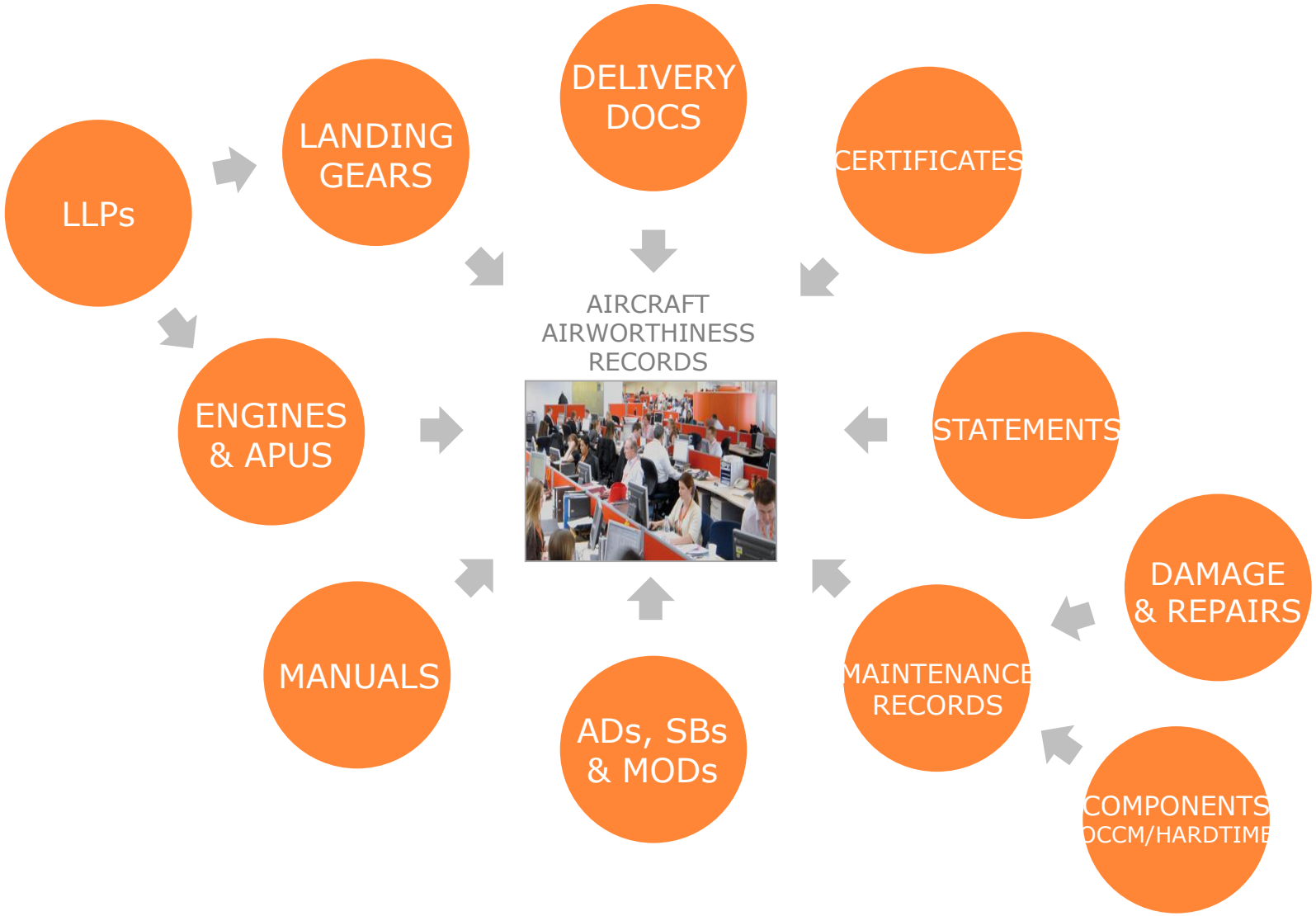


Why ARE RECORDS SO Important?

> If maintained correctly and efficiently, Technical Records ensure:

1. Safety 
2. Reliability 
3. Asset value 
4. Efficient transfers 

INPUTS RECORDS HAVE TO DEAL WITH



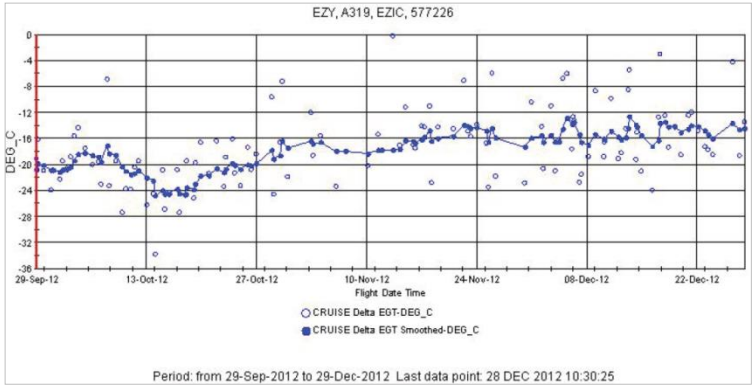
INPUTS RECORDS HAVE TO DEAL WITH

LLPs

LANDING GEARS

ENGINES & APUS

AIRCRAFT AIRWORTHINESS RECORDS



CFM56-5 Engine Test Certificate

Engine S/No: 577226
Engine Mark: -5B5P
Test Date: 13/02/2013 23:35:30
Engine Manual : Rev60(IC)
Test Cell : geaes1
Oil Type Used: Type2
Reason for Test: CERTIFICATION

Final Performance Data

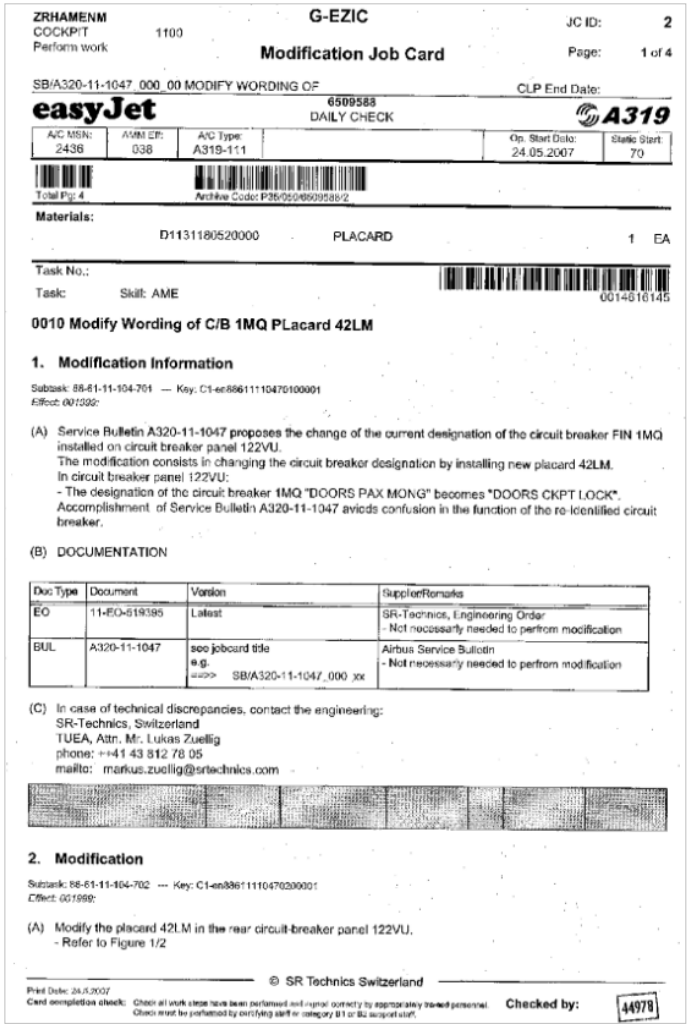
Rated Power N1K RPM	FLAT RATE TEMP Deg.C		Corrected Values Standard Day Fn Lbs.	EGT Deg C.	Core Speed RPM	Wf	SFC		Hot Day EGT Deg C.	Core Speed RPM
Take-Off		Max.							919	14779
		Result	23325	693	13945	7877	0.3343		844	14553
4241	45	Min.	22025							
		Margin	1300							
		Modifier 0	5.90	%					75	225.6
		Modifier 7	2.61	%					86	288
Max. Con.		Max.							830	
		Result	21408	668	13768	7146	0.3310		700	14020
4102	25	Min.	20285							
		Margin	1123							
		Modifier 0	5.54	%					130	
		Modifier 7	2.27	%					138	

SYSTEM PERFORMANCE	RESULT	LIMIT	
Max Vibration N1 Tracked on No.1 Brg:	0.6	4.5	Mils
Max Vibration N1 Tracked on TRF:	0.5	4.5	Mils
Max Vibration N2 Tracked on No.1 Brg:	0.45	1.60	IPS
Max Vibration N2 Tracked on TRF:	0.15	1.60	IPS
Acceleration Time:	3.40	5.00	Seconds
Oil Consumption:	0.00	0.15	Gal/hr
No. 4 Brg Analysis result:	PASS		
Time to Ground Idle:	22.8	50.6	Seconds

Fuel Spec: Jet-A1
Inhibiting Fluid Used in Fuel system: BRAYCO 460
Inhibiting Fluid Used in Lube system: NYCOLUBE 11B
Trim Balance Result Total Running Time: 09:09:01
Weights Hung : N/A
I Certify that the overhaul/ repair and test for the above mentioned engine have been carried out in accordance with QCWI AW-205

Signature: R Clarke Stamp: Date: 13 FEB. 2013

INPUTS RECORDS HAVE TO DEAL WITH



ZRHAMENM
COCKPIT 1100
Perform work

G-EZIC

Modification Job Card

JC ID: 2
Page: 1 of 4

SB/A320-11-1047_000_00 MODIFY WORDING OF
CLP End Date:

easyJet 6509588 DAILY CHECK A319

A/C MSN:	AMM Eff:	A/C Type:		On. Start Date:	Static Start:
2436	038	A319-111		24.05.2007	70

Total Pg: 4
Archive Code: P35/050/6909588/2

Materials:

D1131180520000 PLACARD 1 EA

Task No.:
Task: Skill: AME
0014616145

0010 Modify Wording of C/B 1MQ PLacard 42LM

1. Modification Information

Subtask: 88-61-11-104-701 — Key: C1-en88611110470100001
Effect: 001999:

(A) Service Bulletin A320-11-1047 proposes the change of the current designation of the circuit breaker FIN 1MQ installed on circuit breaker panel 122VU.
The modification consists in changing the circuit breaker designation by installing new placard 42LM.
In circuit breaker panel 122VU:
- The designation of the circuit breaker 1MQ "DOORS PAX MONG" becomes "DOORS CKPT LOCK".
Accomplishment of Service Bulletin A320-11-1047 avoids confusion in the function of the re-identified circuit breaker.

(B) DOCUMENTATION

Doc Type	Document	Version	Supplier/Remarks
EO	11-EO-519385	Latest	SR-Technics, Engineering Order - Not necessarily needed to perfrom modification
BUL	A320-11-1047	see jobcard title e.g. ===> SB/A320-11-1047_000_xx	Airbus Service Bulletin - Not necessarily needed to perfrom modification

(C) In case of technical discrepancies, contact the engineering:
SR-Technics, Switzerland
TUEA, Attn. Mr. Lukas Zuellig
phone: ++41 43 812 78 05
mailto: markus.zuellig@srtechnics.com

2. Modification

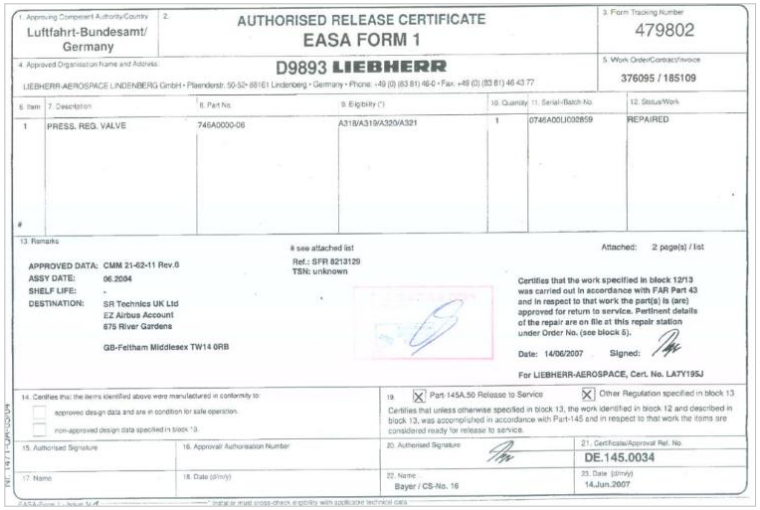
Subtask: 88-61-11-104-702 — Key: C1-en88611110470200001
Effect: 001999:

(A) Modify the placard 42LM in the rear circuit-breaker panel 122VU.
- Refer to Figure 1/2

© SR Technics Switzerland

Print Date: 24.5.2007
Card completion check: Check all work steps have been performed and signed correctly by appropriately trained personnel. Check must be performed by certifying staff or category B1 or B2 accepted staff.
Checked by: 44978

AIRCRAFT AIRWORTHINESS RECORDS



1. Approving Competent Authority/Country: Luftfahrt-Bundesamt/ Germany
2. AUTHORISED RELEASE CERTIFICATE EASA FORM 1
3. Form Tracking Number: 479802
4. Approved Organisation Name and Address: D9893 LIEBHERR
LIEBHERR-AEROSPACE LINDENBERG GmbH • Pfanderstr. 50-52• 88161 Lindenberg • Germany • Phone: +49 (0) (83 81) 46-0 • Fax: +49 (0) (83 81) 46 43 77
5. Work Order/Contract/Invoice: 376095 / 185109

6. Item	7. Description	8. Part No.	9. Eligibility (*)	10. Quantity	11. Serial/Batch No.	12. Status/Work
1	PRESS. REG. VALVE	746A0000-06	A318/A319/A320/A321	1	0746A00U030859	REPAIRED

13. Remarks
see attached list
Ref.: SFR 8213129
TSN: unknown
Attached: 2 page(s) / list
APPROVED DATA: CMM 21-62-11 Rev.6
ASSY DATE: 06.2004
SHELF LIFE: -
DESTINATION: SR Technics UK Ltd
EZ Airbus Account
675 River Gardens
GB-Feltham Middlesex TW14 0RB
Certifies that the work specified in block 12/13 was carried out in accordance with FAR Part 43 and in respect to that work the part(s) is (are) approved for return to service. Pertinent details of the repair are on file at this repair station under Order No. (see block 5).
Date: 14/06/2007 Signed:
For LIEBHERR-AEROSPACE, Cert. No. LA7Y195J

14. Certifies that the items identified above were manufactured in conformity to: approved design data and are in condition for safe operation. non-approved design data specified in block 13.
19. [X] Part-145A.50 Release to Service [X] Other Regulation specified in block 13
Certifies that unless otherwise specified in block 13, the work identified in block 12 and described in block 13, was accomplished in accordance with Part-145 and in respect to that work the items are considered ready for release to service.
15. Authorised Signature
16. Approval/ Authorisation Number
20. Authorised Signature
21. Certificate/Approval Ref. No.: DE.145.0034
17. Name
18. Date (dd/mm/y)
22. Name: Bayer / CS-No. 16
23. Date (dd/mm/y): 14.Jun.2007

DAMAGE & REPAIRS

MAINTENANCE RECORDS

ADs, SBs & MODs

COMPONENTS OCCM/HARDTIME

The old times...

Organised Paper

Easyjet's paperless vision

Easyjet's vision was to become fully digital in managing its aircraft technical records that were capable of being intelligently indexed and providing the capability to prepare end of lease exit ready aircraft documentation.

We already had in operation a digital solution that allowed an indexed filing system. However that was not sufficiently efficient to remove the reliance on paper. To reach that goal we needed to adopt an innovative technology that would give us these efficiencies. Hence we designed an **e-sign solution** in collaboration with our current maintenance software providers. We chose to introduce e-sign as part of a major maintenance information and control system upgrade.

Why The Need

negating human error

Removing error risk in terms of accountability of records verification

Safety

Enhancing safety by having mandatory sign off steps

Headcount flat

Create an efficient Airworthiness Records organisation

COST savings

Negating Shipping and Storage of paper documents

Efficiency

More efficient maintenance checks by removing the requirement to print and sign

Transparency

Remote access for Lessors and authorities

What Did We Do

Undertook a major upgrade of our maintenance software system

SWISS AviationSoftware

Introduced by designing in collaboration with
our maintenance software provider an e-sign solution

How did we achieve it

Updated from version 9.8 to 10.9
(Swiss / IT / KSU)

Communicated and worked closely with our Competent Authority to approve our e-sign solution(CAA)

Worked with our technical records digital storage supplier to ensure effective receipt and display of e-sign records(STREAM)

Prepared our Lessor community to accept digital records transfer as well as internal departments involvement
(Lessors / EZY SME / HOD)

Pre e-Sign

E-RECORDS
Paperless operation

> We verify 100% of our maintenance records on a daily basis. Scan and transfer it to long term storage.

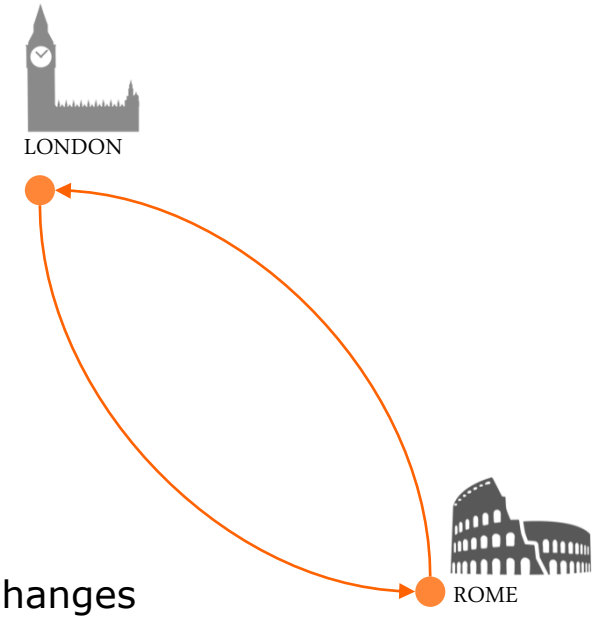
> With a fleet of 270 plus aircraft that's a huge amount of paper and data to process.

ONE OF THE LATEST COUNT

> Daily Verification:

+ 800 Tech Log Pages per day.
+ 270 Daily Work-Packages.

A4 x10m



> Archive Storage:

+ 4,592 boxes / approaching 10 million documents.
+ 1.2TB scanned Data

> Managed by easyJet since 2010:

+ Current Fleet 270+
+ 120 Aircraft Deliveries
+ 350 Engine Changes
+ 320+ APU Changes
+ 240+ Landing Gears Changes
+ 30+ On-Time Re-deliveries

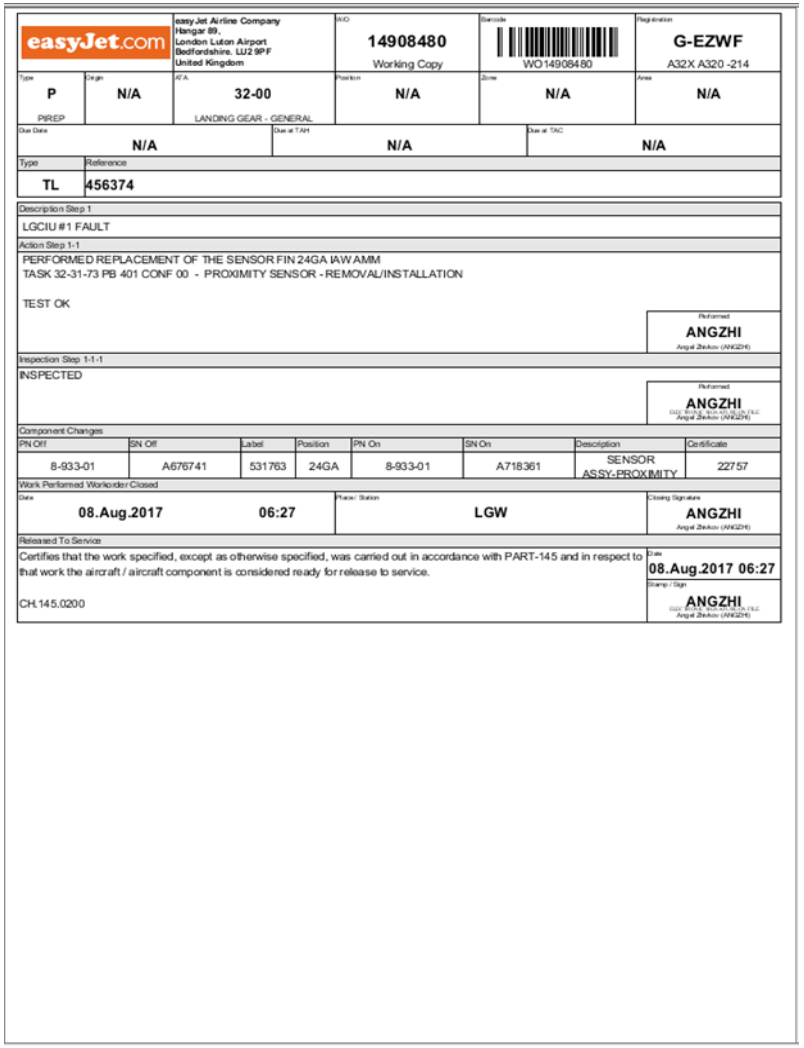
Post e-sign

E-sign capability at all MRO network stations

80% reduction in paper

Reduction in Logistics and Storage

Enhanced Safety during maintenance



easyJet.com

easy Jet Airline Company
Hangar 89,
London Luton Airport
Bedfordshire. LU2 9PF
United Kingdom

W/O: 14908480 Working Copy

Barcode: WO14908480

Registration: G-EZWF A32X A320 -214

Type	Dsgn	ATA	Position	Zone	Area
P PREP	N/A	32-00 LANDING GEAR - GENERAL	N/A	N/A	N/A

Due Date	Due at TAH	Due at TAC
N/A	N/A	N/A

Type	Reference
TL	456374

Description Step 1

LGCIU #1 FAULT

Action Step 1-1

PERFORMED REPLACEMENT OF THE SENSOR FIN 24GA IAW AMM
TASK 32-31-73 PB 401 CONF 00 - PROXIMITY SENSOR - REMOVAL/INSTALLATION

TEST OK

Performed: ANGZHI

Inspection Step 1-1-1

INSPECTED

Performed: ANGZHI

Component Changes

PN Off	SN Off	Label	Position	PN On	SN On	Description	Certificate
8-933-01	A676741	531763	24GA	8-933-01	A718361	SENSOR ASSY-PROXIMITY	22757

Work Performed Workorder Closed

Date		Place / Station	Closing Signature
08.Aug.2017	06:27	LGW	ANGZHI

Released To Service

Certifies that the work specified, except as otherwise specified, was carried out in accordance with PART-145 and in respect to that work the aircraft / aircraft component is considered ready for release to service.

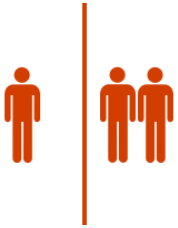
Date: 08.Aug.2017 06:27

CH.145.0200

Stamp / Sign: ANGZHI

Lessons Learnt

Project Management Consistency
Project scope consistency



Lack of e-sign comparable solution for benchmarking to understand what success looks like

Competent authority buy in throughout the process
Key Super Users commitment and availability
Governance/Structure to be agreed at senior level to ensure proper funding/resource

Civil Aviation Authority

AERDATA

SWISS AviationSoftware

Identifying the relevant Stakeholder group to be involved in Steering Meetings e.g. Swiss AS/Cross Consence/Aer Data

What went well?

	Key Learnings
Scope and objectives	• The business and project team were agreed and worked together on the vision to deliver the system upgrade and eSign functionality. • The financial and contractual impact of the upgrade not occurring was communicated clearly to the business from IT.
Business value and economics	• Reduction in contract staff for technical records verification by reducing paperwork management & storage. • Enabling the start of a paperless maintenance vision. • Avoiding extended system support costs.
Governance and organisation	• Regular weekly meetings in the last 12 weeks before upgrade. There were items that had been missed and this regular drumbeat helped keep on top of any issues and actions if they appeared. • The engineering management team were aligned in the goal to upgrade and understood the risks of not, whilst also understanding the open risks at each phase.
Solution and deliverables	• The AMOS system has been very stable since release with no outages or slow downs reported since go-live • eSign is working well and has reduced paperwork processing by easyJet enormously circa 80%.
Planning and execution	• During the transition period, having a dedicated phone number and staff in easyJet MOC worked very well. This consisted of AMOS Admin and business KSUs from Line Maintenance, Component Engineering, Tech Records and MOC Front Desk. This did however take out the 2 key admin to night shifts which caused fatigue and left project team without expertise during day shifts. • Tech Records overnight support for MOC if any issues occurred during the night with paperwork. • Clear cutover plan with expected durations and decision points with regular communication working very well through the night. No concerns from business as they had regular updates on schedule.

What we can do different next time?

1. Avoid combining AMOS system upgrade with e-sign

2. Allow for sufficient training/familiarisation of e-sign

3. Extend the testing phase of e-signed document migration from maintenance system to document storage system

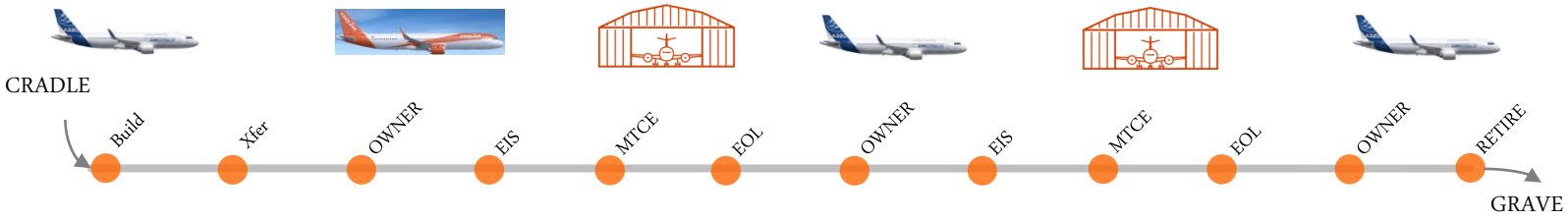
4. More realistic go-live dates

Why are we not totally paperless?

- E-Tech Log still to be adopted……..
- Lack of common interfaces between all the different stakeholders involved.
- OEMs and MROs have not embraced a Paperless concept yet
- Also, because we are driven largely by the use of paper during the cycle of the aircraft. From delivery of a new aircraft we receive it, transfer data from it, print it, sign it, scan it, file it, store it and then return it. Mountains of it!

CRADLE TO GRAVE

LIFE CYCLE



Build → Deliver to → Airline#1 → Re-deliver → Airline>1 → Re-deliver → Dispose

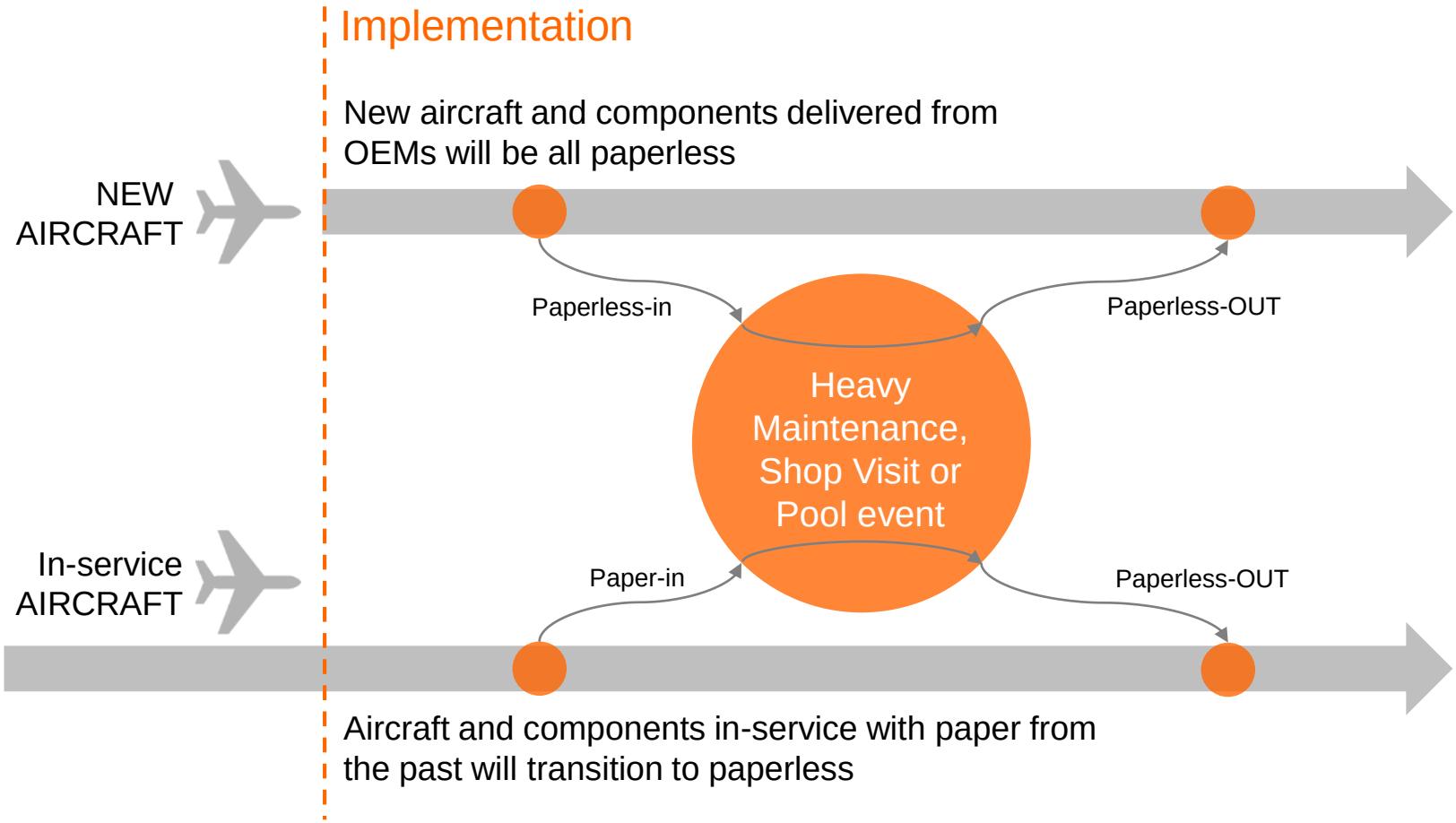
Airlines 1, 2, 3…control:
Airworthiness, configuration, compliance, AMP, Data, Records, Tech Pubs, End of Lease needs & Maintenance Execution by MROs

MROs - Maintenance Events:
(airframe, engines, components)
Task card records, certification records, parts records.

Lessors & Airlines require for delivery & re-delivery:
Aircraft record logs, aircraft inspection reports, technical publications, Certificate of Airworthiness, AD status, LLP status, AMRs, Technical Logs, Weight & Balance status, Engine status, Certificate of Export, etc…

OEMs
Build, provide initial delivery and through-life OEM technical & operational support.

IMPLEMENTATION PROCESS



Easyjet challenges

1. Standardise aircraft delivery data

2. Automated re-delivery & publication

3. E-Tech Log

4. Working with Industry Working Groups

INDUSTRY CHALLENGEs

Regulatory

- Acceptance of digital and electronically generated generated documents replacing paper
- Accept e-sign the same as dfps.
- NAA harmonisation on paperless records

Operators/MROs/OEMs/IATA

- Adoption of common standards for data portability between airlines, MROs and supplier organisations.
- Standards flexible enough to adapt to future evolution of technology solutions
- Universal adoption of standards for proprietary systems and communications (data migration) between proprietary systems.
- Agreement on industry goals and associated timing.
- Quantifying the cost/benefit and timing of moving to paperless.
- And most importantly… keep costs under control.



Technology

- Proprietary technology solutions bring intellectual property hurdles that need to be considered.
- Harmonise technology solutions that allow practical system access and data portability

Lessors

- Lessors need to standardise their requirements for record management and promote paperless
- Standardise lease agreements related to paperless records

records evolution Vs Technology pace

E-RECORDS
Paperless operation

Television

radio

?

PHONE

internet

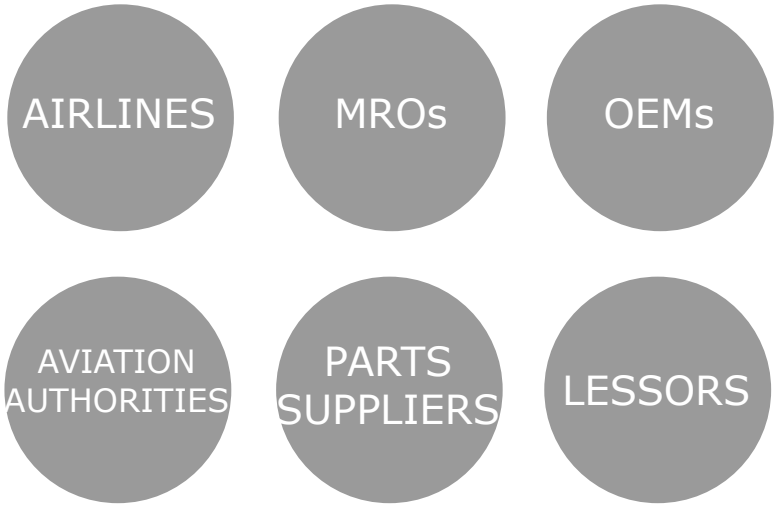
Aircraft records evolution

1960 1970 1980 1990 2000 2010 2017 FUTURE

It is time for change

easyJet along with a number of the STAKEHOLDERS are innovating towards a more automated and efficient way of working in the life cycle of our aircraft

STAKEHOLDERS



This is what we could

Achieve together

1. Quicker to process.

2. Easier to search.

3. Reduced storage.

4. Safer records, safer aircraft.

5. Helps to maintain value of assets.

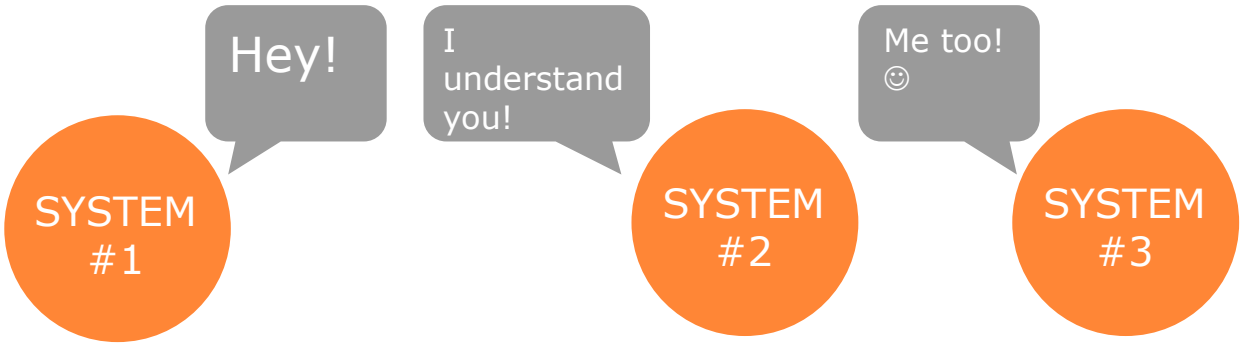
6. More efficient. Less manual more automated.

7. Adaptable systems. Ready for the future.

...and this is what

It would look like

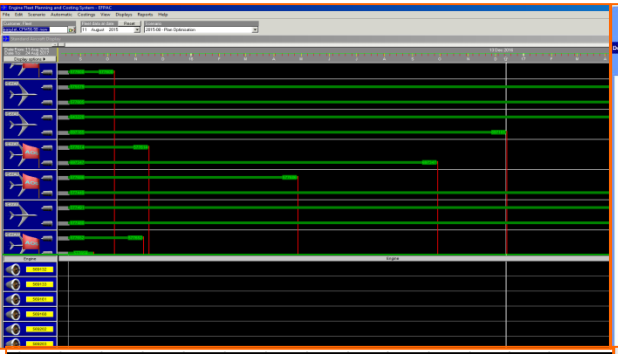
System that talk to each other

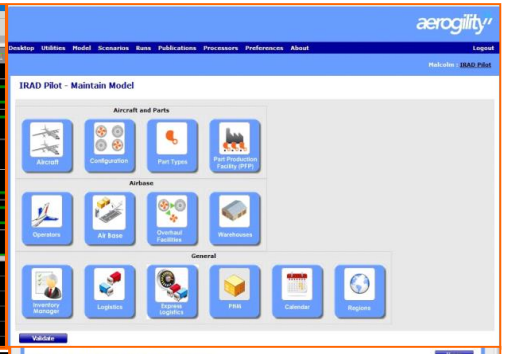


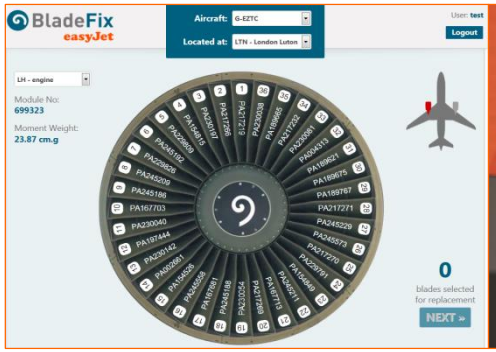
Transfer to a 100% paperless operation

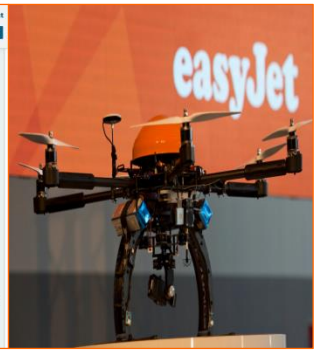
No more....

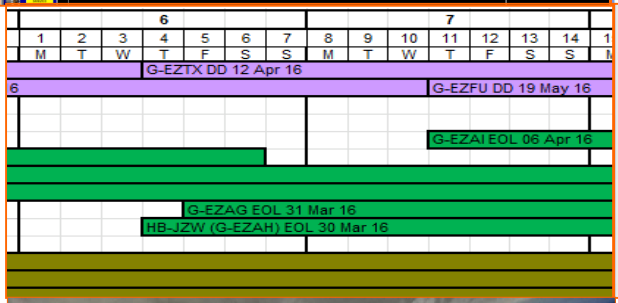
Our innovation journey Continues.....

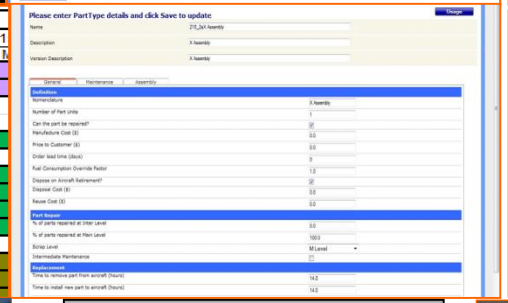


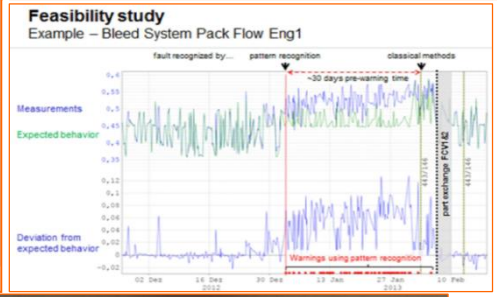


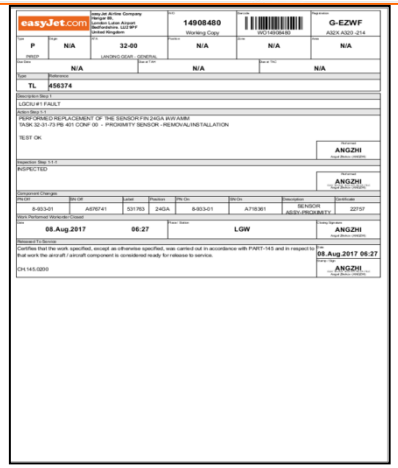


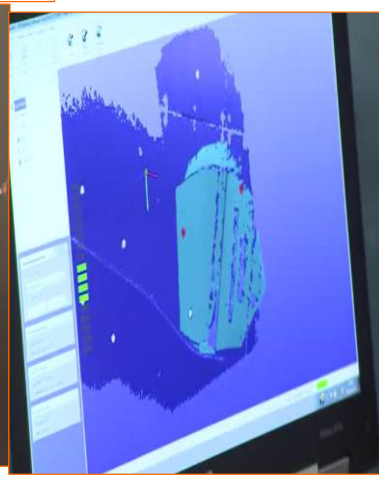












THANKS!

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