



# *Making dent-mapping easy: A Case Study*

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*[Presented by Arun Chhabra (8tree)]*



NONDESTRUCTIVE  
TESTING FORUM

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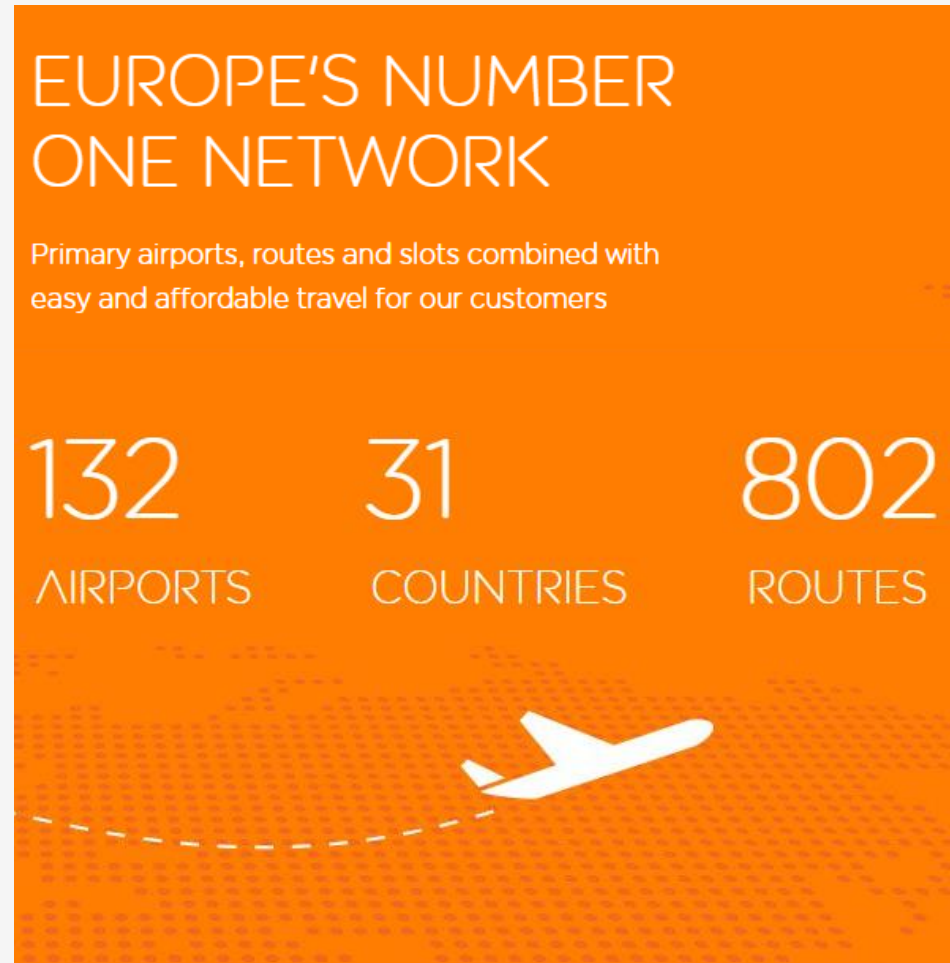
[www.8-tree.com](http://www.8-tree.com)

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# About easyJet

- Innovative pioneer of low-cost aviation model
- Europe's leading short-haul airline
- 279 aircraft – exclusively Airbus (A319, A320, A320neo)
- Maintenance Operations:
  - EZY bases – Luton and London Gatwick (4 narrow-body bays)
  - Several 3<sup>rd</sup> party MRO bases across Europe
- Committed to innovation & digital leadership in aviation



# About dentCHECK

- Aviation industry's tool-of-choice for 3D dent-mapping & reporting



For all A300, A320, A330, A340 and A380 families

AMM 51-00-00 / SRM 51-11-00 / TEB 300-A3327-1 / TEB 320-A3497-1 / TEB 340-A3505-1 / TEB 380-A3351-1



For all 7x7, DC and MD aircraft

Dedicated Service Letter (SL) consistent with dentCHECK performance spec

- Purpose-built tool for the aviation industry
- Empowers operators with SRM-compliant 'go/no-go' decisions instantly
- Expedites blend-out, lightning strike assessment and rework

# The Dent-mapping Problem

The Challenge	Desired Solution
Achieve reliable, accurate and objective mapping/reporting for – <ul style="list-style-type: none"><li>- Dents</li><li>- Blend-outs</li><li>- Lightning strikes</li></ul>	Fast (preferably real-time)
	Reliable & consistently accurate
	OEM recognized + SRM-compliant
	Answers...not just data
	Handheld portability
	No surface preparation required



**Hail Damage** (Image source: easyJet)



**Lightning strike** (Image source: Boeing)



**Ground equipment damage** (Image source: Wikipedia)

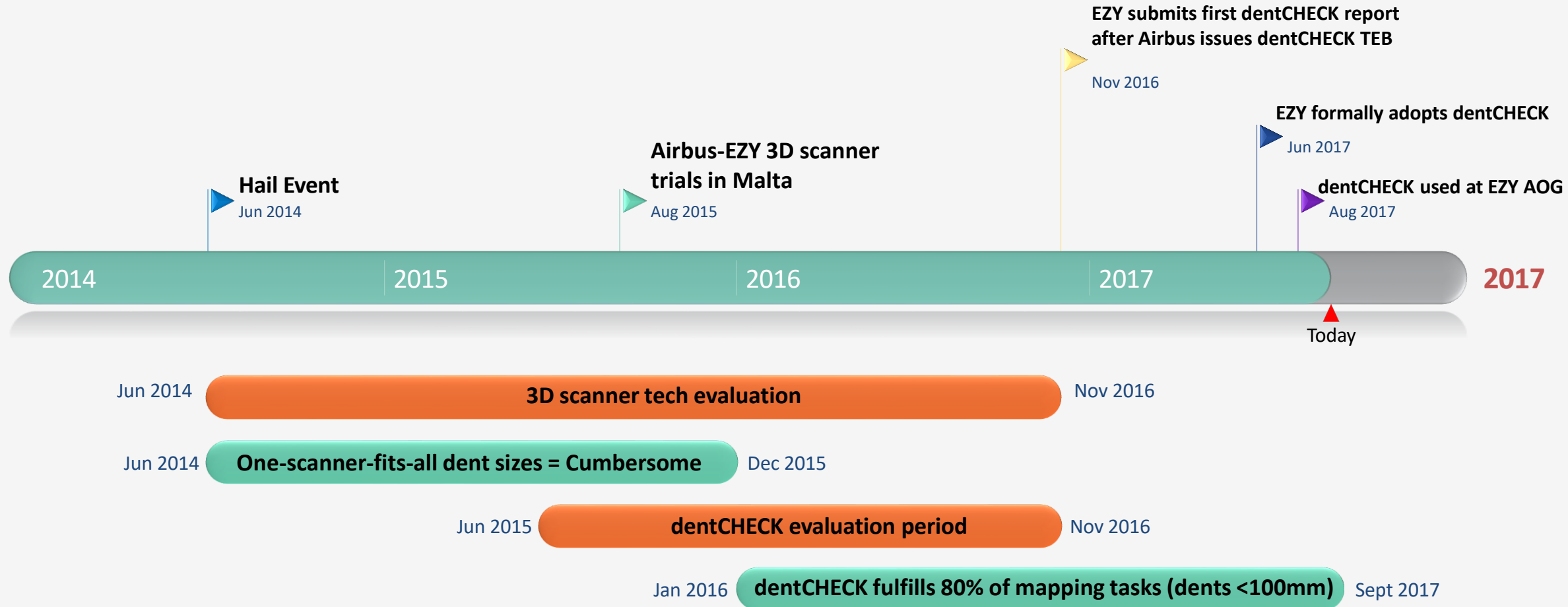
# Traditional tools – easyJet experience

- Slow
- Complex
- Increasingly inaccurate for dent >50mm diameter
- Very subjective
- Poor repeatability
- Limited to A&P/B1 engineer skill-level (airframe/engines)



Image source: easyJet

# 3D scanners – easyJet history



easyJet criteria	dentCHECK performance	dentCHECK enabling advantage
AOG events	Quick early results	Single-shot real-time scan with AR-enabled 'go/no-go' results
Measurement quality	Very accurate, repeatable and objective	OEM & National Lab certified performance
Reporting	Fast detailed reports from the comfort of engineering offices	dentCHECK DRT™ reporting software
Ease of Use	Easy. B1 (Airframe/Engines) and B2 (Avionics) engineers can perform dent assessment to the same standard	Zero-learning curve™ & No surface prep
Accessibility of Results	Results can be uploaded to the network for 'anytime' interrogation/review by structures specialists located at a remote location and/or OEM experts	Wireless and fully-networked design (WiFi, USB, Bluetooth)



# How it Works – *Dent-map Inspection* with dentCHECK

- Point & click (1-button operation)
- Auto transfer dent-map results to Engineering teams (via USB or WiFi)

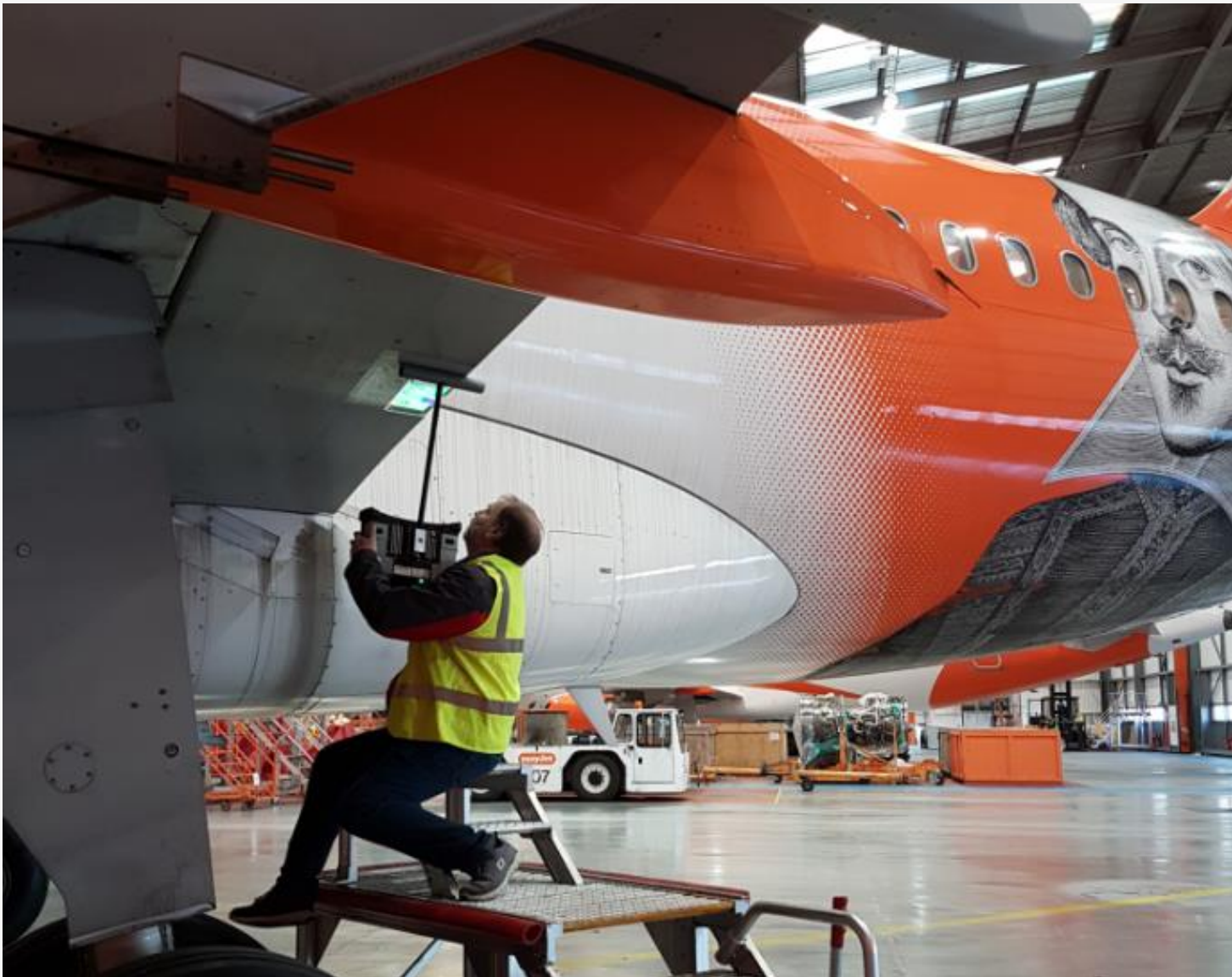
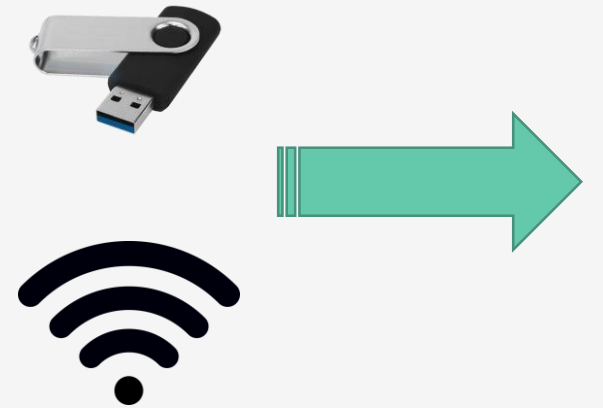


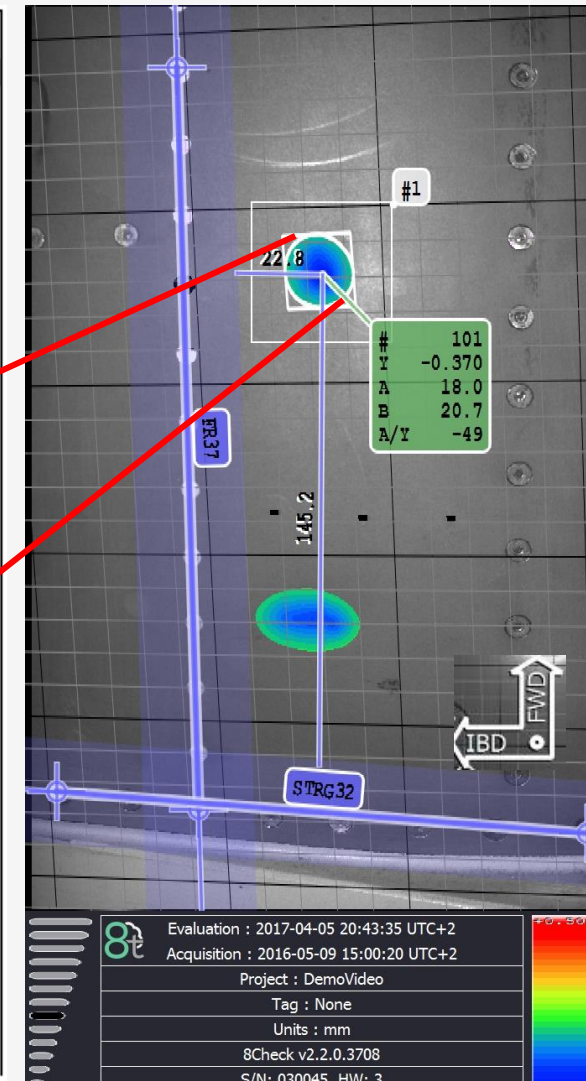
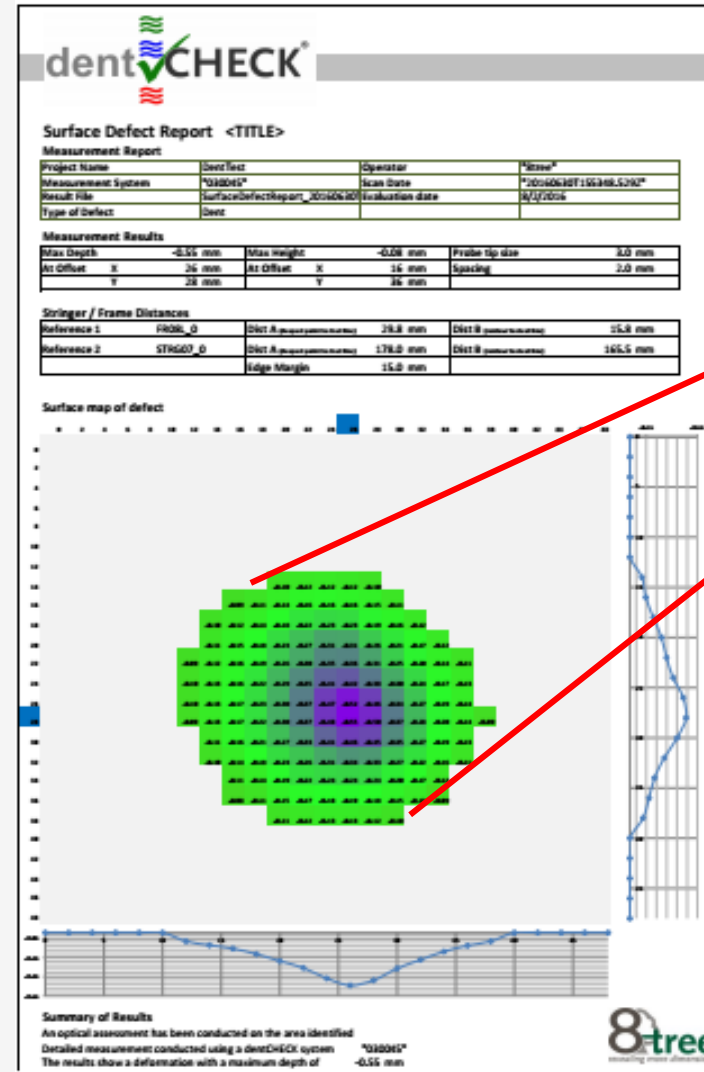
Image source: easyJet

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# How it Works – *Dent Reports with DRT™*



- Engineering team PCs loaded with Dent Reporting Tool (DRT) software to receive incoming dent-maps
- Using DRT = Detailed reports in < 5min
  - Vertical/horizontal deepest point of dent
  - Gridding
  - Coordinate symbols
  - Distances to neighboring dents
  - Distance to adjacent frames/stringers
  - 3D and 2D photos for surrounding context
  - Dent severity profile information

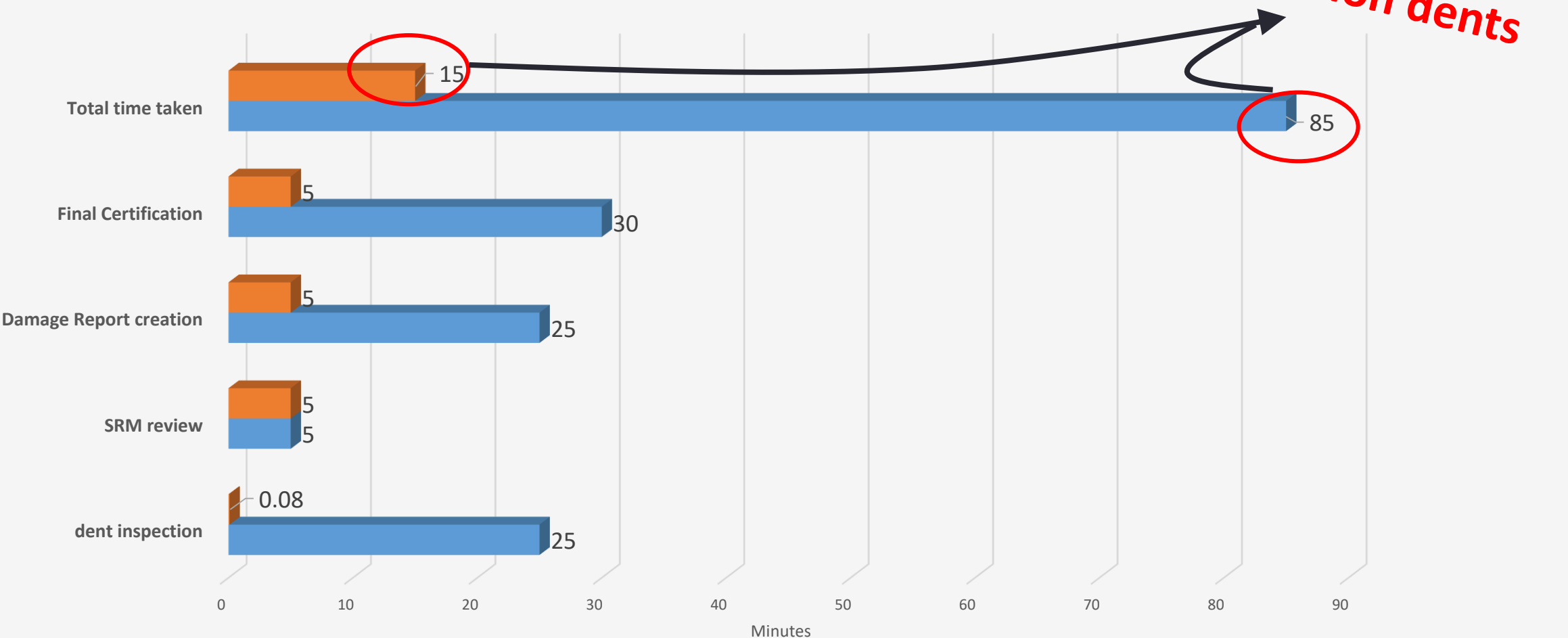


# Efficiency Gains dentCHECK

@ easyJet

Time to Disposition a Dent

With dentCHECK Traditional method





- dentCHECK used to supplement traditional inspection methods
- Consistently accurate results in a fraction of the time
- dentCHECK report submitted to Airbus (within hours of TEB issuance) – resulting in 1000FC temporary certification from

Airbus

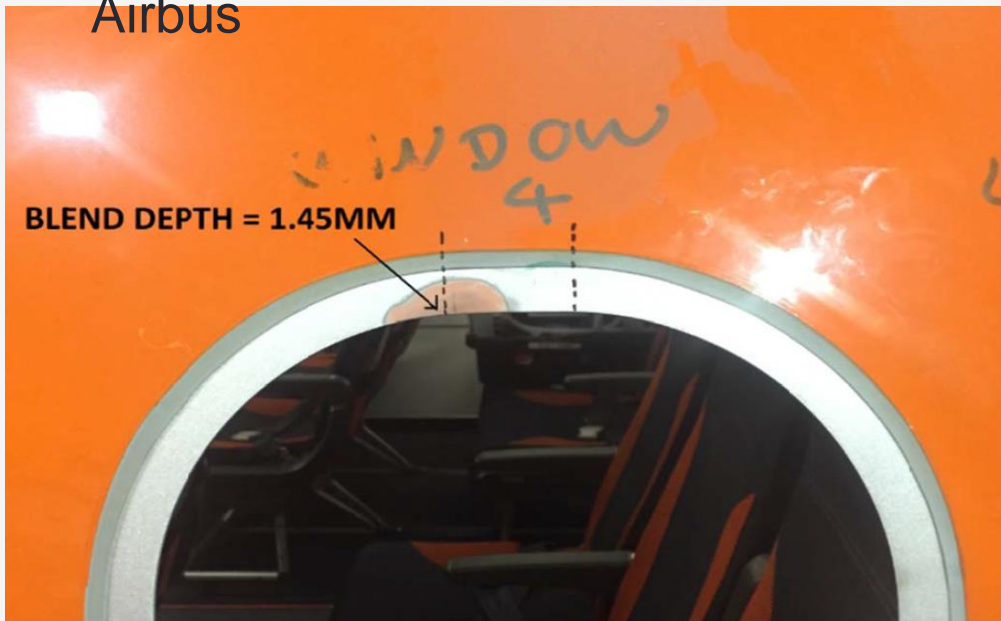


Image source: easyJet

**Surface Defect Report**

**Measurement Report**

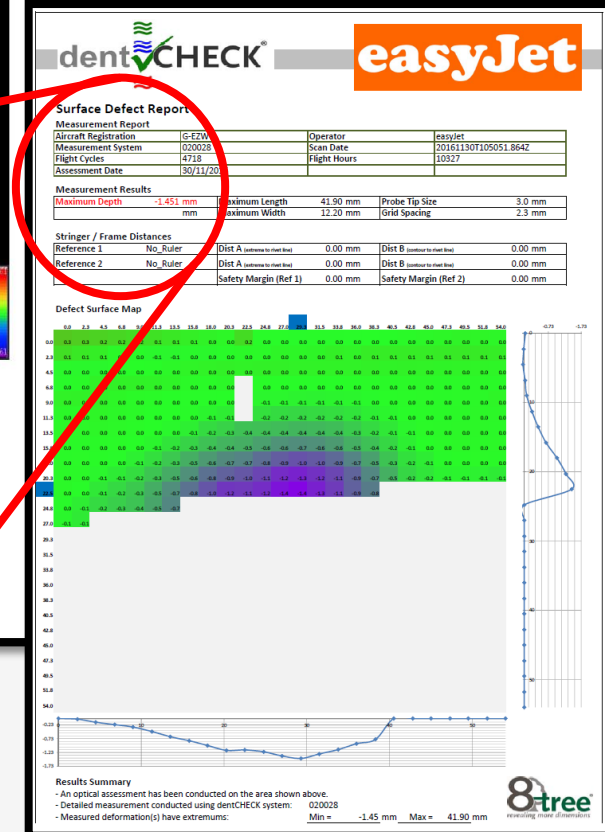
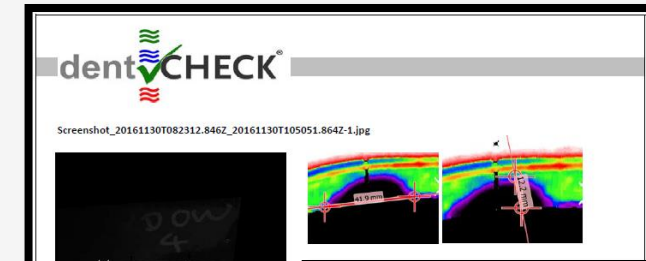
Aircraft Registration	G-EZWT
Measurement System	020028
Flight Cycles	4718
Assessment Date	30/11/2016

**Measurement Results**

Maximum Depth	-1.451 mm	Max
	mm	Max

**Stringer / Frame Distances**

Reference 1	No_Ruler	
Reference 2	No_Ruler	



# easyJet's experience with dentCHECK

- “When looking at damage measurement solutions we considered **ease of use, flexibility, information provided and cost per unit.**”
- “We were impressed with the **speed and relative simplicity of the 8tree system** compared with other available systems and worked closely with 8tree to assist with development of the system to better suit our requirements.”
- “The dentCHECK system and the associated I.T. support are currently **being integrated into easyJet's maintenance operation for both routine and AOG events.**”
- “We are confident it **will prove to be a great benefit to maintenance operations allowing us to return aircraft to service more quickly and efficiently** therefore reducing disruption.”

– Gary Smith  
Head of Engineering  
easyJet

**What operators want = What operators get**

Ease of Use

High Accuracy

Consistency & Objectivity

No surface preparation

Quick out-of-box experience

Instant analysis = Faster TaT



Image source: easyJet



Never look away from the aircraft...

...eyes always on task!

# Questions?

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