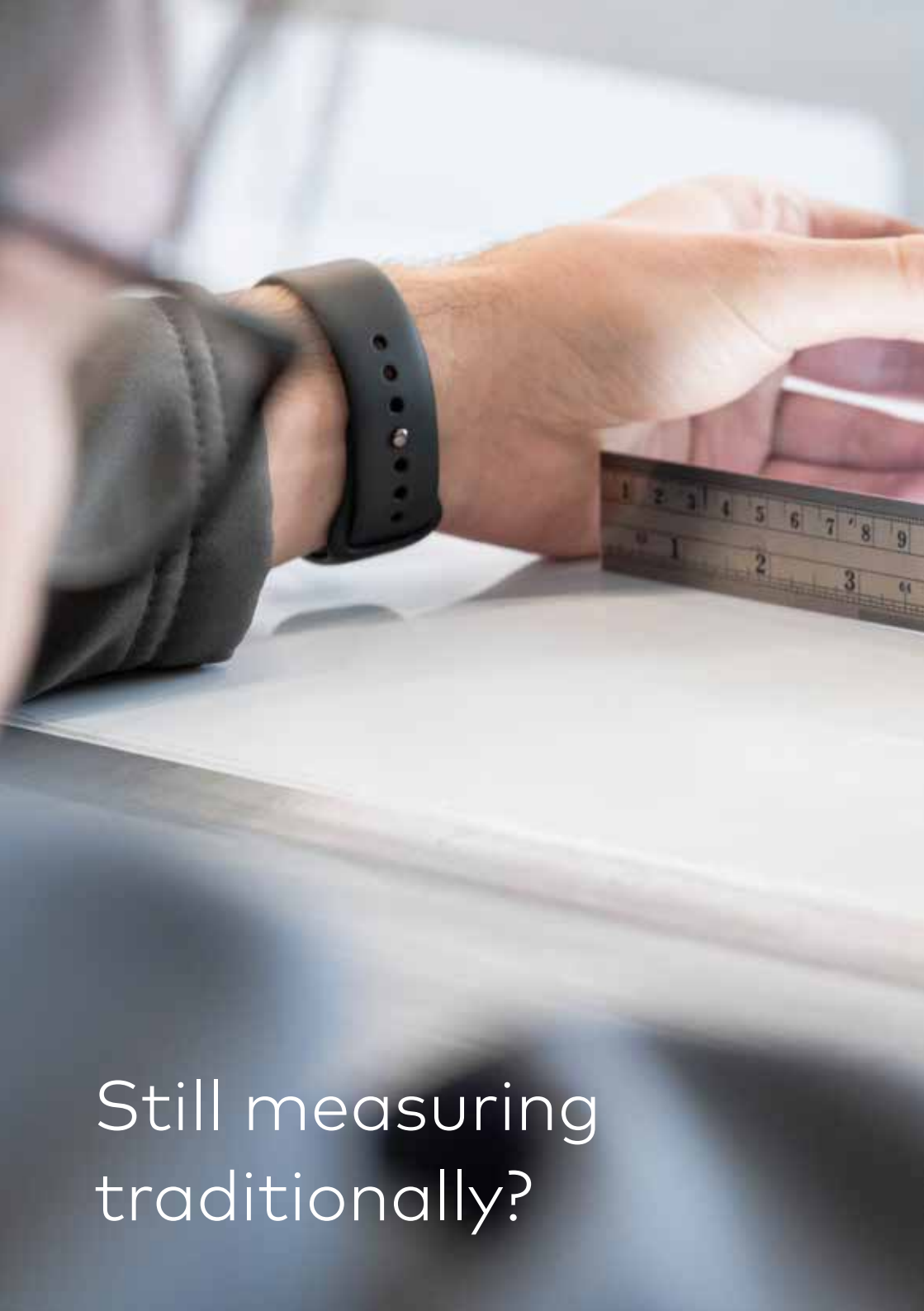
8tree®
fast ✓CHECK®

dentCHECK vs. Traditional Methods

World's most comprehensive aviation dent-mapping study

AMC
AVIATION WEEK MRO AMERICAS


Still measuring
traditionally?


10 11 12 13 14 15 16 17 18 19 20 21
4 5 6 7 8

Aerospace Maintenance Competition (AMC)

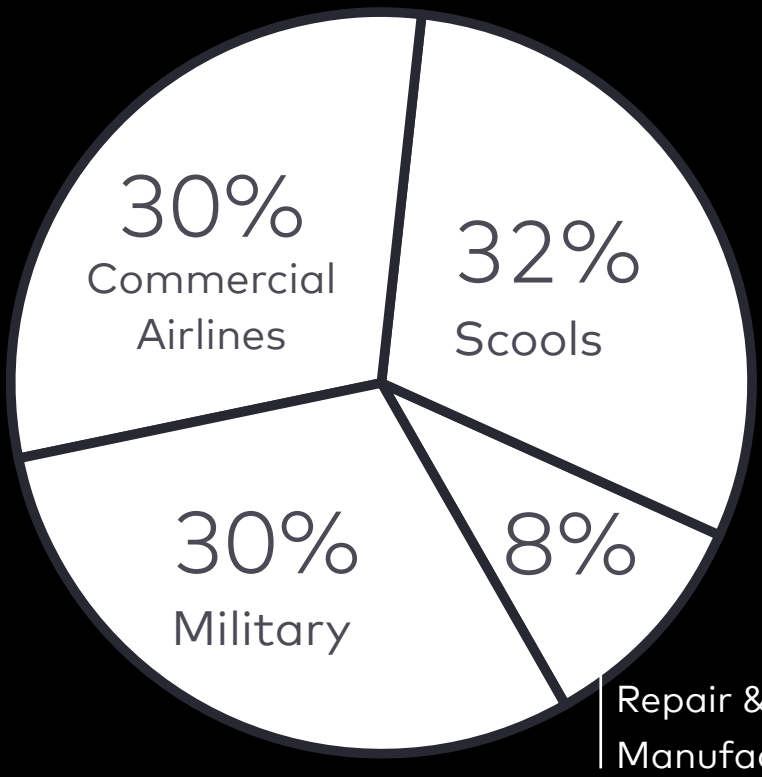
2-day competition

73 teams of 5-6 members

27 events:

→ "Airframe Damage Inspection" event, co-sponsored by 8tree and Alaska Airlines

Participant category in 2022



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AVIATION WEEK MRO AMERICAS

What is the task?

73 Teams / 146 Engineers

146 Dent Measurements

→ Depth (Y)

→ Width (A)

→ Length (B)

→ Critical Ratio (A/Y)

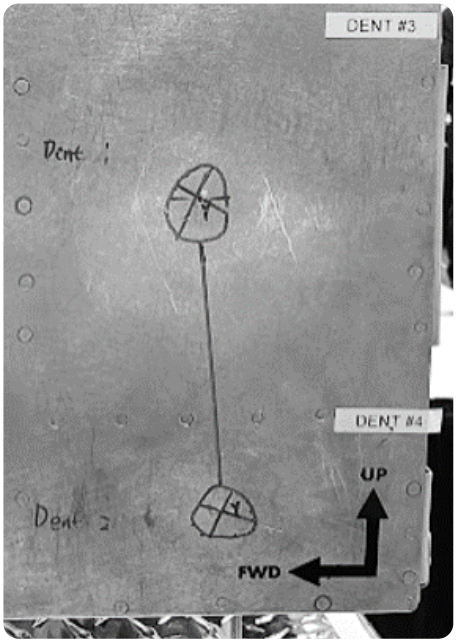
73 Inter-Dent Distance Measurements

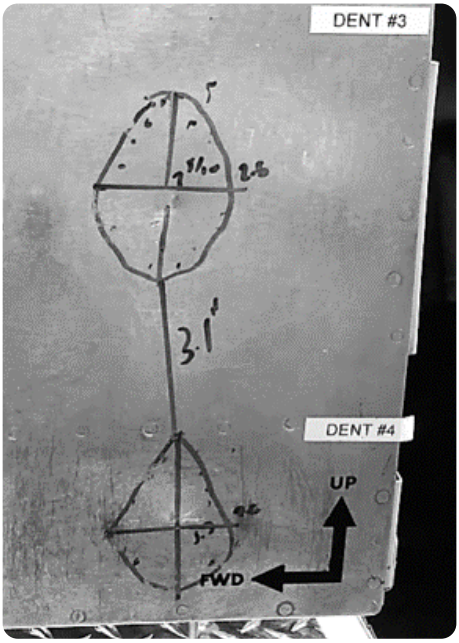
→ Measure with Traditional Tools

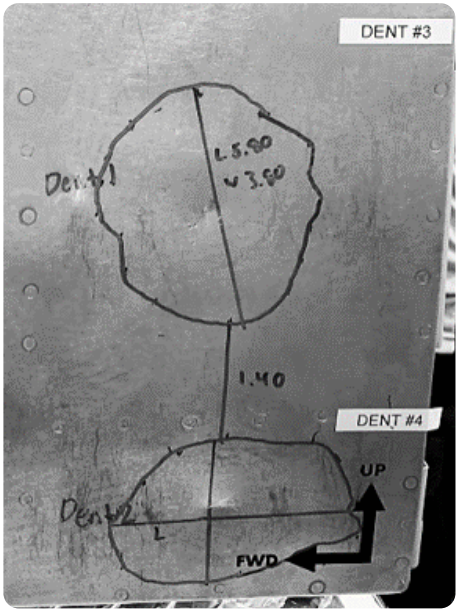
→ Repeat Task with dentCHECK

“Accurately map two dents using traditional methods and dentCHECK”

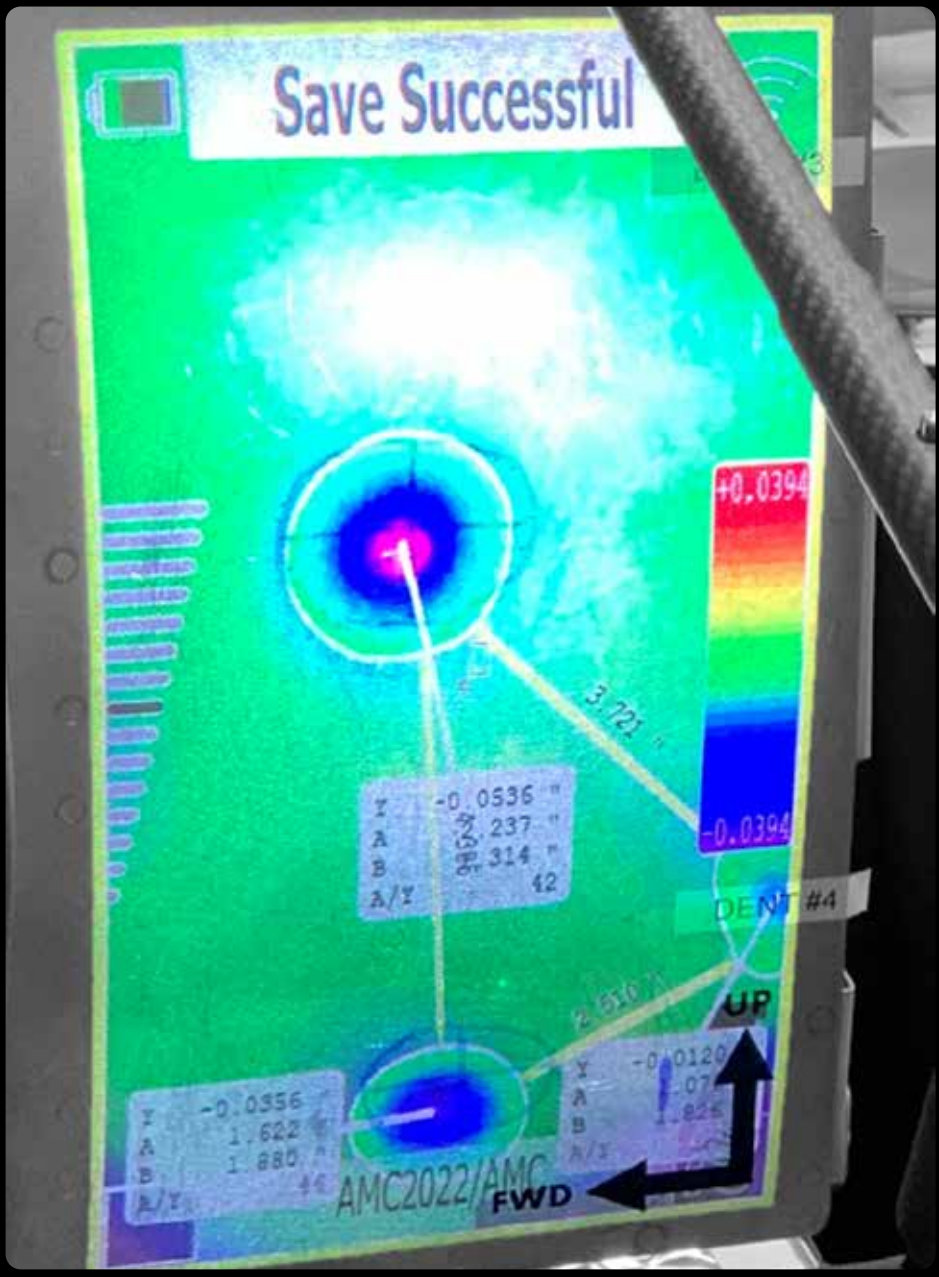
Traditional Method







vs. dentCHECK



Summary — Key Findings

dentCHECK enables:

20x more consistent depth measurement

13x more consistent width measurement

13x more consistent inter-dent distance measurement

48x faster inspection time

Improved Confidence when making "Go/No-go" decisions

Uncovered top 3 errors associated with traditional method:

- Tool handling error
- Incomplete measurement
- Record keeping error


CHECK


BRADEN

Double Digit Improvement in Precision

20x in depth measurement

13x in width measurement

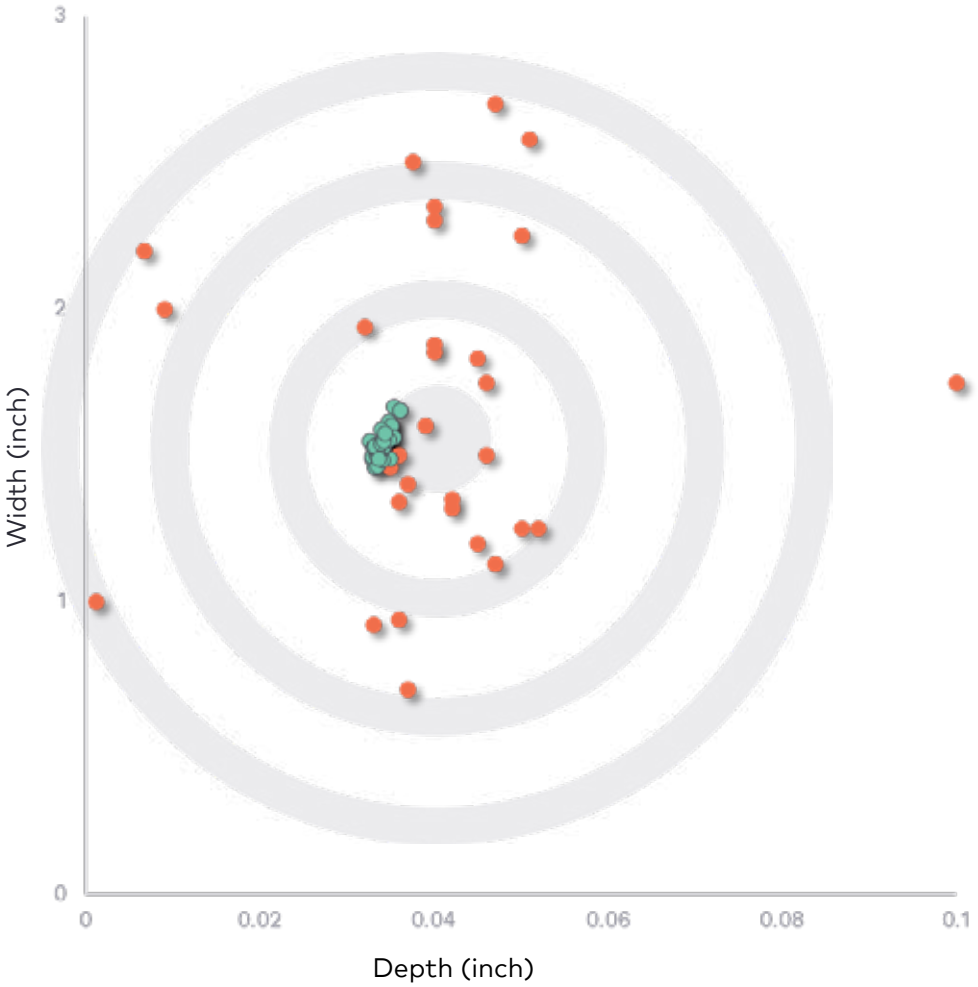
Width Margin of Error
Traditional method = +/- 0.602"
dentCHECK = +/- 0.048"

Depth Margin of Error
Traditional method = +/- 16 thou
dentCHECK = +/- 0.8 thou

Depths > 0.100" are considered outliers and are excluded from this study. Background target used to illustrate precision. "True" width and depth is unknown.

Precision Chart for 1 Dent

Traditional method
dentCHECK



Supplement Slide

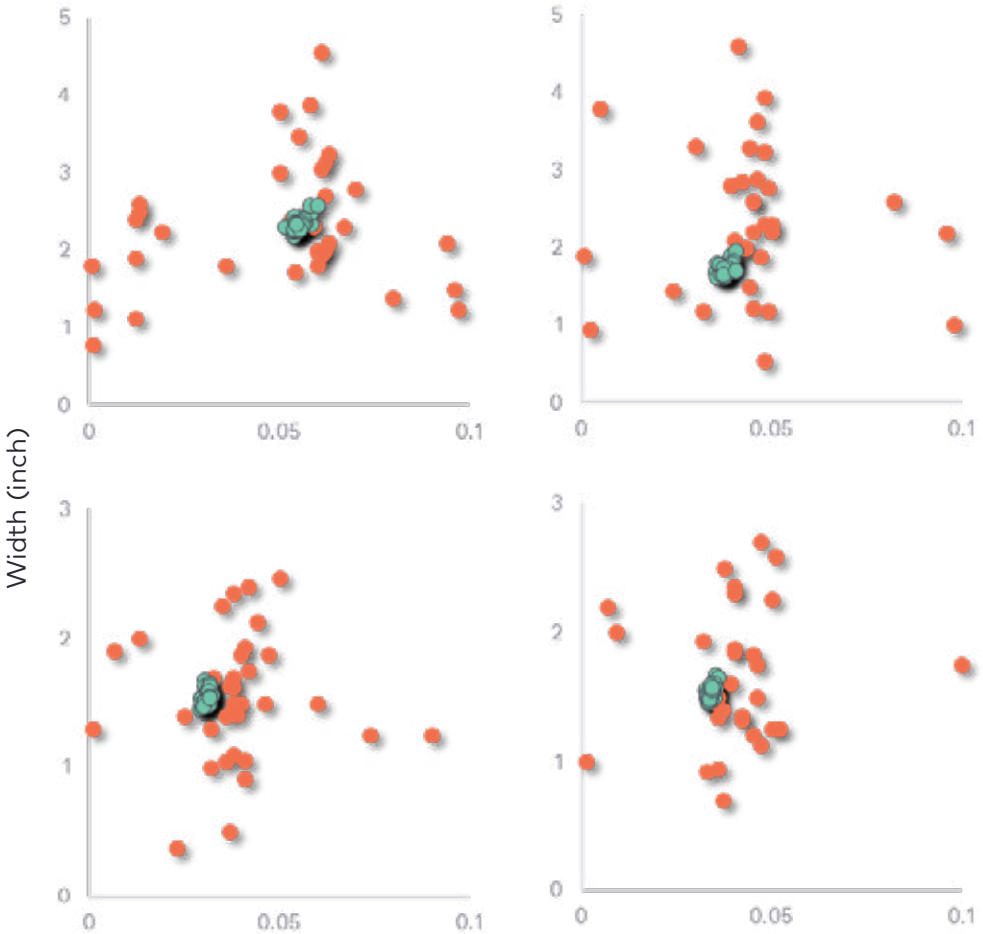
Precision Chart for all 4 dents

Depths > 0.100" are considered outliers and are excluded from this study.

Precision Chart for 4 dents

Traditional method

dentCHECK



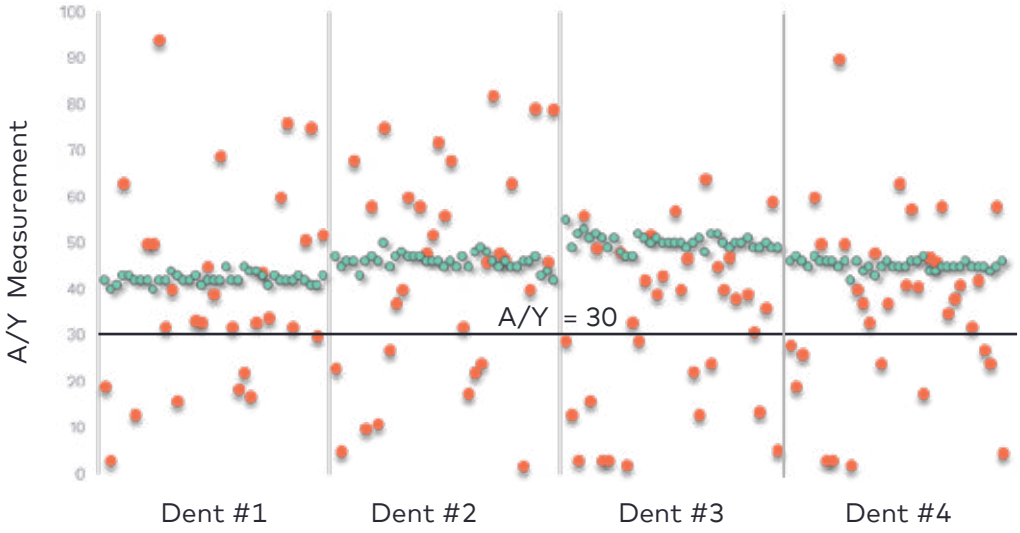
“Go/No-go” decisions with improved confidence

dentCHECK caught 40 erroneous manual measurements

A/Y Ratio Measurement for 4 dents

Traditional method

dentCHECK



13x more consistent inter-dent distance measurement

Margin of Error

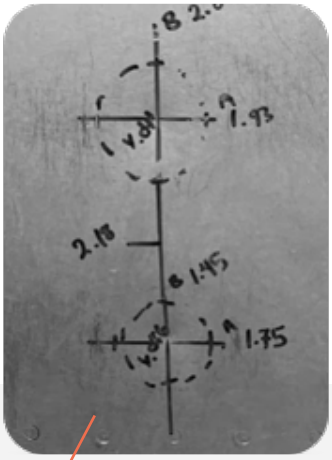
Traditional Method = +/- 1.225"

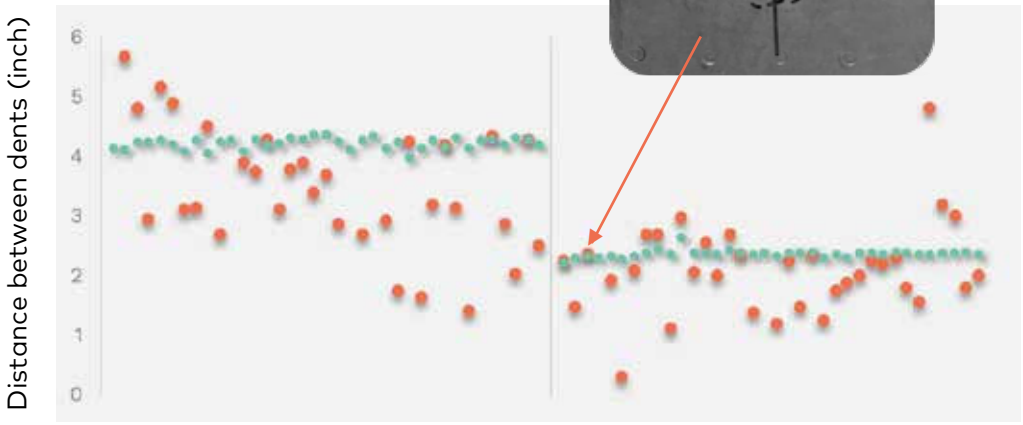
dentCHECK = +/- 0.094"

Inter-Dent Distance Measurement

Traditional method

dentCHECK

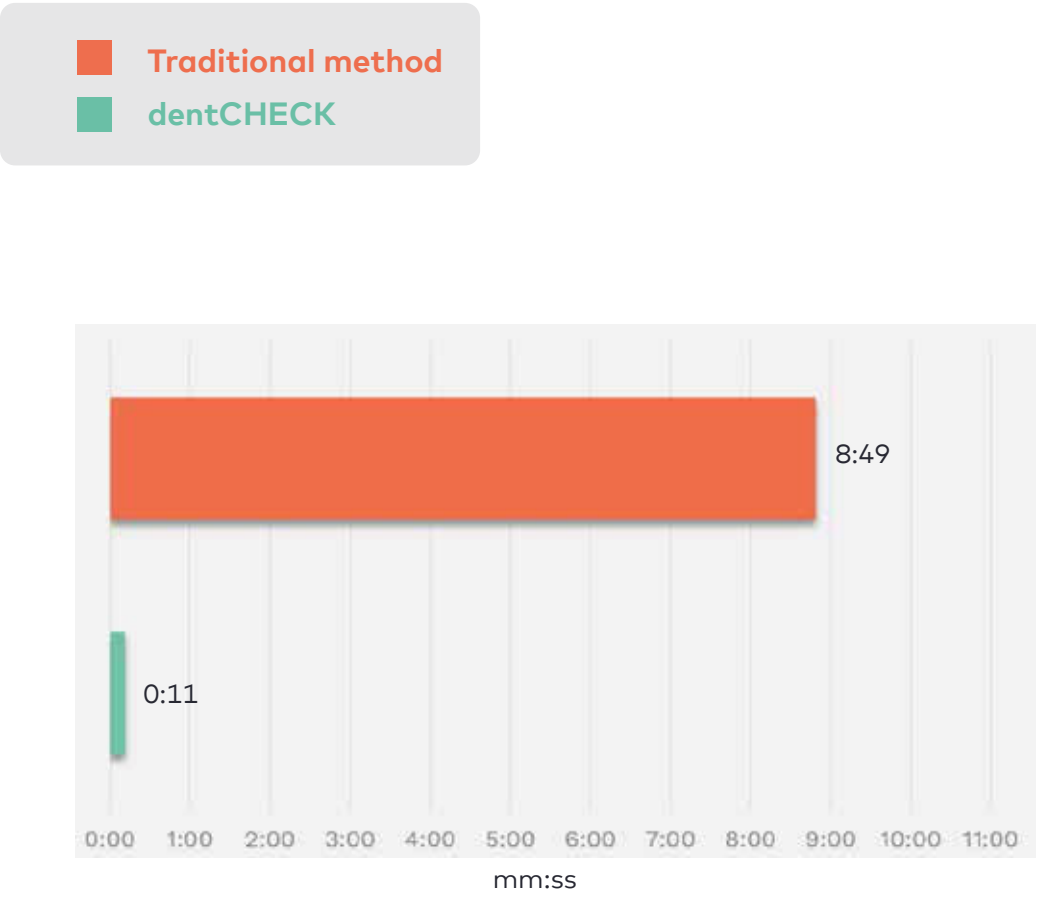




48x Faster Inspection Time

dentCHECK captures and measures both dents in a single scan

Time taken to complete Inspection Task

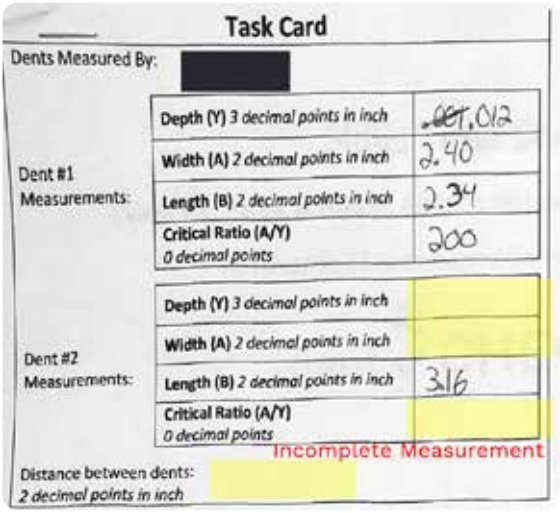


Top 3 Errors using

#1 Tool Handling Error

Traditional Method

#2 Incomplete Measurement



Task Card

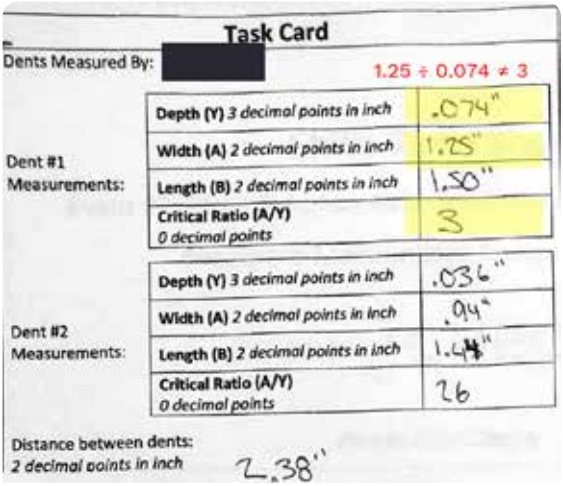
Dents Measured By: [redacted]

Dent #1 Measurements:	Depth (Y) 3 decimal points in inch	.012
	Width (A) 2 decimal points in inch	2.40
	Length (B) 2 decimal points in inch	2.34
	Critical Ratio (A/Y) 0 decimal points	200
Dent #2 Measurements:	Depth (Y) 3 decimal points in inch	
	Width (A) 2 decimal points in inch	
	Length (B) 2 decimal points in inch	3.16
	Critical Ratio (A/Y) 0 decimal points	

Incomplete Measurement

Distance between dents: 2 decimal points in inch

#3 Record Keeping Error



Task Card

Dents Measured By: [redacted]

1.25 ÷ 0.074 ≠ 3

Dent #1 Measurements:	Depth (Y) 3 decimal points in inch	.074"
	Width (A) 2 decimal points in inch	1.25"
	Length (B) 2 decimal points in inch	1.50"
	Critical Ratio (A/Y) 0 decimal points	3
Dent #2 Measurements:	Depth (Y) 3 decimal points in inch	.036"
	Width (A) 2 decimal points in inch	.94"
	Length (B) 2 decimal points in inch	1.44"
	Critical Ratio (A/Y) 0 decimal points	26

Distance between dents: 2 decimal points in inch 2.38"

Participants Testimonials

“

Did a 10-minutes job in about 30 seconds at most.

Cade Donley,
Eastern Florida State University
2022

“

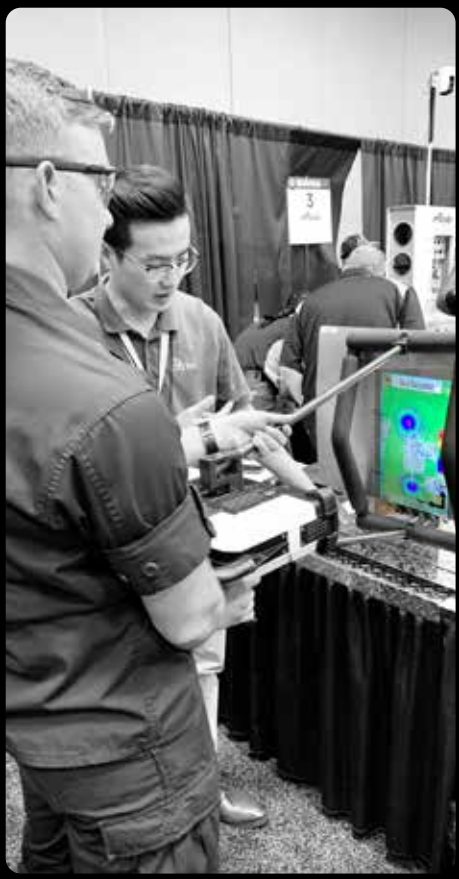
dentCHECK offers a simple, fast and accurate measurement compared to traditional methods.

Arturo Amezcua,
Spirit Airlines
2022

“

It’s quicker.
Takes out that human error aspect out there, which is good.

Taylor Anderson,
U.S. Air Force
2023



AMC 2024


Snap-on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