



# *TorqTraQ*®

## Closure Testing Device

Overview of independent studies performed by customers



# TorqTraQ<sup>®</sup> Closure Testing Device

## Comparing the device to other equipment



- How does the device compare to other equipment? Many of our customers have tested the TorqTraQ<sup>®</sup> device and shared the results.
- The following slides show:
  - TorqTraQ<sup>®</sup> device vs. analog bench-top meter
  - TorqTraQ<sup>®</sup> device vs. digital bench-top meter
  - TorqTraQ<sup>®</sup> device vs. automated torque testing equipment
  - TorqTraQ<sup>®</sup> device measuring capper head application torque
  - TorqTraQ<sup>®</sup> device R&R study
  - Customer feedback



# TorqTraQ<sup>®</sup> Closure Testing Device

## Comparing the device to bench-top meters



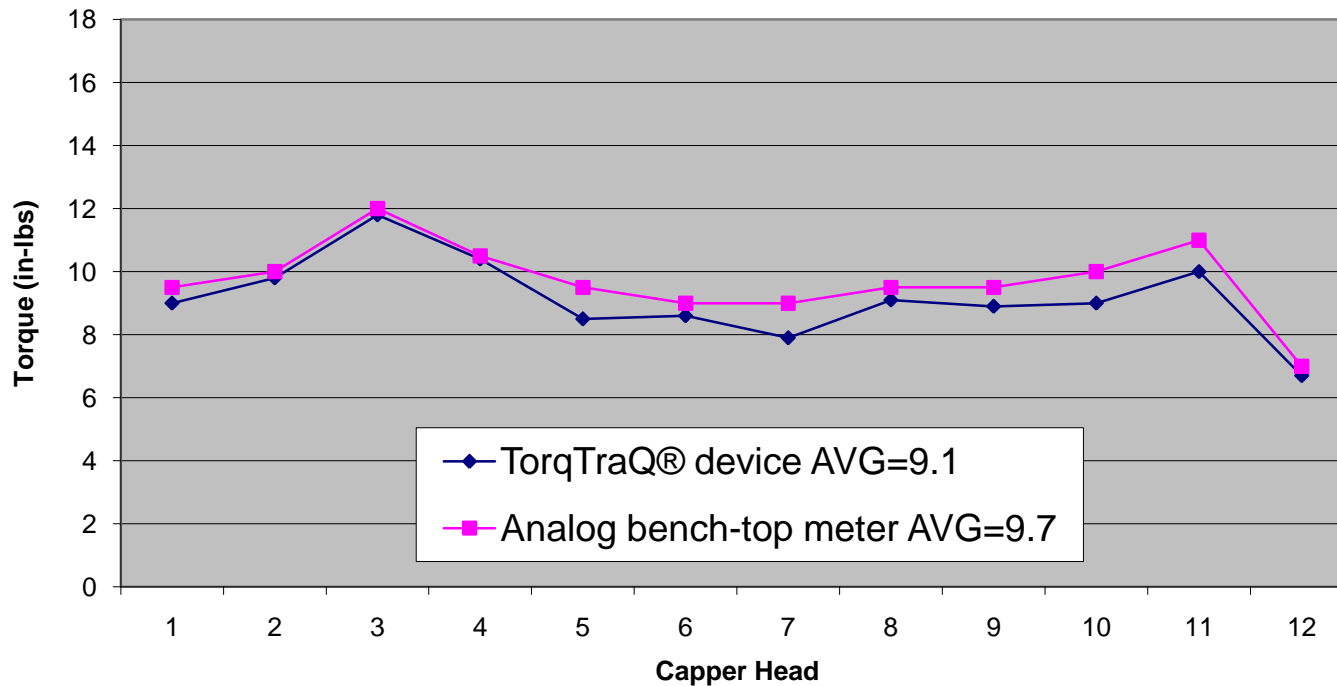
- To compare the TorqTraQ<sup>®</sup> device to bench-top style meters, the following steps were followed:
  1. Place the base of the bottle onto the bench-top meter
  2. Adjust the 4 gripping pegs, and clamp the base of the bottle
  3. Place the TorqTraQ<sup>®</sup> device over the closure
  4. Zero both devices
  5. Remove the closure using the TorqTraQ<sup>®</sup> device
  6. Readings are taken from both devices:
    - Bench-top meter measures torque at the base of the bottle
    - TorqTraQ<sup>®</sup> device measures torque at the closure

# TorqTraQ<sup>®</sup> Closure Testing Device

## TorqTraQ<sup>®</sup> device vs. analog bench-top meter - Customer study #1



**TorqTraQ<sup>®</sup> device vs. analog bench-top meter**  
2 operators testing different samples from each capper head

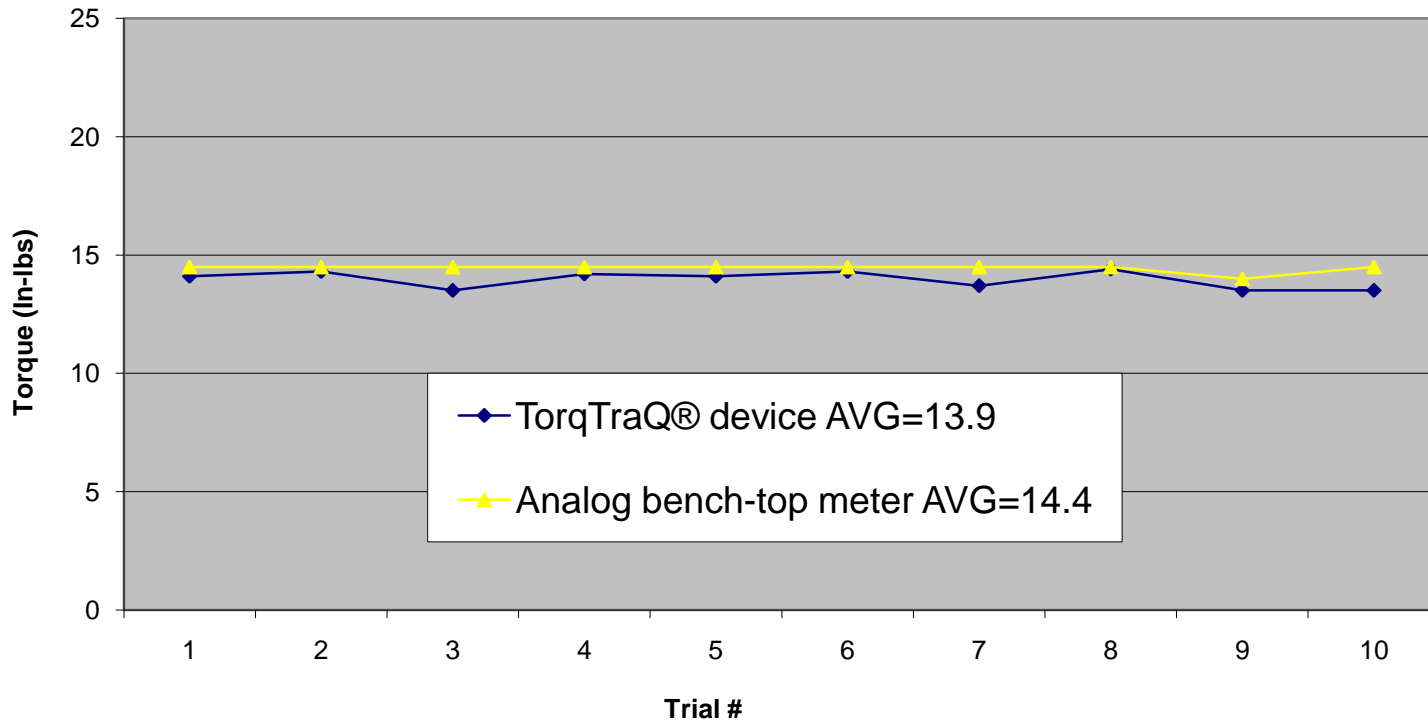


# TorqTraQ<sup>®</sup> Closure Testing Device

## TorqTraQ<sup>®</sup> device vs. analog bench-top meter - Customer study #2



TorqTraQ<sup>®</sup> device vs. analog bench-top meter  
Customer study #2

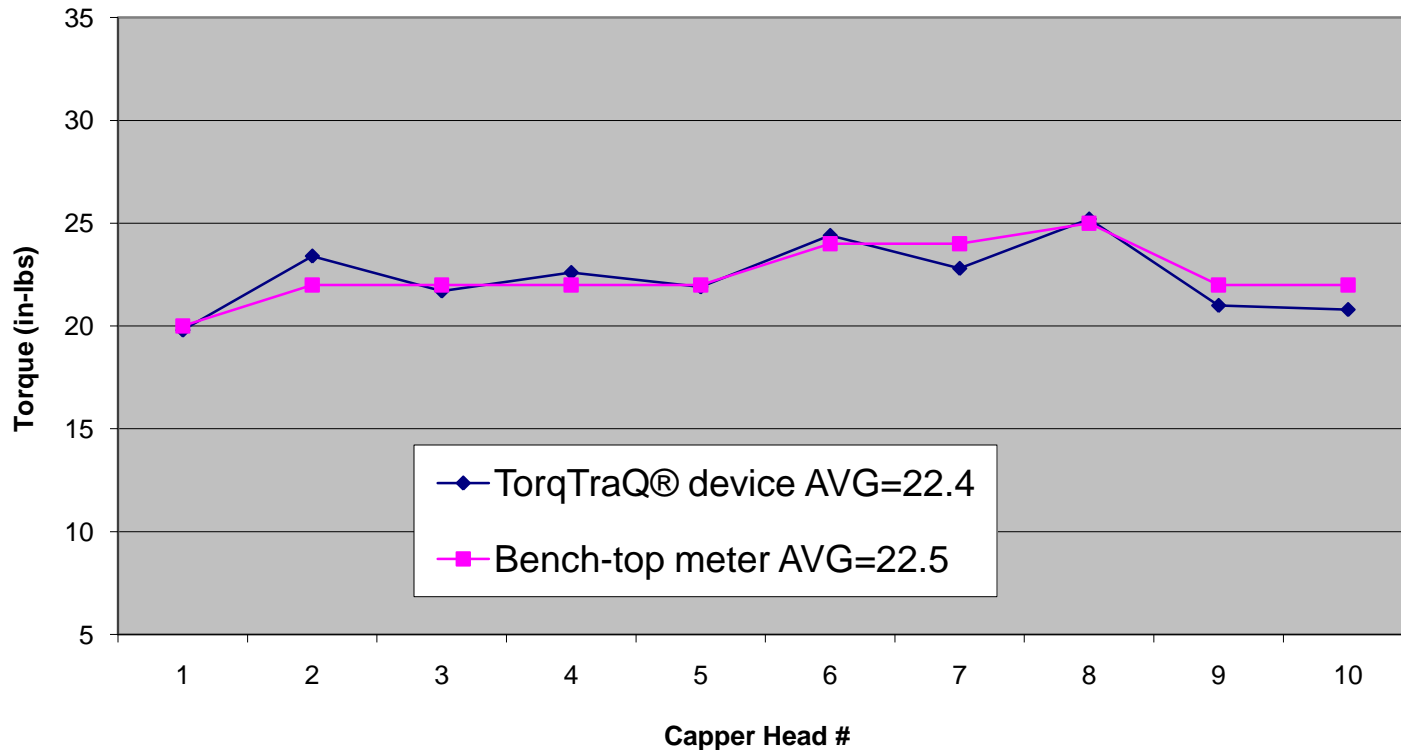


# TorqTraQ<sup>®</sup> Closure Testing Device

## TorqTraQ<sup>®</sup> device vs. digital bench-top meter

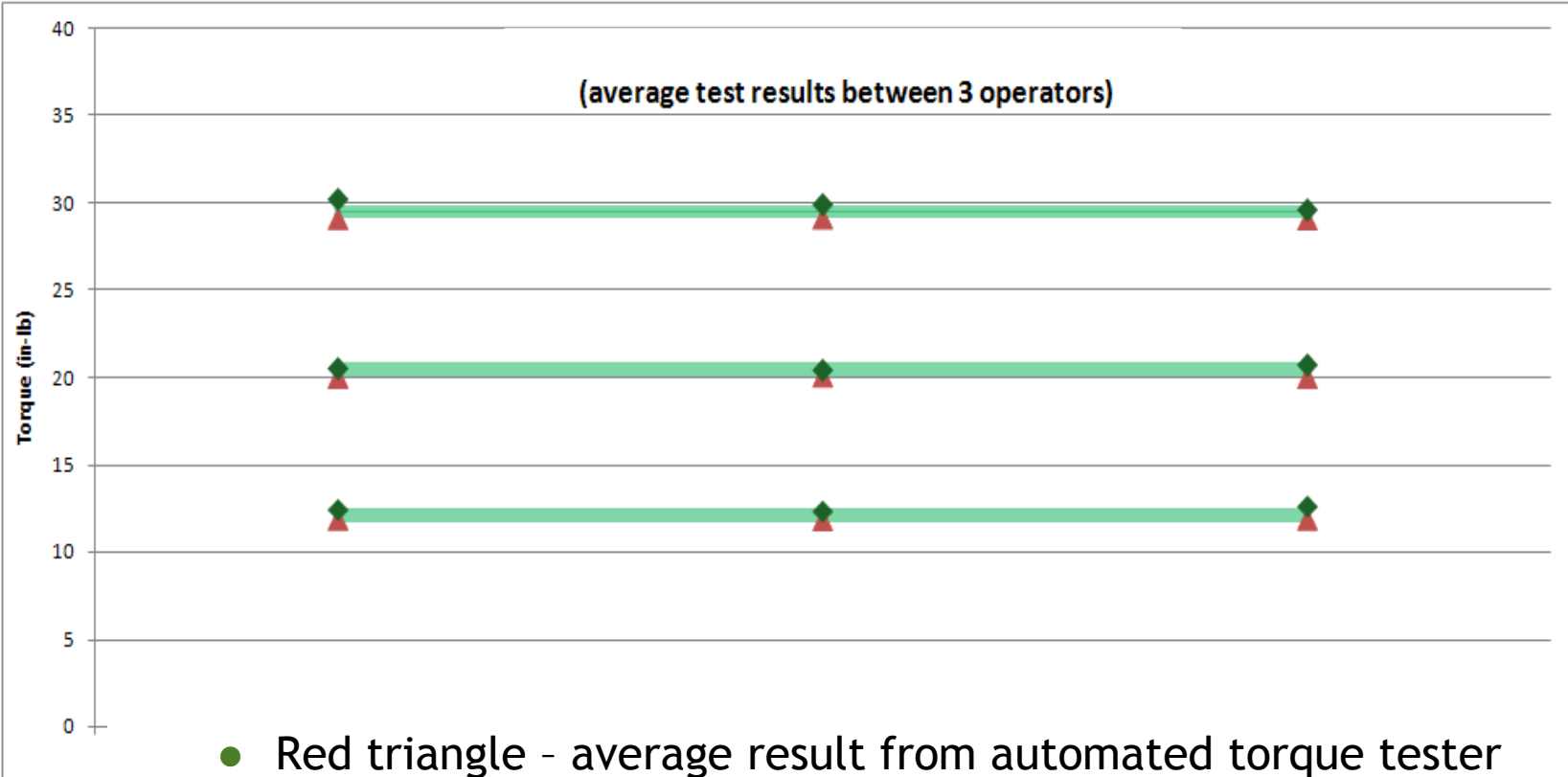


**TorqTraQ<sup>®</sup> device vs. digital bench-top meter**  
2 operators testing different samples from each capper head



# TorqTraQ<sup>®</sup> Closure Testing Device

## TorqTraQ<sup>®</sup> device vs. automated torque tester - Measurement of a Gold Bottle Standard



- Red triangle - average result from automated torque tester
- Green diamond - average result from TorqTraQ<sup>®</sup> device
- Light green - gold standard specification

# TorqTraQ<sup>®</sup> Closure Testing Device

## TorqTraQ<sup>®</sup> device vs. existing lab equipment

- Customer compared device to their existing methods



- The TorqTraQ<sup>®</sup> device provided results comparable to existing equipment
- Averages:
  - TorqTraQ<sup>®</sup> device = 16.7 in-lbs
  - Bench-top meter = 17.0 in-lbs
  - Automated torque tester = 17.2 in-lbs

		Equipment		
		TorqTraQ <sup>®</sup> device	Bench-top meter	Automated device
User	#1	16.2	16.8	16.9
	#2	16.3	16.0	17.5
	#3	17.6	18.1	17.4
	average	<b>16.7</b>	<b>17.0</b>	<b>17.2</b>
st.dev		0.8	1.1	0.3
min		16.2	16.0	16.9
max		17.6	18.1	17.5



# TorqTraQ<sup>®</sup> Closure Testing Device

## TorqTraQ<sup>®</sup> device vs. analog bench-top meter -Measuring the capper head



- The TorqTraQ<sup>®</sup> device can be equipped with a capper setup chuck that allows it to measure the application torque set-point of a capper head.
  - The capper head was tested in the maintenance area using both devices.
  - Bench-top meter vs. TorqTraQ<sup>®</sup> device with capper setup chuck
    - Bench-top device average was 8.14 in-lbs
    - TorqTraQ<sup>®</sup> device average was 8.10 in-lbs
  - The correlation is good, and the client determined that they could also measure the application torque while the capping head was still mounted in the machine.



# TorqTraQ<sup>®</sup> Closure Testing Device

## TorqTraQ<sup>®</sup> device independent R&R Study



- Test consisted of 3 operators, completing 3 trials, 10 samples per trial... totaling 90 samples. Trials were randomized.
- Gold standard tested was certified to: 11.8 - 12.2 in-lb
- Average results between operators:
  - Operator #1 = 12.1 in-lb Std. dev. = 0.2
  - Operator #2 = 11.8 in-lb Std.dev. = 0.3
  - Operator #3 = 11.9 in-lb Std. dev. = 0.1
- EV (Equipment Variance) = 7.6%
- AV (Appraiser Variance) = 5.0%
- R&R (Repeatability and Reproducibility) = 9.4%

# TorqTraQ® Closure Testing Device

## Customer feedback...



- ... allows us to execute an evaluation of all of the capper heads right at the machine, cutting the current setup time in more than half.
- ... a best practice tool; a great advantage for all of our plants using light-weight closures.
- ... our technical service guys love it. They no longer have to lug around the heavy tabletop meters.
- ... direct correlation study showed that the slab meters and TorqTraQ® device are very similar. The difference in means was only 0.34 in-lb's.
- ... the TorqTraQ® device gives us a “true” torque reading.
- ... in the first two days, I've used the [TorqTraQ® device] to evaluate capping of no fewer than 1000 containers. It is awesome. Makes torque evaluation a breeze.”



# TorqTraQ<sup>®</sup> Closure Testing Device



For more information on the TorqTraQ<sup>®</sup> device, and to order online, please visit our website:

[www.torqtraq.com](http://www.torqtraq.com)

[torqtraq@plastictechnologies.com](mailto:torqtraq@plastictechnologies.com)

1440 Timberwolf Dr.

Holland, OH 43528

1-(419) 867-5424 ph.

1-(419) 867-7700 fax

