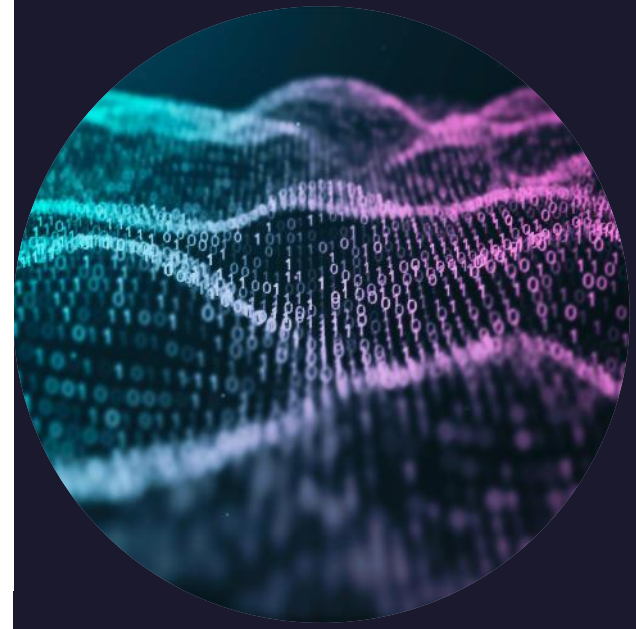
Thermal Cycling

- Provides a definitive competitive advantage by significantly reducing replacement and repair costs in a Brake system.

Thermal Processing is a Technology that Makes Metals Stronger So That Metals Last Longer Under Harsh and Strenuous Conditions.
The Thermal Processing Also Allows Metals to Perform With More Precision.

Thermal Cycling For Brakes

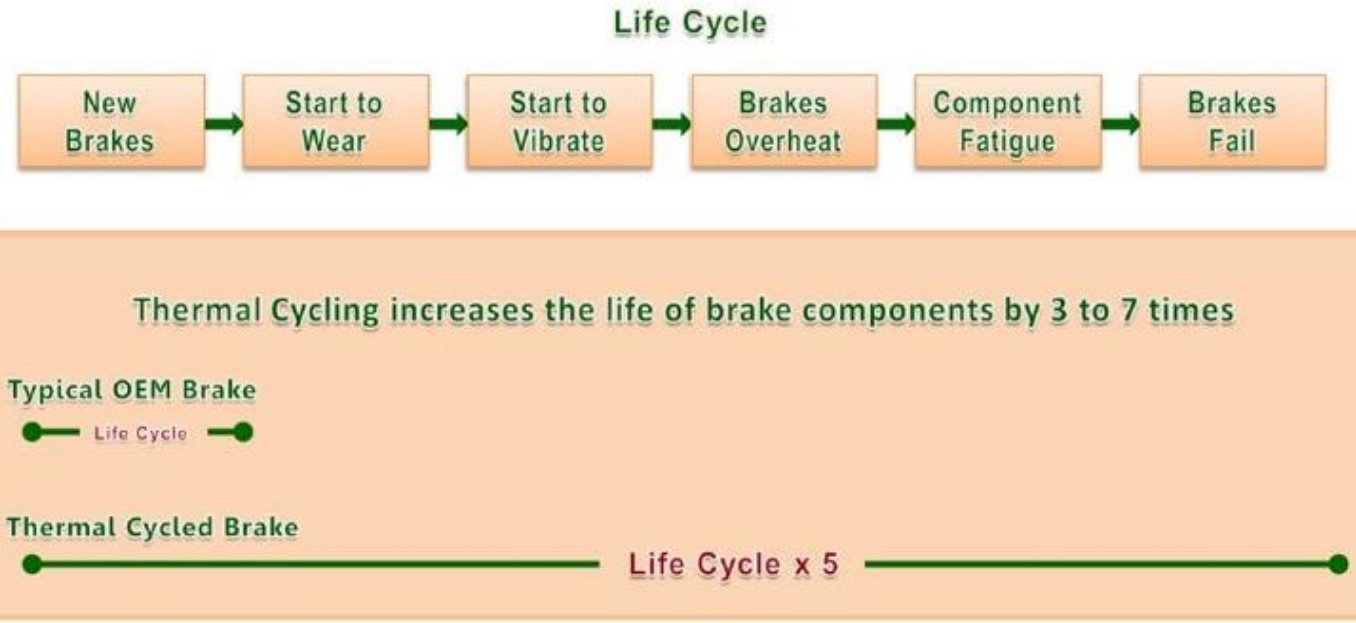
Benefits of Thermal Cycling Brakes



- **More uniform wear –** Forged metal brakes have inherent flaws from the forging process. These imperfections cause brake components to wear in an uneven pattern when working together. Thermal Cycling removes these imperfections.
- **Stronger brakes –** The realigned grain structure of Thermal Cycled metal is significantly stronger and increases the life of brake components by 2 to 4 times.
- **Reduced vibration –** Vibration is a bi-product of uneven wear. It robs energy, forcing the brakes to work harder to stop the vehicle.
- **Lower core temperatures –**Thermal Cycling enables brake parts to maintain lower core temperatures and dissipate heat faster, which reduces the potential for premature failure.
- **Less noise from brake usage –** Brakes tend to squeal as they wear. The thermal cycling process extends the life of brake parts and reduces the wear.
- **Less wear & tear on ancillary components –** All of the things that make Thermal Cycled brakes work better have a positive effect on ancillary components.
- The reduction of brake particle dust in the atmosphere – By reducing Wear-

Thermal Cycling For Brakes

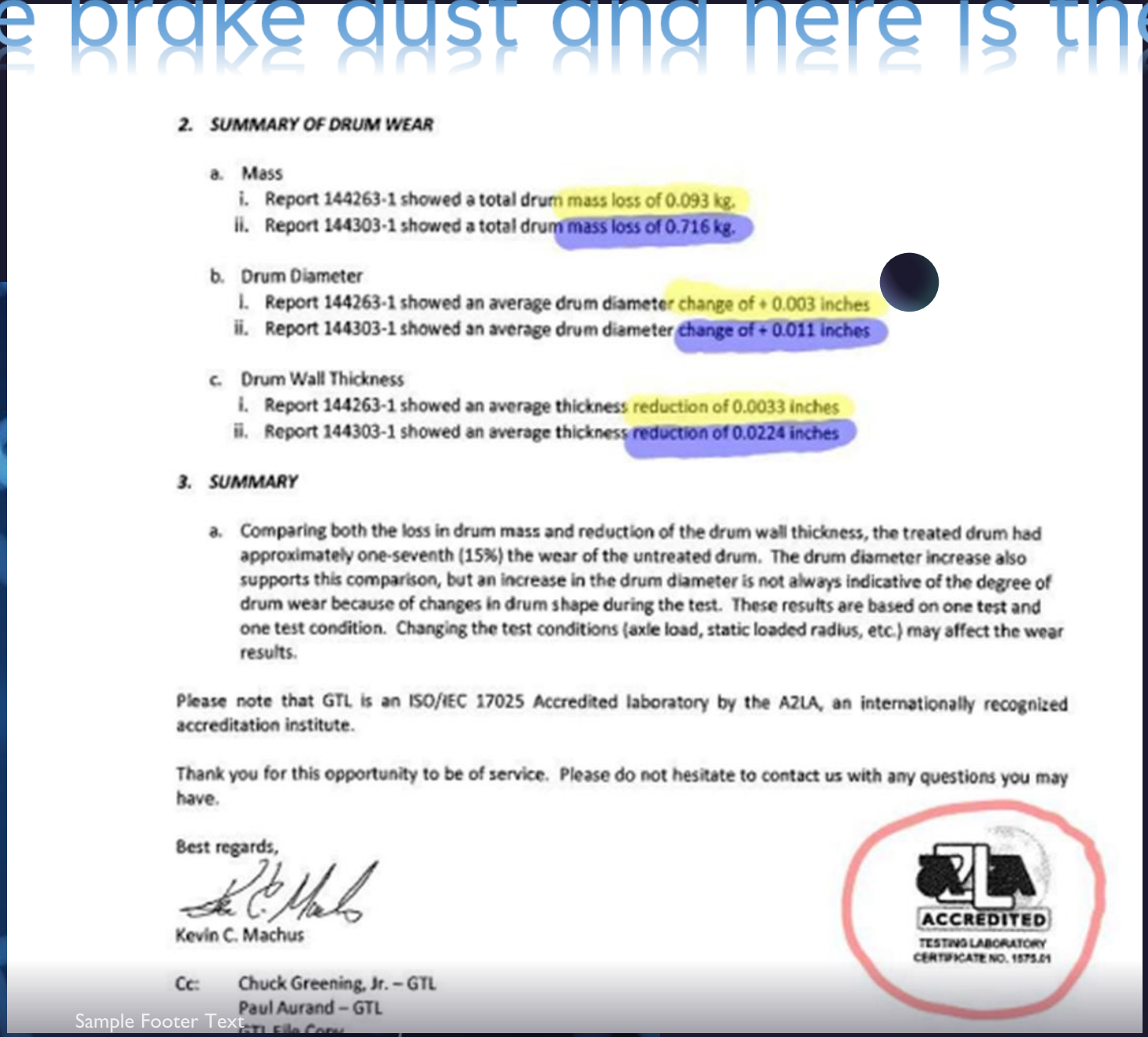
Thermal Cycling™ not only makes metal stronger… it reduces stress, balances and stabilizes the metal at grain level, minimizes corrosion, reduces vibration, generates less heat when operating, it allows the metal to hold a sharper edge, and it helps prevent premature failure.



We reduce brake dust and here is the proof

This Report Was By Greening Labs a World Wide Accredited Lab In The Auto Center Of Detroit Michigan

TWENTY FIVE PERCENT OF AUTOMOTIVE POLUTION IS BRAKE DUST AND SEVENTY PERCENT IS METAL PARTICLES



2. *SUMMARY OF DRUM WEAR*

a. Mass
   i. Report 144263-1 showed a total drum mass loss of 0.093 kg.
   ii. Report 144303-1 showed a total drum mass loss of 0.716 kg.

b. Drum Diameter
   i. Report 144263-1 showed an average drum diameter change of + 0.003 inches
   ii. Report 144303-1 showed an average drum diameter change of + 0.011 inches

c. Drum Wall Thickness
   i. Report 144263-1 showed an average thickness reduction of 0.0033 inches
   ii. Report 144303-1 showed an average thickness reduction of 0.0224 inches

3. *SUMMARY*

a. Comparing both the loss in drum mass and reduction of the drum wall thickness, the treated drum had approximately one-seventh (15%) the wear of the untreated drum. The drum diameter increase also supports this comparison, but an increase in the drum diameter is not always indicative of the degree of drum wear because of changes in drum shape during the test. These results are based on one test and one test condition. Changing the test conditions (axle load, static loaded radius, etc.) may affect the wear results.

Please note that GTL is an ISO/IEC 17025 Accredited laboratory by the A2LA, an internationally recognized accreditation institute.

Thank you for this opportunity to be of service. Please do not hesitate to contact us with any questions you may have.

Best regards,

Kevin C. Machus

Cc: Chuck Greening, Jr. – GTL
Paul Aurand – GTL

ACCREDITED
TESTING LABORATORY
CERTIFICATE NO. 1575.01

Thermally Treated Brakes in Yellow Untreated Brakes in Purple

NLE CONSULTING GROUP

Runaway Safety Ramp
Used For Lost of Braking

Jackknifed Trailer

Newer Brakes Have less incidences of Brake Overheating and Brake Fade.
Overheating of Brakes Can Lead to:
1. Longer Stopping Distance
2. Un-even Braking Leading to Possible Jackknife Situations
3. Total Loss of Braking (Brake Fade)

Everything wears out sooner or later

Later is better

To Know When it Will Wear Out is Even Better!!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