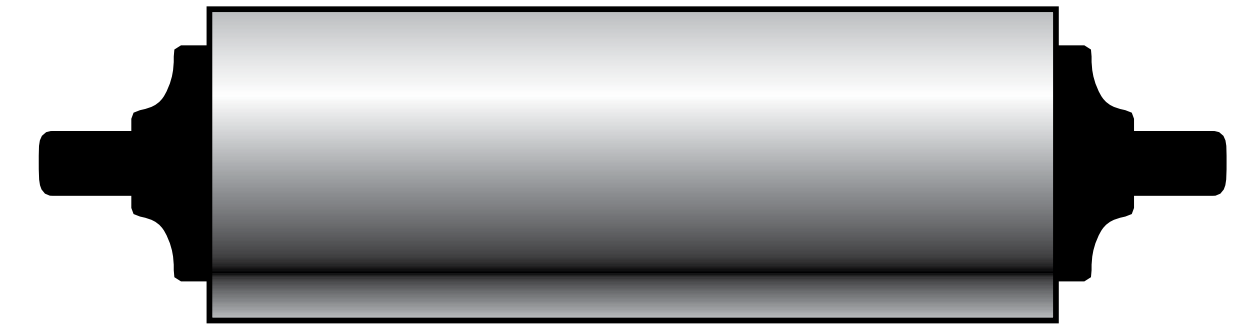


REAL ECONOMIC BENEFITS OF PRECISION ROLL GRINDING AND SERVICES

PRECISION



ROLL GRINDERS

Over 50 years of value-added service

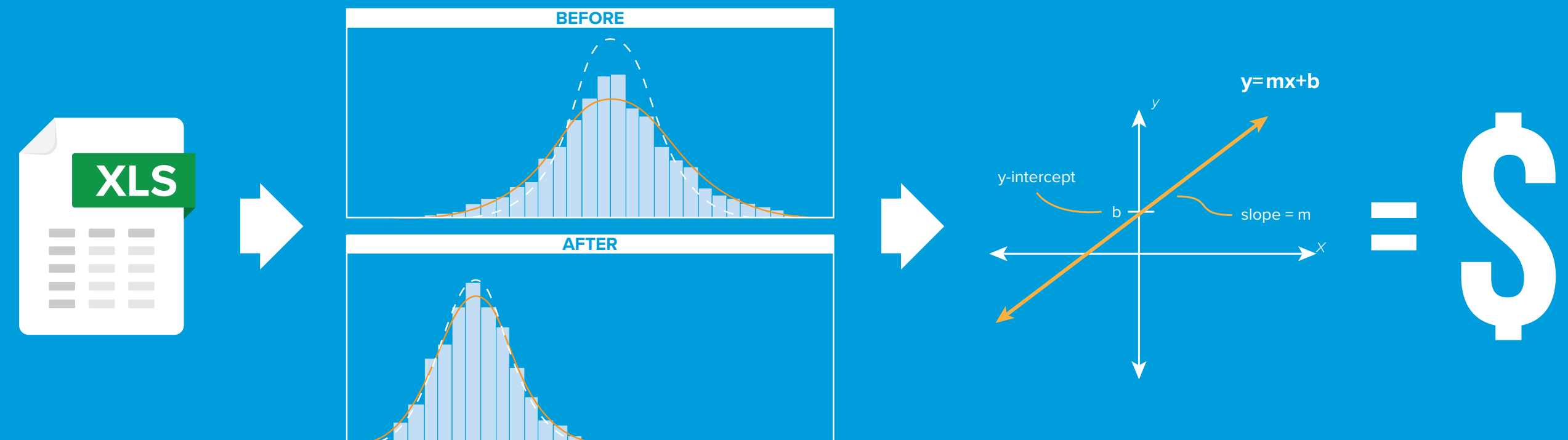
**WEBINAR
SERIES**

precisionrollgrinders.com

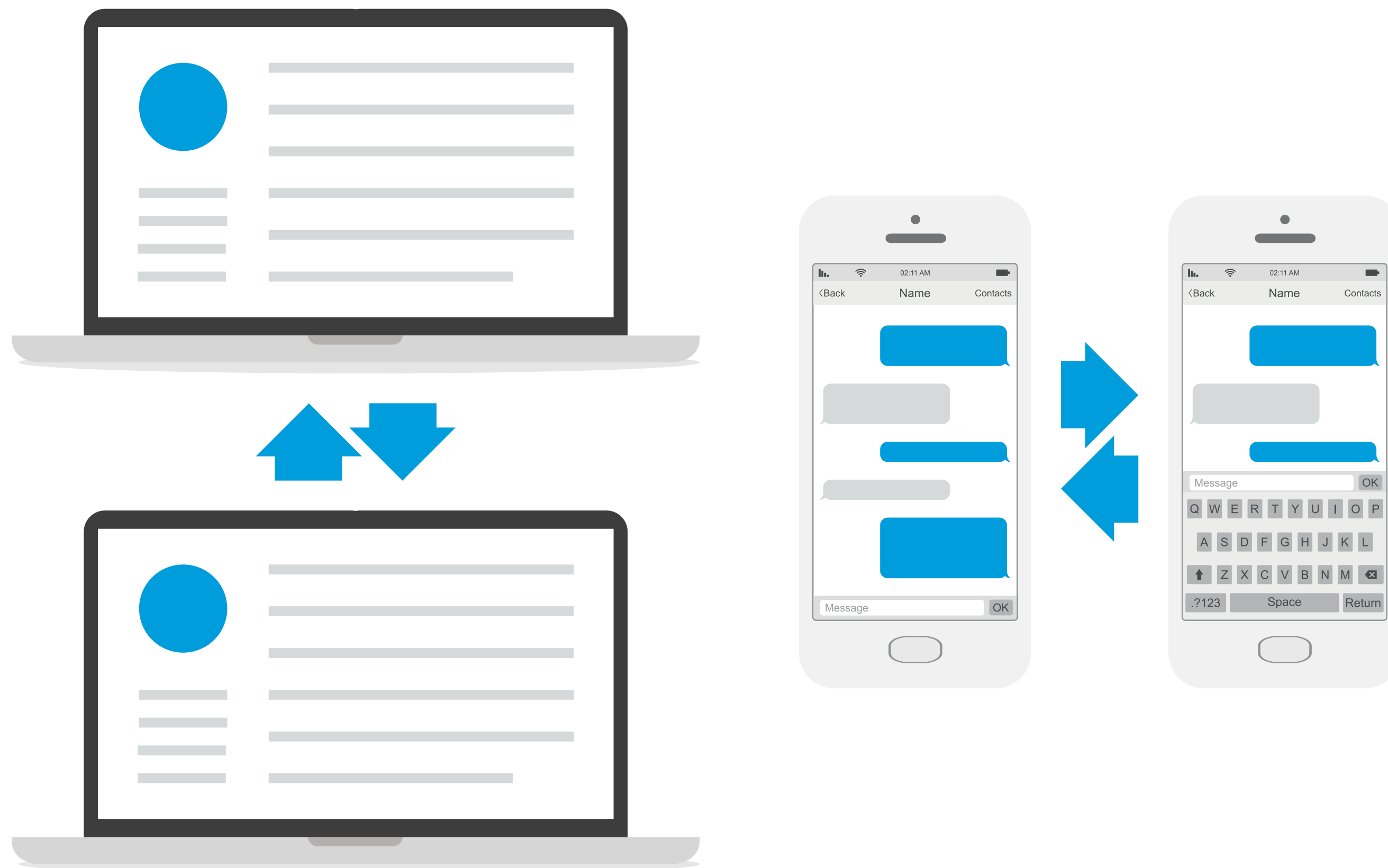
PROMISE TO PROVIDE REAL ECONOMIC VALUE

PROCESS VARIATION
IMPROVEMENT = \$

- Joint Design of Experiment to reduce variation
- Data analysis on current process
- Implement plan for variation improvement
- Data analysis on improved process – predictive equation



ADJUSTING TO OUR NEW “VIRTUAL” PARTNERSHIP



WHAT ARE “VIRTUAL VALUE-ADDED” SERVICES?

PARTNERING WITH YOUR ROLL SERVICE PROVIDER TO IMPROVE YOUR PROCESS ➡ REDUCING VARIATION

- Data analysis, sampling and testing
- Statistical validation of real benefits (\$\$)
- Virtual troubleshooting (pics/video)

*Send us your data,
samples, pics, video*



PRECISION ROLLS: WHAT MATTERS = \$\$

PRE-GRINDS AND GRINDS FOR PROPER TOLERANCES AND SHAPE

- Reducing Variation

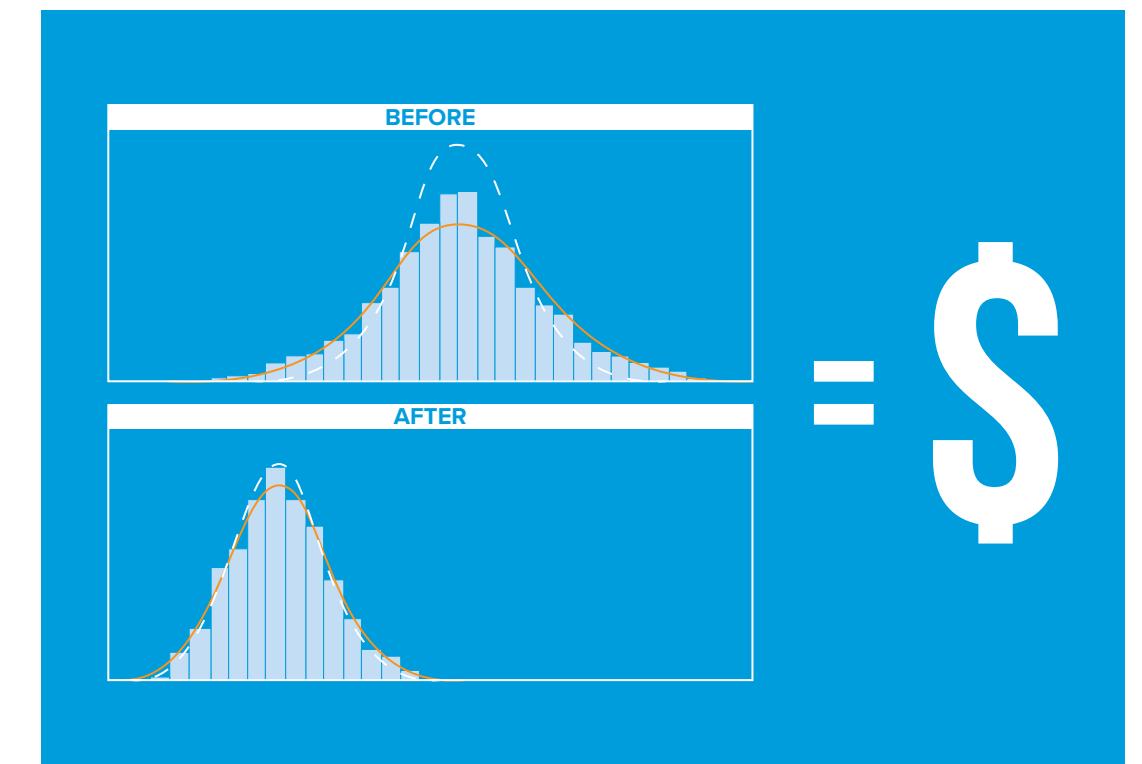


MAINTAINING THE SURFACE AND OPTICAL PROPERTIES YOU NEED TO PRODUCE HIGH-QUALITY PRODUCT

- World-Class Product Quality



VALUE-DRIVEN RESULTS THROUGH MATERIAL SAVINGS, PRODUCT QUALITY AND ROLL LIFE

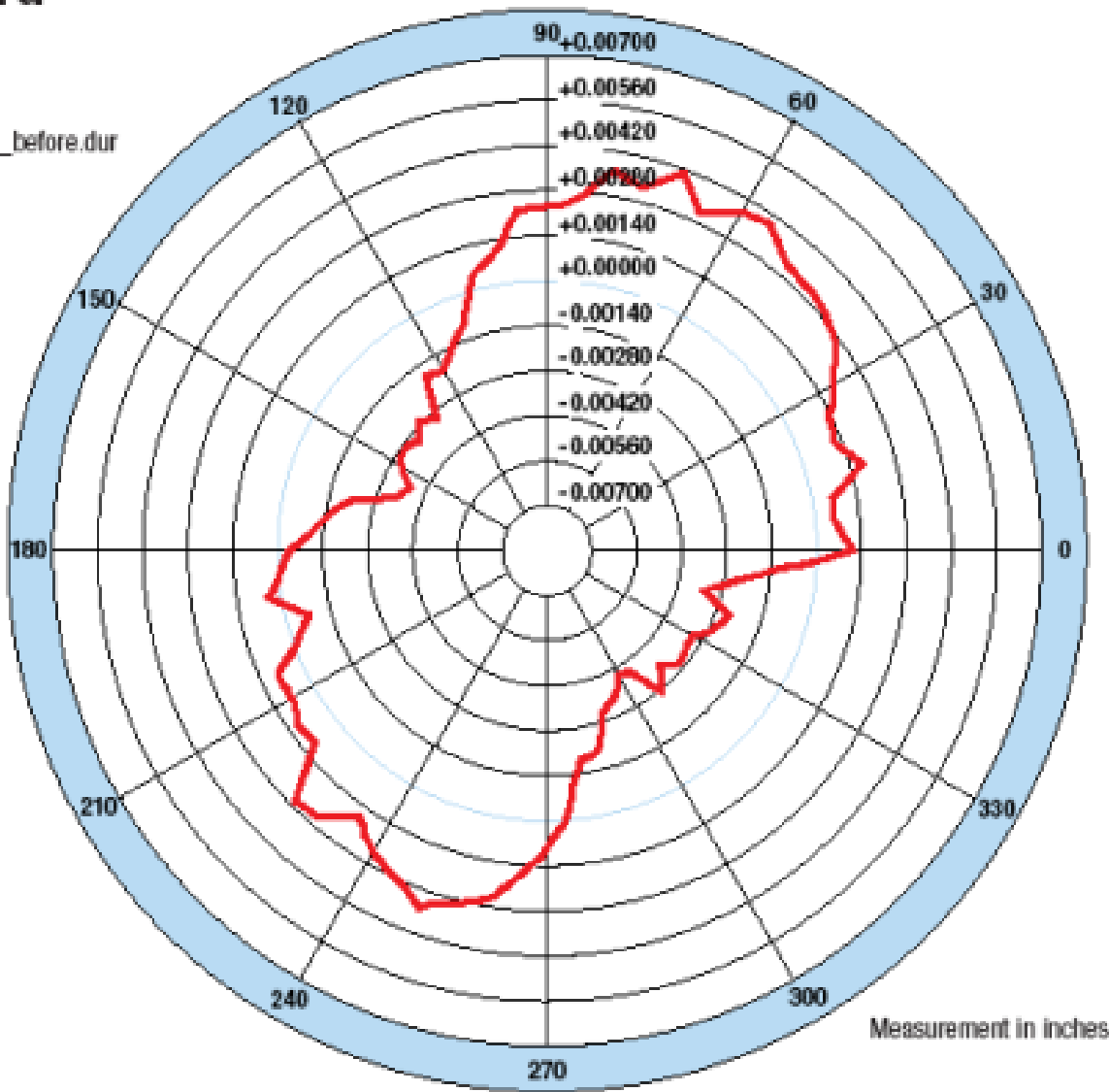


REDUCING VARIATION – ROLL ROUNDNESS MATTERS

GROUND IN BEARINGS

Measurement Record

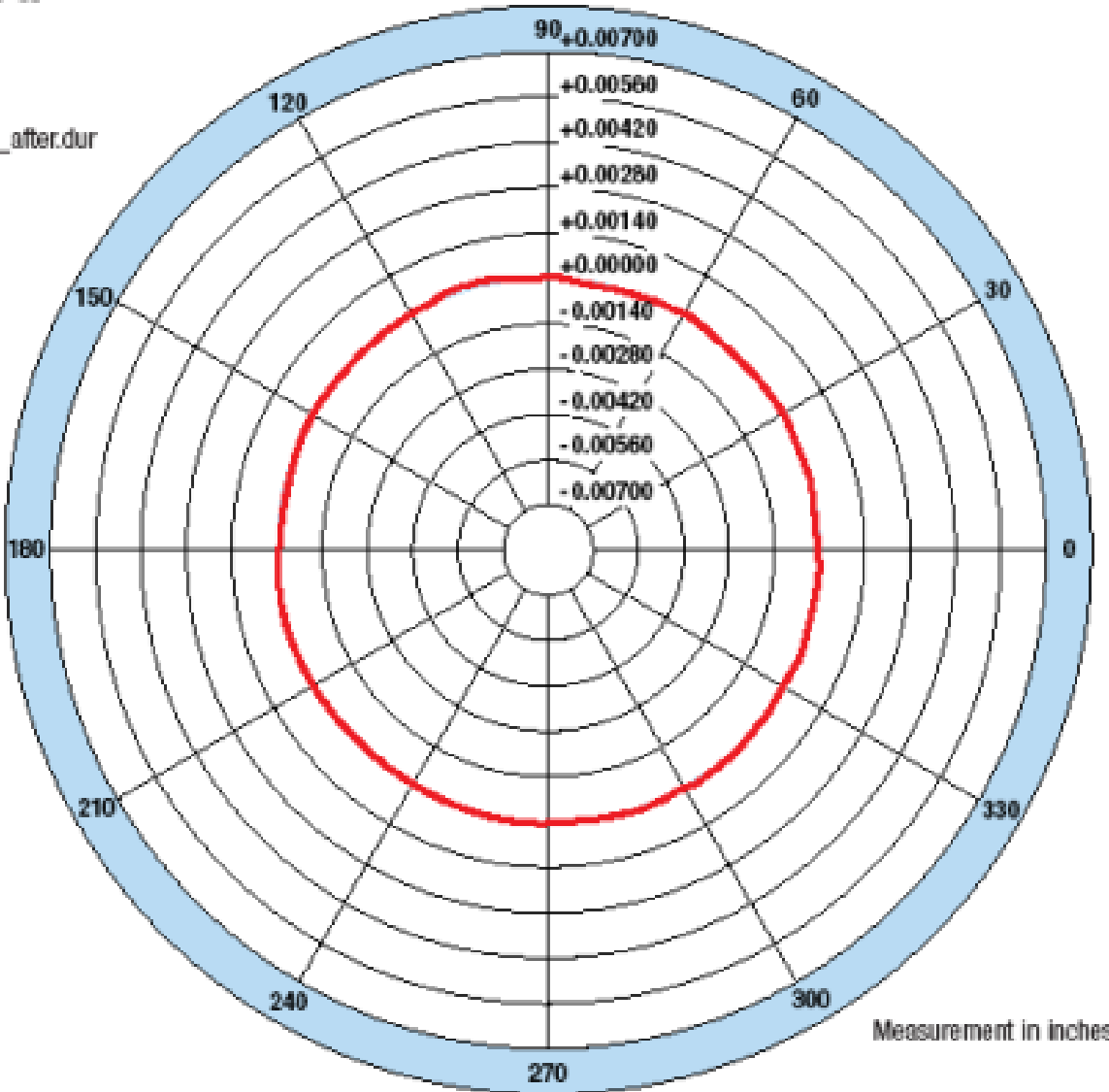
Customer: Confidential
Customer Roll Number: competition/q00732_before.dur
Roundness: 0.00682
Measure Time: 18-10-05, 21:07
Probe Mode: T1+T2
Curve Zero Point: 77.0000 inch
Measurement Position: 263.5000 inch
Roundness: 0.00682



PRECISION GROUND ROLL

Measurement Record

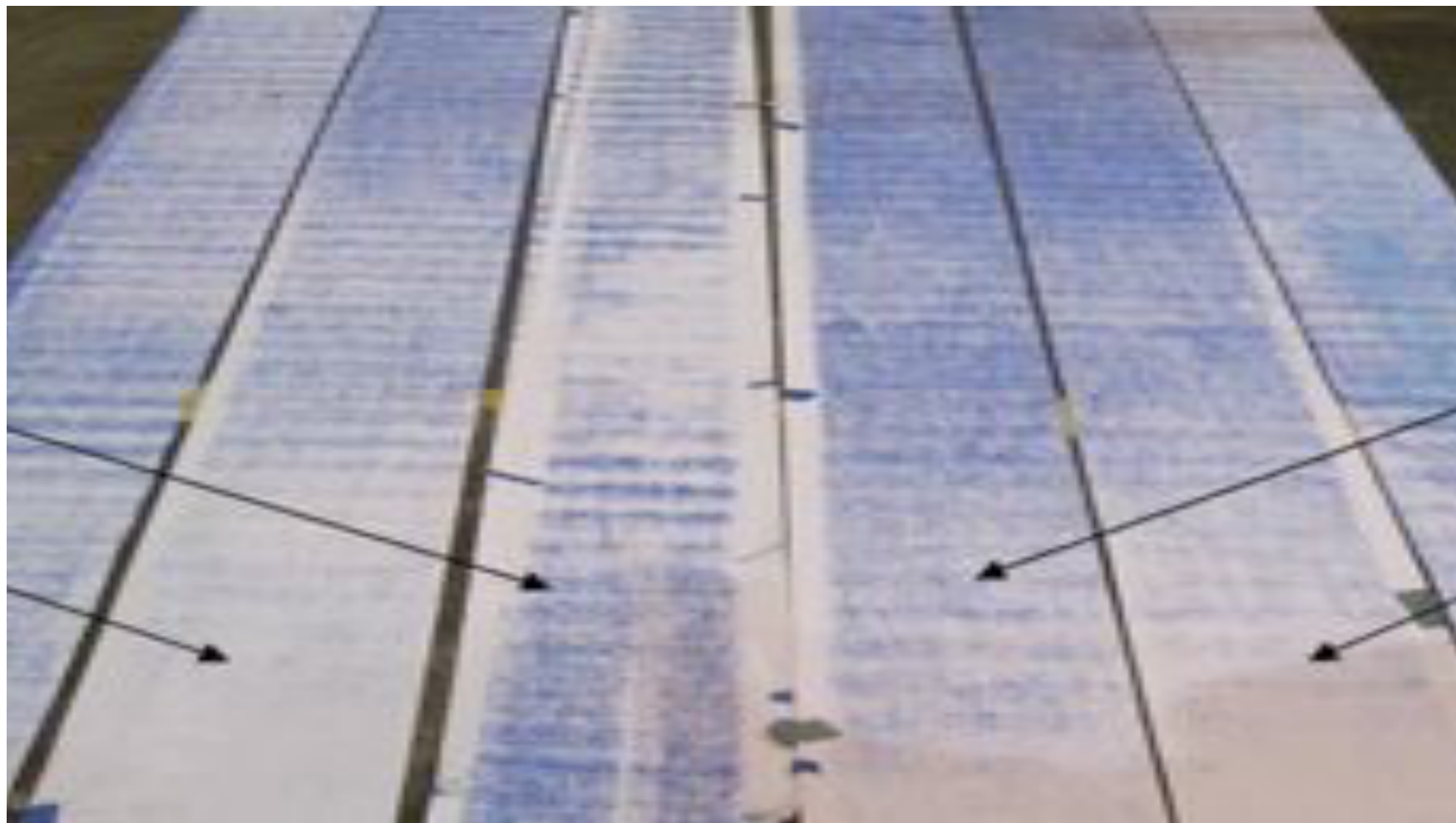
Customer: Confidential
Customer Roll Number: competition/q00732_after.dur
Roundness: 0.00021
Measure Time: 19-10-05, 09:13
Probe Mode: T1+T2
Curve Zero Point: 77.0000 inch
Measurement Position: 263.5000 inch
Roundness: 0.00021



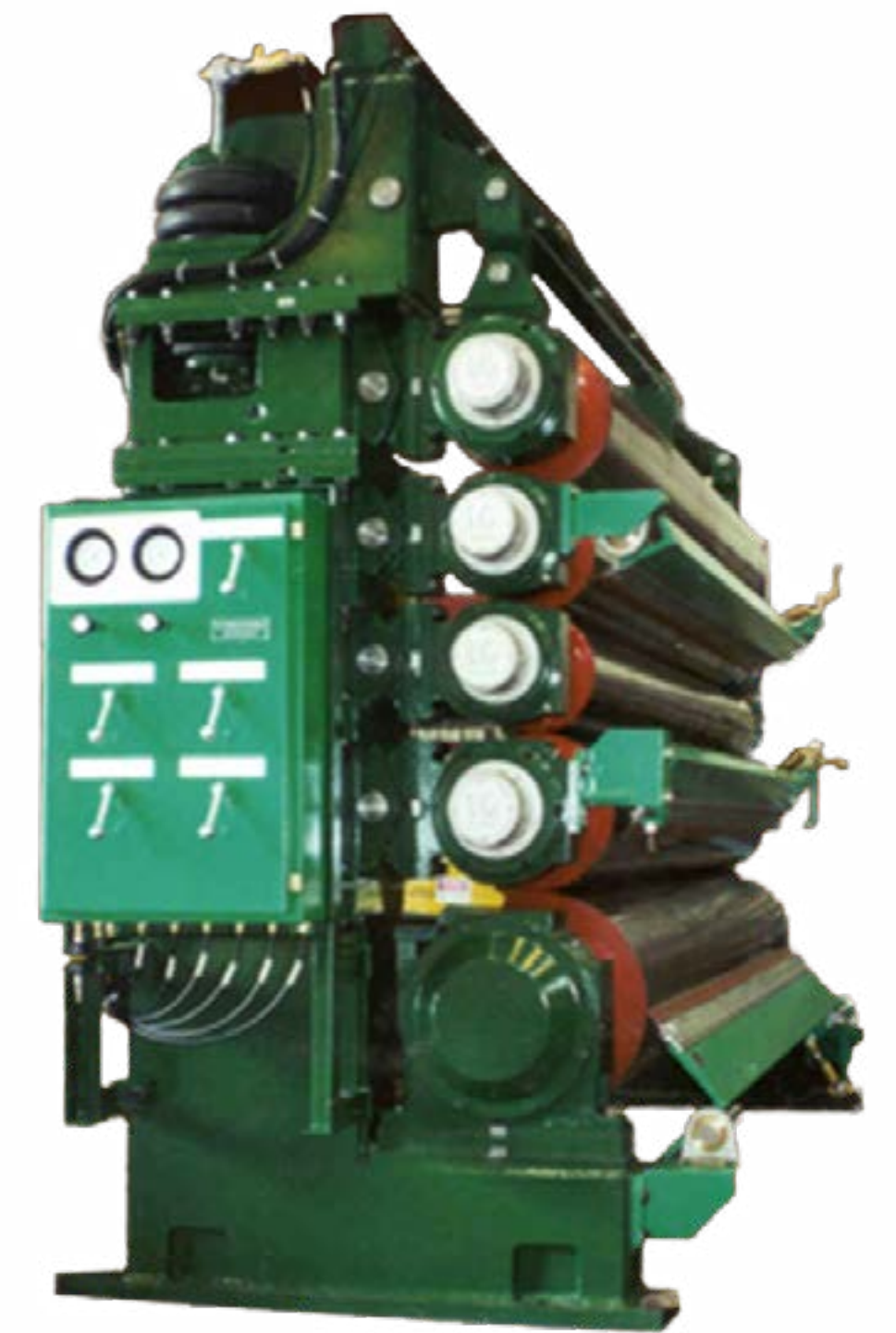
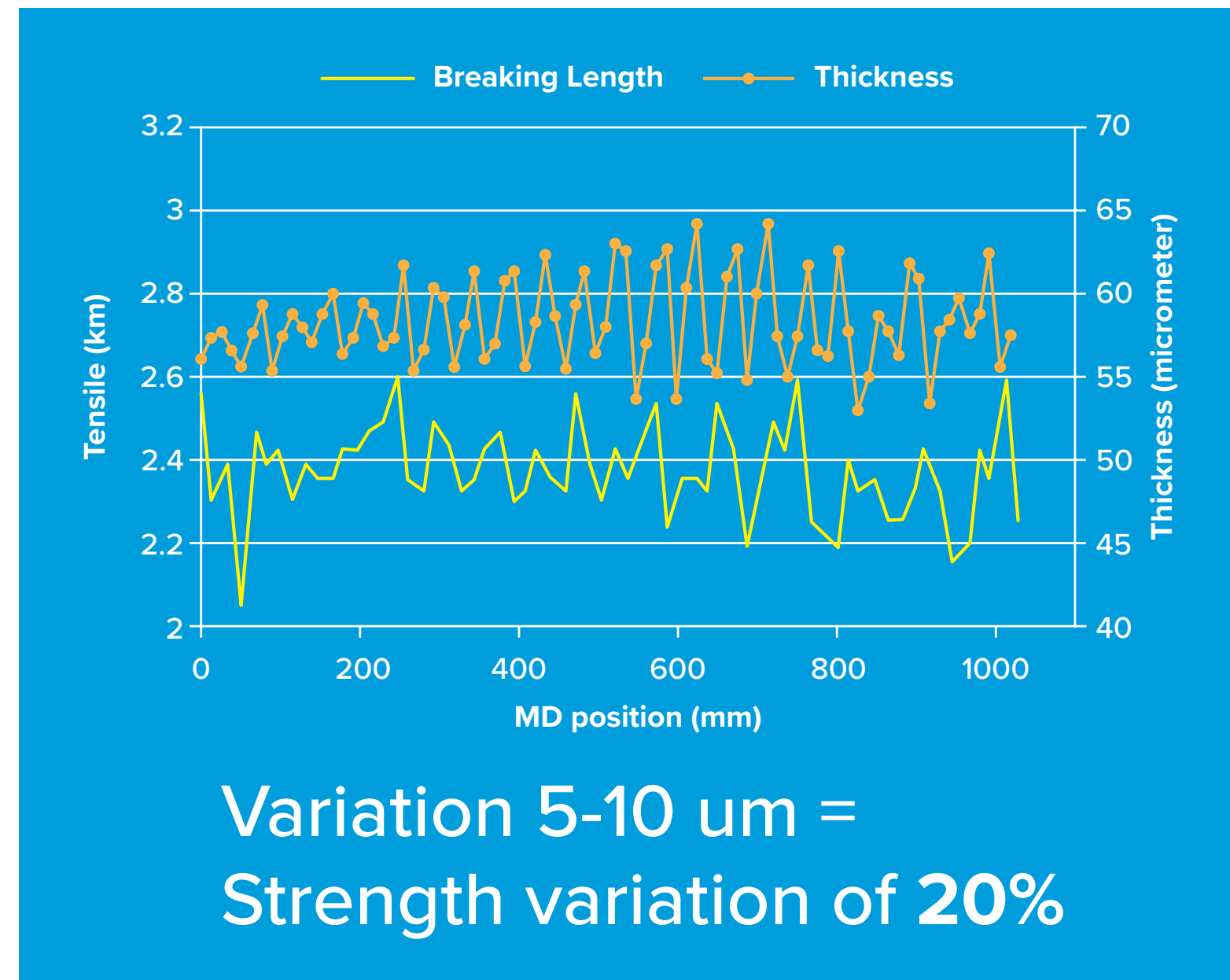
ROLL ROUNDNESS PERFORMANCE

ROLL ROUNDNESS PERFORMANCE = LOWER PROCESS VARIABILITY

- Machine direction variation or barring



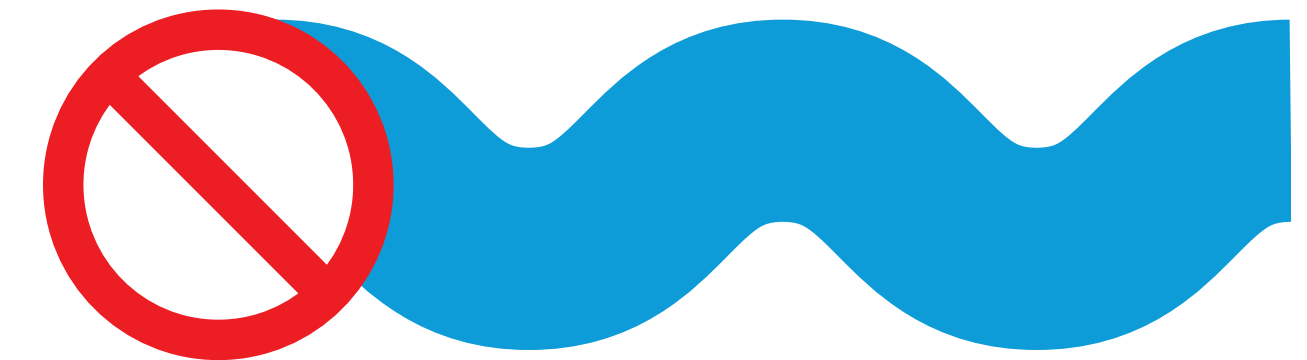
- This causes strength variation



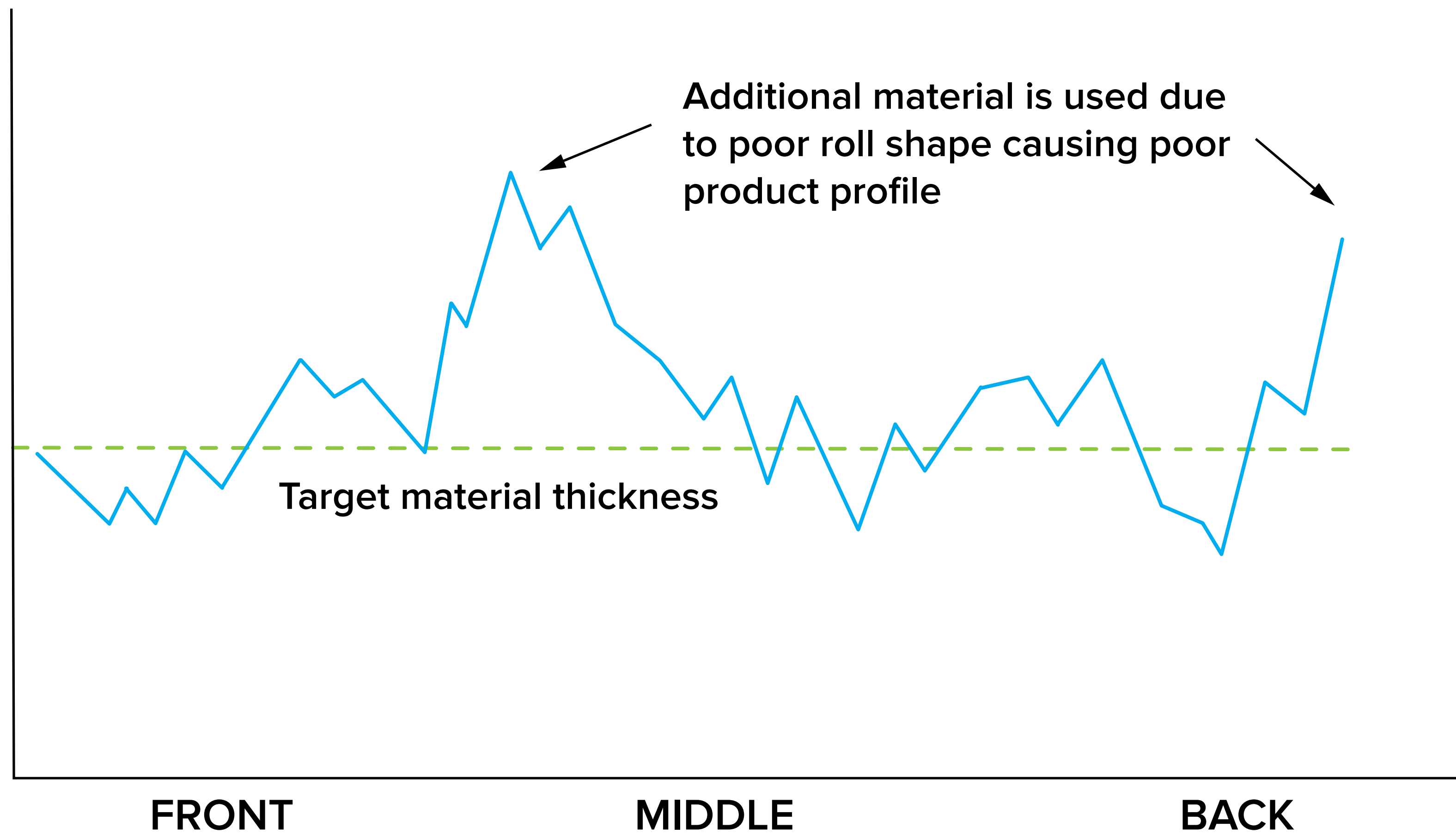
REDUCING VARIATION – ROLL SHAPE MATTERS

UNIFORM MATERIAL THICKNESS

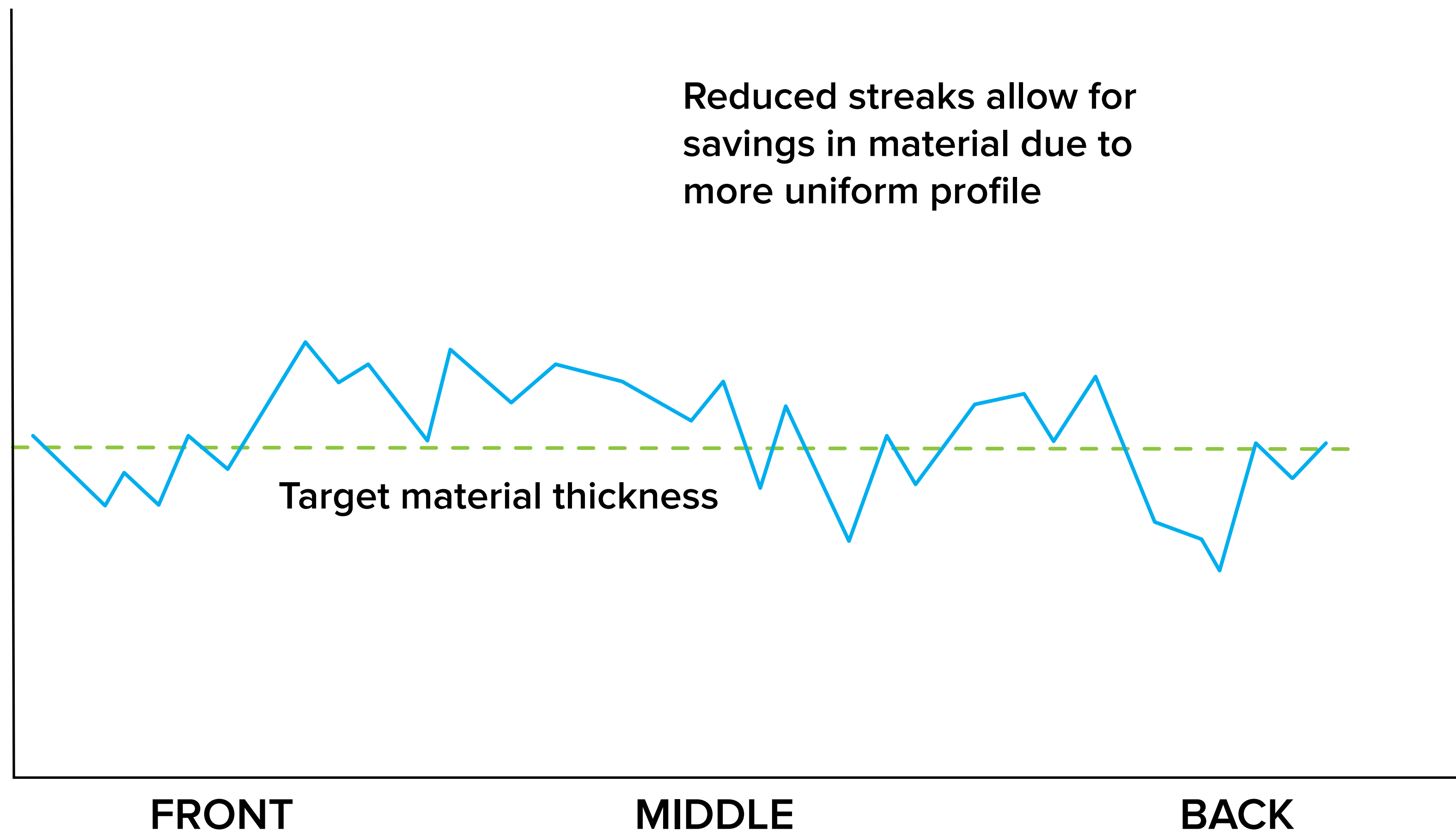
- Reduced material usage due to a thick or “wavy” sheet
- Reduced defects due to localized thinning in the material profile
- Improved end-product construction
 - Reduce defects caused by a deviation in the material thickness
 - Improved construction productivity with a more uniform material thickness



POOR ROLL SHAPE = LOST MATERIAL



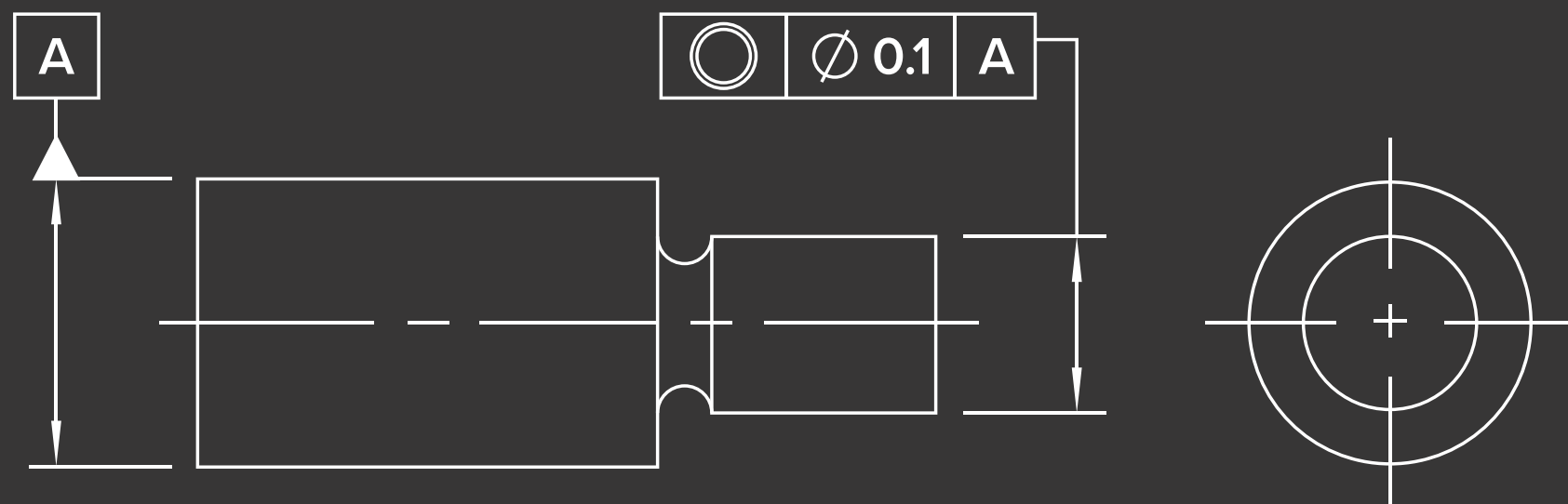
GOOD ROLL SHAPE = MATERIAL SAVINGS



REDUCING VARIATION – ROLL CONCENTRICITY MATTERS

CONCENTRICITY

Concentricity is a tolerance that controls the central axis of the referenced feature, to datum axis.



Concentricity must be attained to ensure roundness and shape.

Poor concentricity leads to material losses and shorter roll life.

Often overlooked.

SURFACE FINISH MATTERS

OUR TYPICAL TOLERANCE IS 5 UM.
10% OF OUR WORK HAS TOLERANCES LESS THAN 2.5 UM.

	Diameter	Face Length	Tolerances	Finish
Battery	400	420	2 um	0.05
Battery	320	280	2 um	0.05
Battery	445	305	1 um	0.025
DOD	880	990	1 um	0.1
Coating	365	610	1.3 um	0.15
Coating	305	460	1 um	0.15
DOD	320	280	2 um	0.05
Plastics	610	1730	1.5 um	0.15
Plastics	610	1820	1 um	0.05
Plastics	610	1830	2 um	0.1
Plastics	720	2690	2 um	0.02

COST OF IMPROPERLY GROUND ROLLS

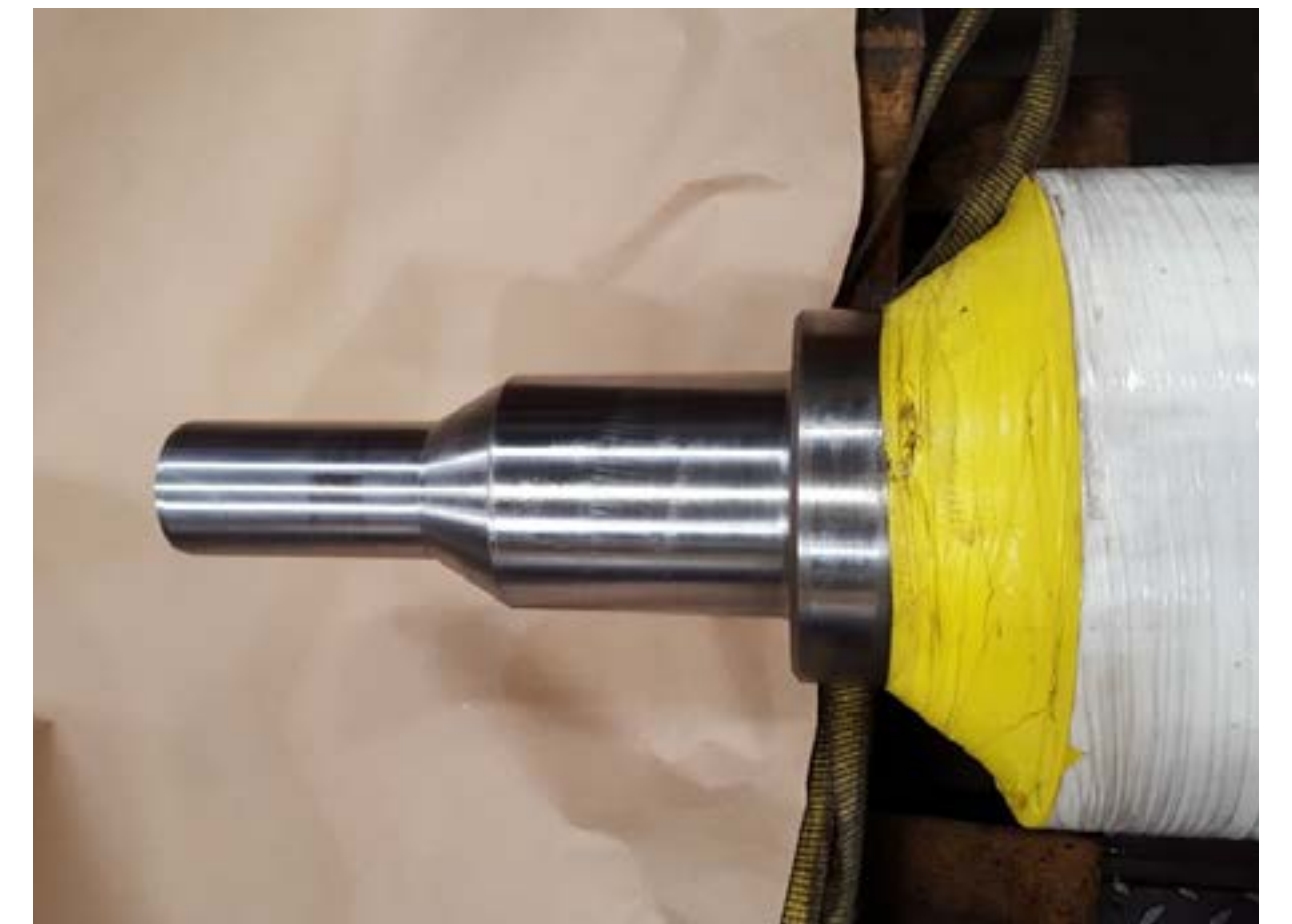
DESCRIPTION	VARIABLE	AMOUNT
PRG Grind Cost	\$20,000.00	
PRG Roll Life (months)	14.00	
Competitor's Grind Cost	\$10,000.00	
Competitor's Roll Life (months)	6.00	
Annual Savings due to Extended Roll Life		\$2,857.14
Production Hours Lost due to Improperly Ground Roll	2.00	
Lost Revenue Per Hour	\$3,500.00	
Total Lost Revenue due to Improperly Ground Roll		\$7,000.00
Scrap While Running Improperly Ground Roll (pounds)	50.00	
Cost per pound	\$50.00	
Total Scrap Cost due to Improperly Ground Roll		\$2,500.00
Revenue Per Hour at Normal Production Speed	\$3,500.00	
Percent Production Lost due to Degraded Speed	0.10	
Hours Run at Degraded Speed	24.00	
Revenue Lost Due to Degraded Speed		\$8,400.00
TOTAL COST OF IMPROPERLY GROUND ROLL		\$17,900.00

This total cost calculator tool will allow you to project the operational cost of an improperly ground roll and potential savings with an investment in PRG grinding services.

[CLICK HERE](#) to access your own fully functional calculator as a Microsoft Excel file. Simply insert your values within the green cells and your projected savings will be automatically calculated.

ROLL LIFE AND START-UP — MECHANICAL EXCELLENCE

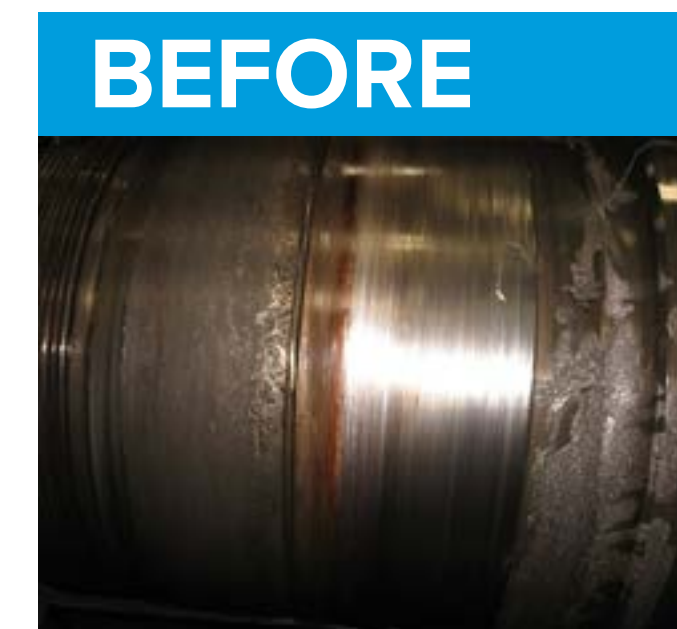
- Bearing Inspection
- Bearing Seat Grinding
- Bearing Replacement
- Complete Roll Inspection
- Complete Rebuilds/
Reconditioning
- Dynamic Balance
- Dynamic Leak Test
- Grinding
- Head Fit Repairs
- Journal Repairs
- NDT
- New Housings
- New Journals
- New Rolls
- Roll Modifications
- Vacuum Testing
of Suction Rolls



ROLL LIFE AND START-UP — MECHANICAL EXCELLENCE

PRECISION MAINTENANCE IS MORE THAN JUST PRECISION GRINDING

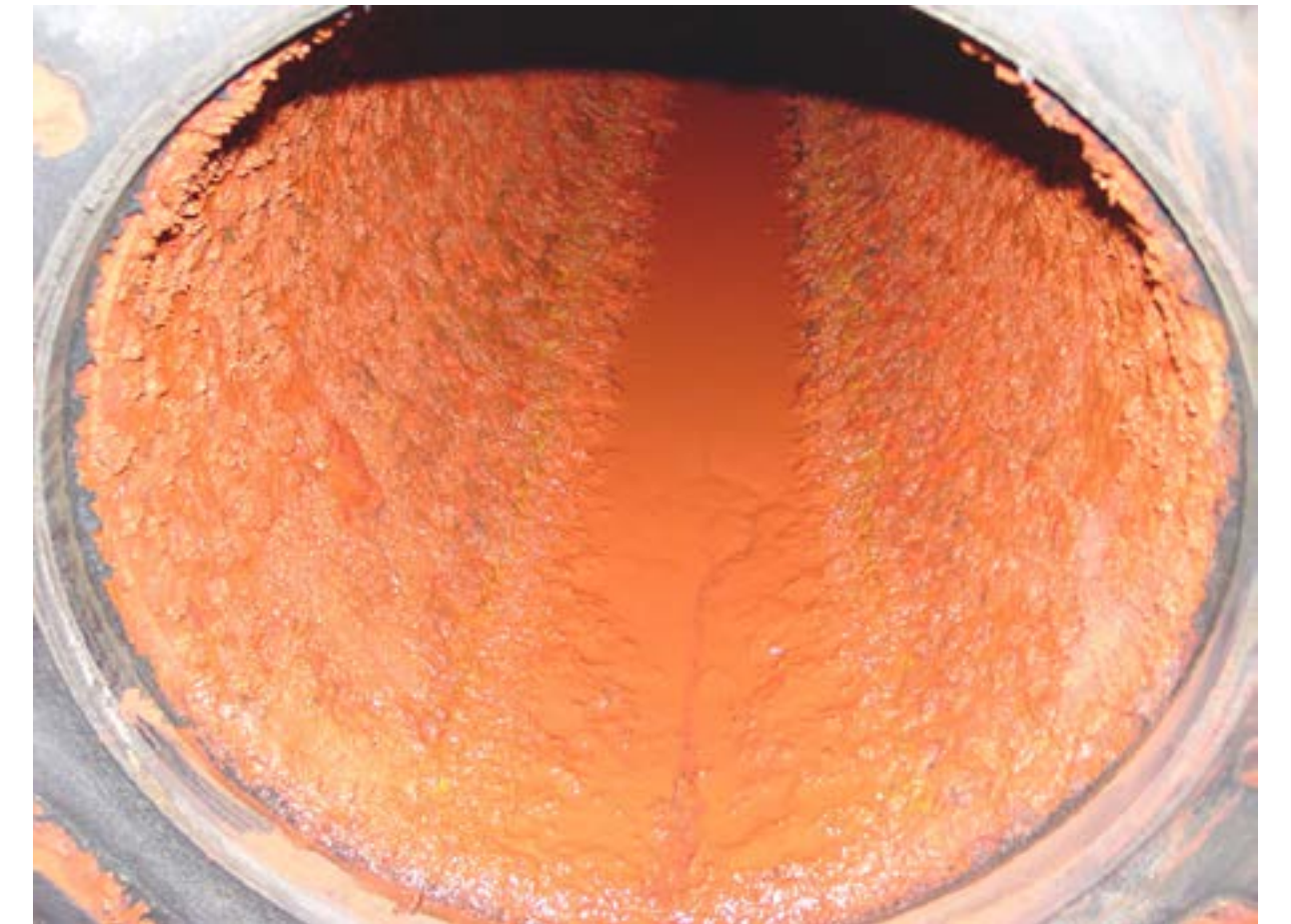
- Thorough inspection of bearings and housings
- Proper assembly of bearings and housings
- Replacing worn or damage bearings and bushings
- Journal repair and replacement
- On-time start-up and profitable production



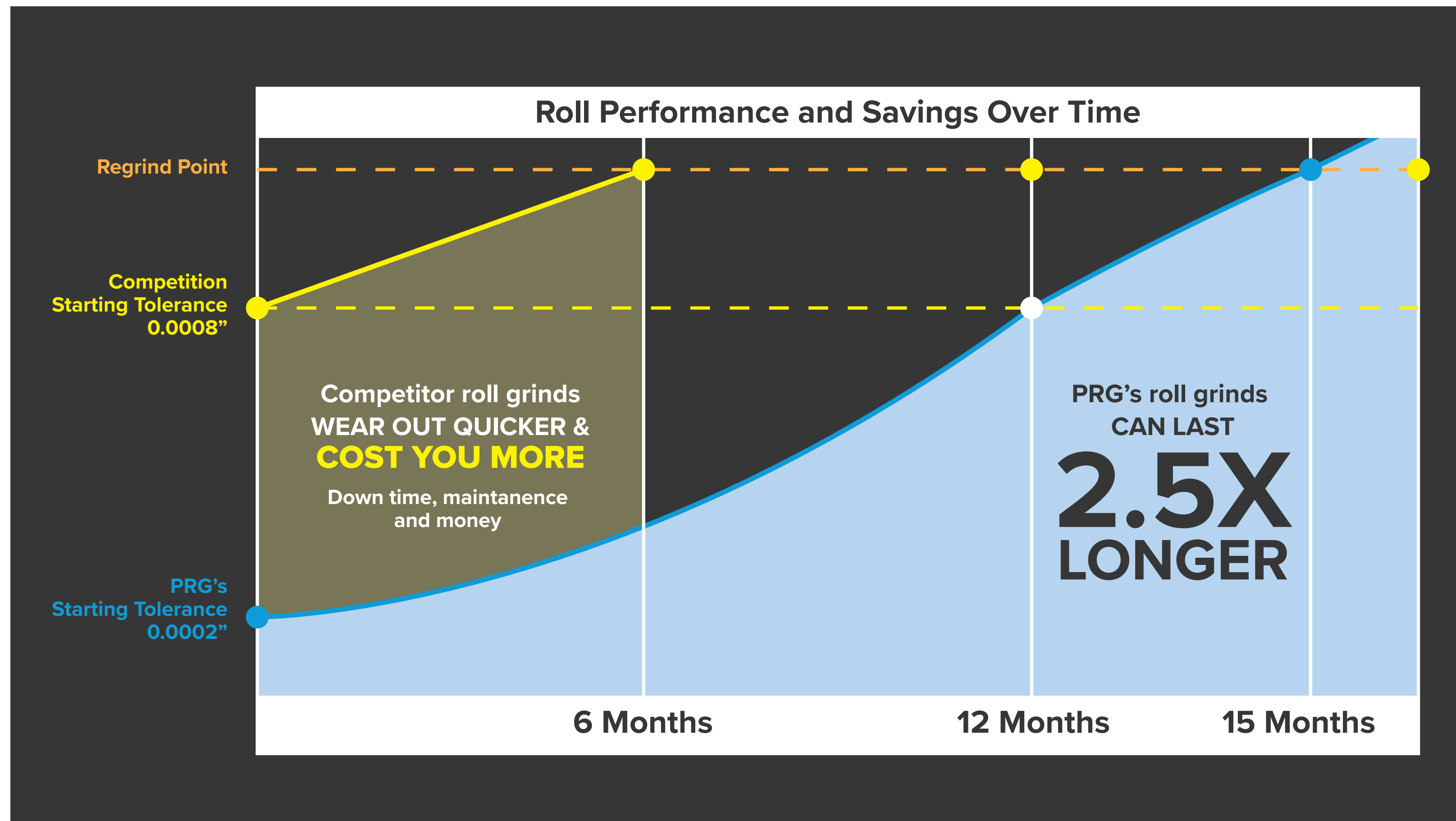
ROLL LIFE AND START-UP — MECHANICAL EXCELLENCE

UNIFORM ROLL SURFACE TEMPERATURE: TEMPERATURE TRANSFER AND ROLL TIR

- Temperature control
- Reduce sheet scorching and hot spots
- Prevent “thermal” runout (TIR) due to plugged passage
 - Can cause machine direction material variation
- Increase production speeds

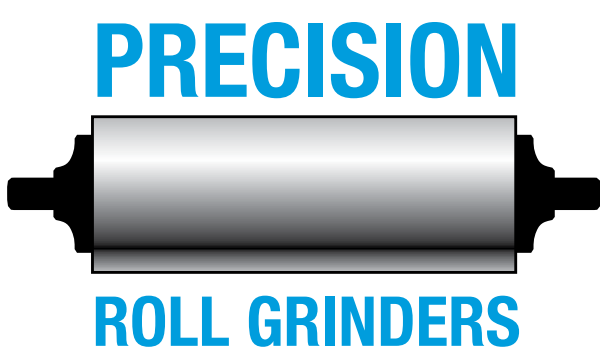


ROLL LIFE AND START-UP



ROLLS THAT
**START CLOSER
TO PERFECTLY
ROUND START
UP FASTER &
RUN LONGER!**


PRG'S PROMISE TO PROVIDE VALUE — CASE STUDY



50 Years

PRG has been the premier cylindrical shaft and roll grinding company in the Western hemisphere with over half a century of experience.

Your Production Line Could be Saving Money and Time with Increased Quality.



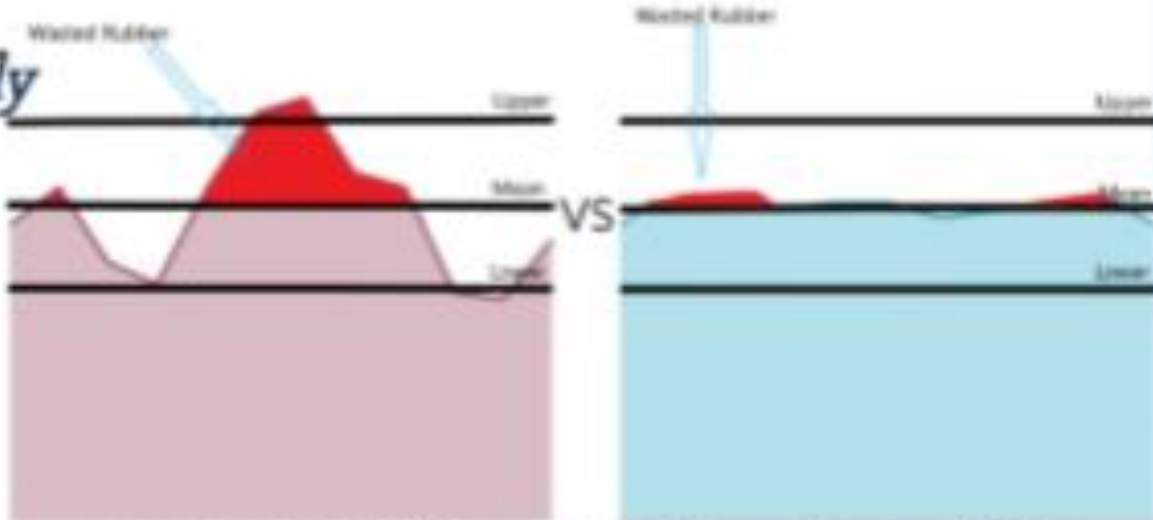
"PRG can grind to tolerances as small as 0.00002 or 20 millionths of an inch"

Your production line may be experiencing excessive material use, unplanned shutdowns, and even poor quality. Many of these problems could be improved or even avoided with something as simple as a high quality grind for your rolls.

PRG can significantly increase your material savings.

Sheet Profile (Standard Grind)


Sheet Profile (PRG Grind)



With the higher tolerances and quality at PRG, your rolls will always be ground to the proper specifications. The results that can be seen in your plant is a far superior rubber sheet profile. This leads to significant savings in material and more of your product falling within your desired tolerances.

See the other side to learn more

Tighter Tolerances Means Bigger Savings



Parameter	Value
W = Sheet Width (in)	48
S = Sheet Speed (FPM)	130
D = Days/Year in Operation	250
C = Avg. Cost in \$ per lb (Mat'l & Labor)	1.5
SG = Specific Gravity of Material	1.2
PPI = Calculated lbs/in	0.04332
T = Tolerance With Current Grinding Method (+/- inches)	0.0004
PRGT = Tolerance with PRG Grinding Method (+/- inches)	0.0002
Average Annual Savings	\$525,496

Calculation:
 $W(S^2)12 \text{ in}^3(D^2)1440 \text{ min/day} / (C^2 PPI^2)(T^2 - PRGT^2)50\%$

1/10,000 inch may sound unimportant in an industry that creates thousands of feet of product a day in large scale operations, but the impact on the material savings is tremendous. The model to the left demonstrates the possible savings that our tolerances can achieve. As small as only a 2/10,000 inch difference can result in over a half million dollars in savings every year!

We Do More Than Just Roll Grinds


- Brush Electroplating
- Calendar Rolls
- Coatings
- Chrome Plating
- Custom Grinding
- Descaling
- Dynamic Balancing
- Dynamic Leak Testing
- Heat Grinding
- Journal Repair
- Media Blasting

- Metal Industry Mill Rolls
- Metal Spraying
- Mirror Polishing
- New Chilled Iron Rolls and Shafts
- Regrooving Rubber and Polyurethane
- Roll Fabrication
- Section Roll Rebuilds
- Turning
- Variable Crown (VC) Roll Rebuilds


Want to Find Out More?

Contact Precision Roll Grinders to Get a Free Quote!

Proud to Partner With



Locations




- Allentown, PA
(610) 395-6966
6356 Chapmans Rd
- Lewisport, KY
(270) 295-4990
200 Industrial Park Rd

- Carrollton, GA
(770) 830-6323
400 Barnes Dr
- Texarkana, AR
(870) 216-4000
4000 E 19th St

Visit our Website Below

www.precisionrollgrinders.com

Follow Us On Social Media

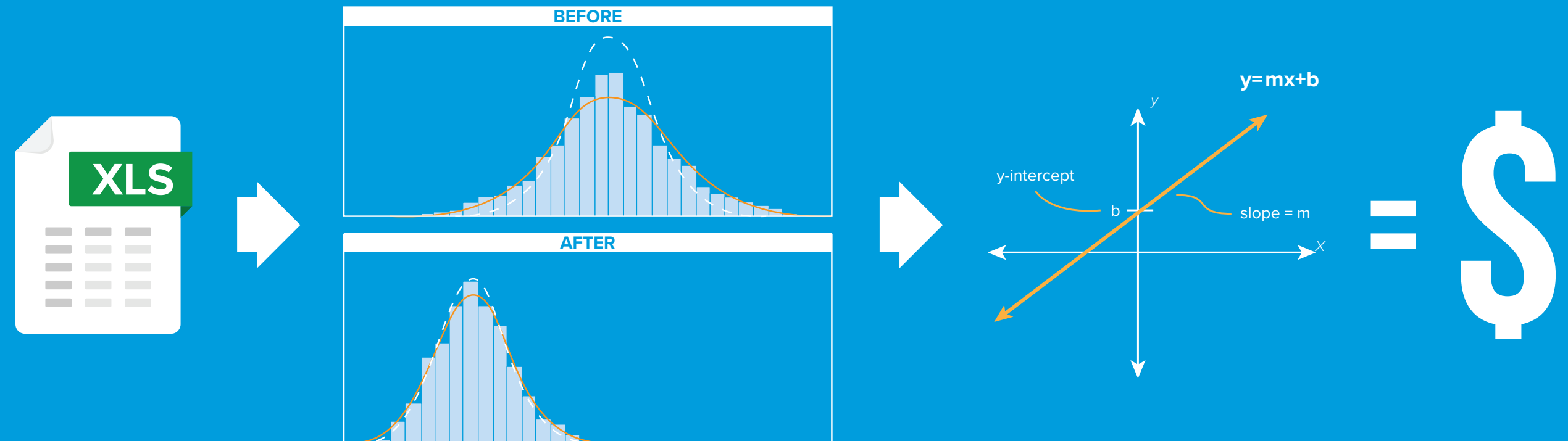


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LEWISPORT, KENTUCKY

(270) 295-4990

TEXARKANA, ARKANSAS

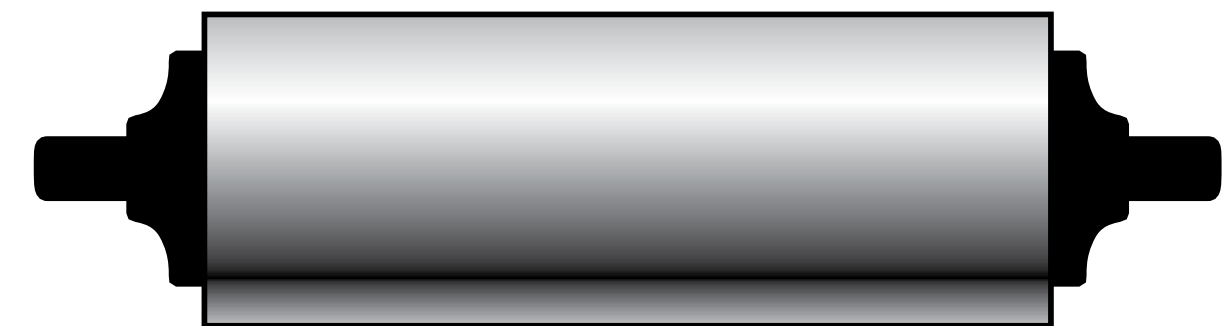
(870) 216-4000



THANK YOU FOR YOUR TIME.

QUESTIONS?

PRECISION



ROLL GRINDERS

Over 50 years of value-added service

precisionrollgrinders.com