



The Grinding Doc's

***Carbide
Master-Grinder
Clinic***

**Three days of high-tech, hardcore
grinding facts to make you a
tungsten-carbide master grinder.**

www.TheGrindingDoc.com

Schedule & Content

Day 1:

- Fundamentals: grit/bond/porosity, wheel grade, diamond types, bond types, rubbing/cutting/plowing, wheel wear, specific energy.
- Key Parameter 1: *Specific Material Removal Rate*.
- Key Parameter 2: *Grit Penetration Depth*, finding the “Sweet Spot” of the wheel.
- Increasing removal rates while keeping *Grit Penetration Depth Constant*.
- Trueing of diamond wheels.
- Sticking of diamond wheels. Correct speed, correct stick grit size.
- Loading: how to minimize it.
- Power Signal: using it to assess the grinding process.

Day 2:

- Cooling: pressure or velocity or flowrate? Measuring velocity.
- Cooling: Nozzle design.
- Cooling: Using *The Grinder’s Toolbox*® to design a high-performance cooling system.
- Cooling: Cleaning nozzle. Is it worth it? Common mistakes.
- Eccentricity in wheel mounting; Common mistakes.
- Electroplated-wheels: how they work; Common pitfalls.
- Power-monitoring demonstration on machine.
- Grit-Penetration Depth & MRR calculations; Temperature predictions in *The Grinder’s Toolbox*®
- Creep-feed flute grinding.
- Using *The Grinder’s Toolbox*® in creep-feed flute grinding.
- Cylindrical-plunge grinding: equivalent diameter, effect of workpiece RPM, sidewall.
- Using *The Grinder’s Toolbox*® in cylindrical-plunge grinding.
- The dreaded RPM Ratio as a cause of waviness; How to avoid it.
- Chatter: self-excited vs. forced; Determining source of chatter from speeds & feeds and distance between chatter marks; Once source determined, how to eliminate chatter.

Day 3:

- New developments in carbide grinding.
- Hybrid-bond wheels; how to use them correctly.
- Cylindrical-traverse grinding.
- Using *The Grinder’s Toolbox*® in cylindrical-traverse grinding.
- Cup-wheel grinding, typically for saw-blade grinding.
- Using *The Grinder’s Toolbox*® in cup-wheel grinding.
- Peel grinding.
- Using *The Grinder’s Toolbox*® in peel grinding.
- Reducing cycle times via Cycle Mapping & Power Monitoring.

Common grinding questions

Q: Why when I increase feedrates to bad things usually happen?

A: You're not keeping your *Grit Penetration Depth* constant while you increase feedrates. At *The Carbide Master-Grinder Clinic*, you'll learn how to do this. By keeping your *Grit Penetration Depth* constant, you'll be amazed at how far you can crank things up and get your cycle times down.

Q: Why is there so much disagreement in our shop on optimum wheel speed?

A: Because your operators are thinking in terms of wheel speed and not in terms of *Grinding Aggressiveness*. Once they start thinking *Aggressiveness*, everything in your shop will change.

Q: We tried the new hybrid-bond wheel and it didn't work. Why?

A: Because you ran it at your standard parameters. At the *Carbide Master-Grinder Clinic* you'll learn how to evaluate wheels with a proven scientific method – not just “sticking it on and seeing if it works.”

Q: We are wasting lots of time retrueing our wheels. Why?

A: Because you don't know the relationship between wheel loading and wheel sticking and how to stick correctly. At the *Carbide Master-Grinder Clinic*, you'll learn exactly when and how to stick your wheels to maximize wheel life.

Q: Some of our operators run our cylindrical grinders at 40 thou a minute and some run at 80 thou a minute. How do we know what speed is best?

A: You're thinking in terms of feedrate and not *Specific Material Removal Rate*. At the *Carbide Master-Grinder Clinic*, you'll learn this key parameter – and use it to reduce cycle times.

Q: I think we're not pushing things as hard as we could. Is that right?

A: Probably, and it's because your operators are trying to avoid burn and wheel wear and always play it safe by keeping feedrates low. At the *Carbide Master-Grinder Clinic*, you'll learn how to calculate the optimum *Grit Penetration Depth* for low wheel wear and low temperatures and how to lock those in for any job on that wheel – and then start increasing feedrates.

The Grinder's Toolbox®: Each attendee receives *The Grinder's Toolbox*, a program for calculating optimum grinding, cooling and sticking parameters.

The Book of Grinding®: Each attendee receives *The Book of Grinding*, 2500 pages of practical grinding information they will use long after the course is over.

Upcoming Courses & Cost

Visit www.TheGrindingDoc.com

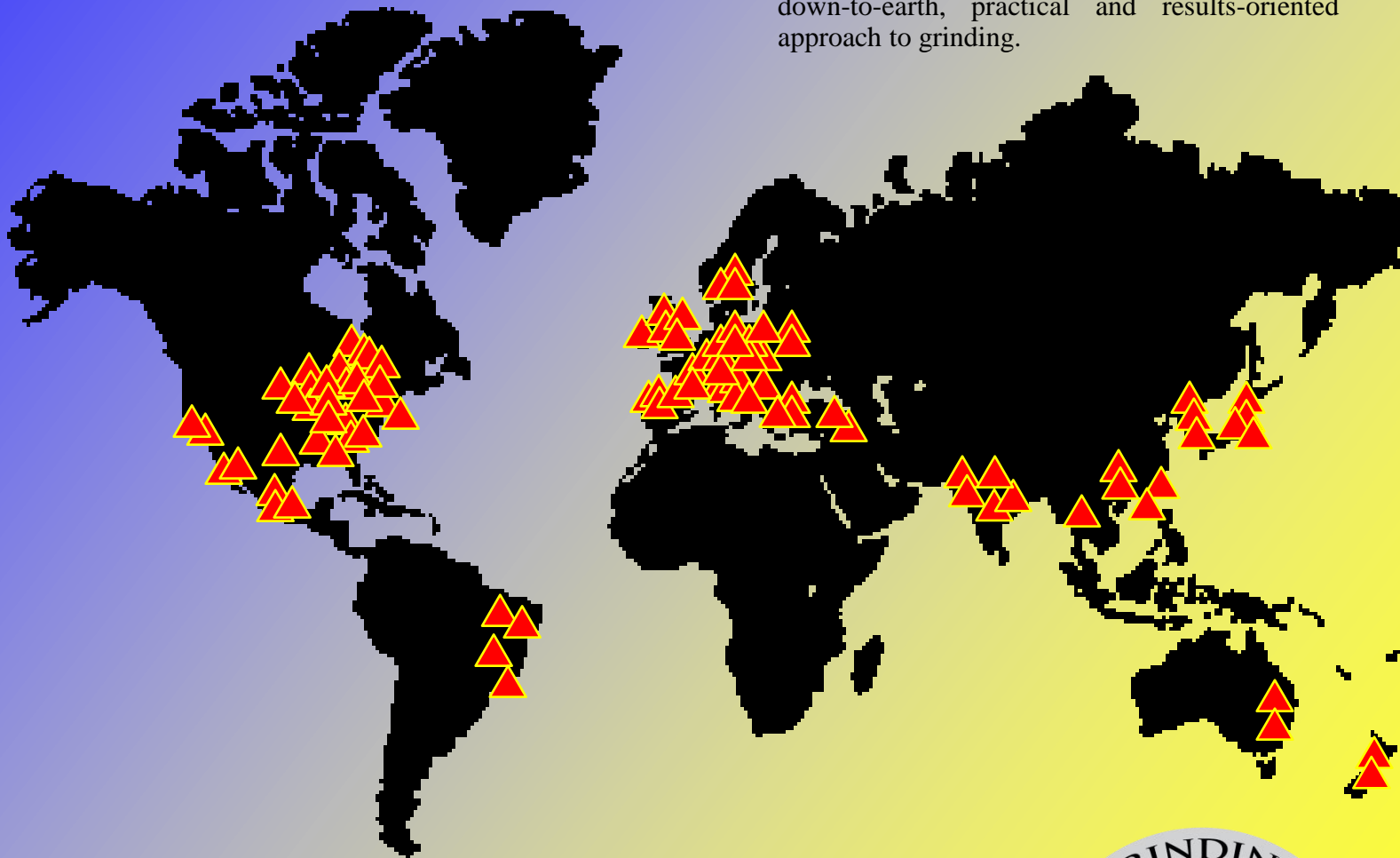
1. All of *The Grinding Doc's* clinics and seminars are non-promotional. The host gets no “air time” to promote their products. However, attendees are welcome to discuss with host representatives during coffee breaks and meals.
2. Before reduced-rate deadline.
3. Significant discounts for companies sending more than one person.
4. *Grindometer* given to attendee on first day of clinic. \$2,200 price reduction compared to *Grindometer* purchased separately.

About *The Grinding Doc*



The Grinding Doc: Dr. Jeffrey Badger has degrees in Mechanical Engineering from The University of Texas at Austin, Pennsylvania State University and Trinity College in Dublin, Ireland. He is known as “The Grinding Doc” from his question/answer column in *Cutting Tool Engineering*. He works independently as an expert consultant in grinding.

Jeff Badger has worked in grinding facilities around the world and brings a no-nonsense, down-to-earth, practical and results-oriented approach to grinding.



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