



*World Leader in
Superabrasive
Finishing Systems*

Superabrasive Finishing Systems for Medical Instruments & Orthopedic Implants

Quality
Precision
Ingenuity

Electrogrip® Diamond and CBN Grinding Wheels

Engis diamond and CBN wheels maintain precise surface integrity on a wide variety of medical components including prosthetics, sharps, surgical tools and dental implants. We also design specially processed grinding wheels for dental burr manufacturing. Applications for Electrogrip Grinding Wheels include:

- Grinding needles, sharps and blades
- Form grinding prosthetics, hip joints and knee slots
- Grinding flex tube endoscope devices
- Grinding hip stems and in-vitro diagnostic systems
- Forming bone screws

Hyprez® Precision Flat and Radial Lapping Systems

We build the machines, complimented with the required accessories, and formulate slurries and compounds with one goal in mind; to deliver a total system with the capabilities you need for lapping and polishing. Our Process Development Labs partner with our customers to maximize productivity and minimize costs. Applications for flat and radial lapping include:

- Polishing medical cases on V.A.D
- Precision finishing of ceramic blood valves
- Lapping of transducers for ultrasound equipment
- Polishing injector pressure valves for analytical instruments and in-vitro diagnostic systems
- Lapping of titanium batteries
- Lapping and polishing of alumina implantable devices

Engis Single-Pass Bore Finishing Systems

Utilizing Engis single-pass super-abrasive bore finishing technology, extremely tight tolerances on the inside diameter of medical components can be held reliably and consistently at the lowest possible cost per finished piece. Engis single-pass technology is used in the finishing of sleeve bearings on prosthetic knees and can be adapted to suit a wide variety of high-precision finishing applications.

DiaMold® Hand Polishing Tools and Supplies

Many orthopedic implants require hand polishing to bring them to the required surface finish. As a single source for all of your hand polishing needs, Engis recognizes that polishing is a system. We offer a full range of high quality rotary and reciprocating tools as well as machine accessories and consumables.

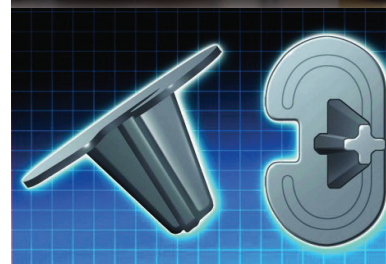
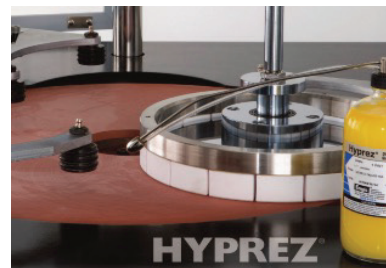
CASE STUDY #1

PART	Surgical Needles
MATERIAL	Stainless Steel
REQUIREMENT	A major medical instrument manufacturer needed to grind surgical needles so that no visible scratches or gouges appeared at 15X magnification.
PROCESS	Using a special micron sized Engis Electrogrip CBN plated wheel, the customer roughed and finish-ground the needles on a specialized machine. A light oil was applied during the grind.
RESULTS	The Electrogrip CBN wheel not only produced parts that surpassed the quality requirements, but it also exceeded expectations in terms of productivity and cost. The needles showed no scratches or gouges at 20X magnification.



CASE STUDY #2

PART	Medical Implant
MATERIAL	Cobalt Alloy
REQUIREMENT	Customer needed to clean part surface 100% producing a scratch-free finish and flatness of $0.0005''$. The processing was currently done by hand but with inconsistent results and very low throughput.
PROCESS	An Engis 24" single-side lapping machine was used in a two-step process using Hyprez composite/diamond and a final pad polish with colloidal silica.
RESULTS	The process achieved a visually scratch-free surface finish with flatness of two lightbands ($0.000023''$). Production increased beyond the required 12 per hour with significantly less operator dependency.



CASE STUDY #3

PART	Prosthetic Foot
MATERIAL	Bronze Bushings
REQUIREMENT	Extremely close tolerance fit between the pins and two bronze bushings which pivot the ankle. In order for the foot to function correctly these elements must move smoothly together, creating neither friction or play, a difficult challenge.
PROCESS	Honing 8mm and 10mm holes
RESULTS	The Engis Single-Pass Bore Finishing process finished the double bronze bushings to within a tolerance of 0.005mm without clogging or loading of the tools. The process was repeatable and reliable in runs of hundreds of parts with very little adjusting of the tools.

