

CRAFTS TECHNOLOGY

COMPOSITE CUTTING SOLUTIONS (IN PARTNERSHIP WITH FIVES)

MAY 24TH, 2021

JEFFREY ROBERTS – VICE PRESIDENT OF ENGINEERING



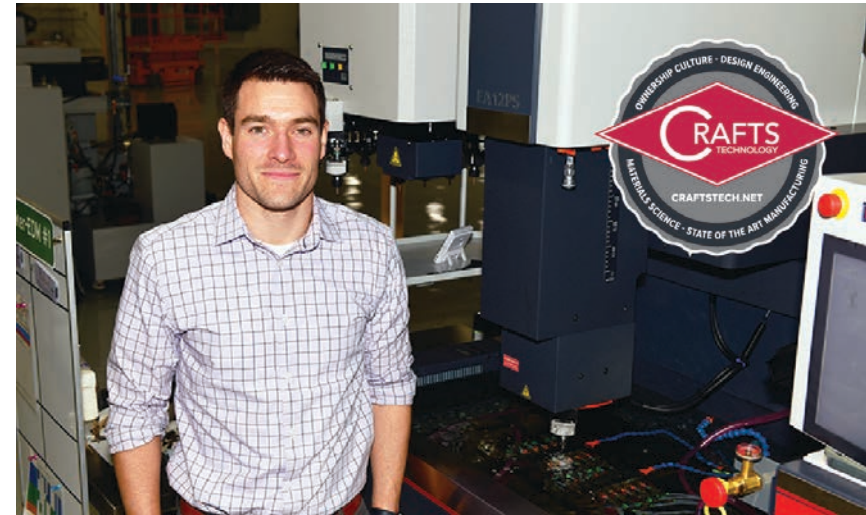
A
HYPERION
MATERIALS &
TECHNOLOGIES
COMPANY



PRESENTER

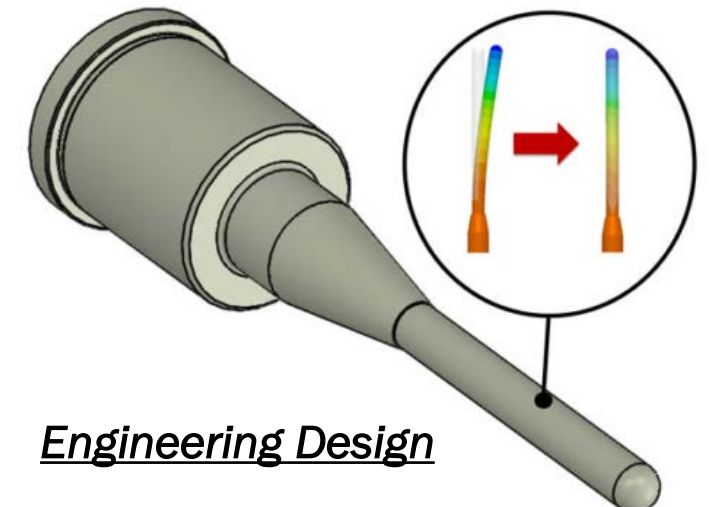
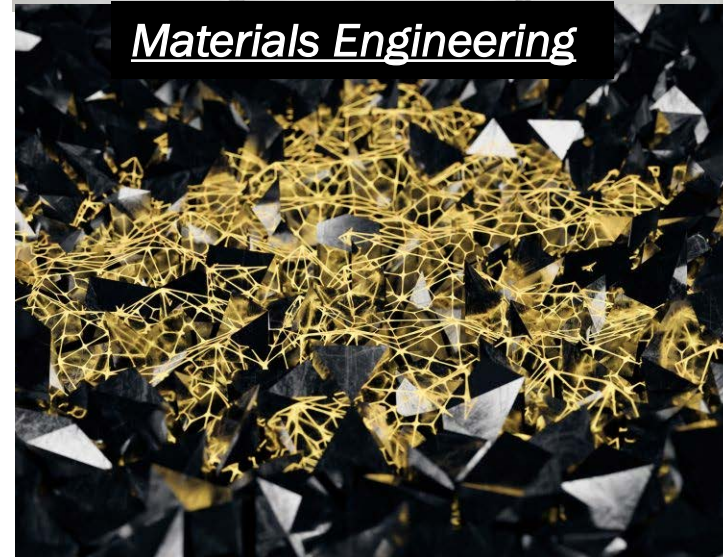
Jeffrey Roberts
Vice President of Engineering

- Masters of Engineering - Purdue University
 - Material Science & Business Management
- Bachelors of Mechanical Engineering - University of Iowa
- 10 Years with Crafts Technology
- 4 Patents / Provisional Patents
- 2 Daughters – 3 Years & 2 Years
- Enjoys Running , Golf , Wood Working , Whiskey



COMPANY OVERVIEW

- Our vision is to deliver the most advanced systems & tooling that continually enhance the utilization & performance of industrial equipment.
- Values
 - Transparency
 - Innovation
 - Integrity
 - Continuous Improvement
 - Work Ethic
 - Teamwork
 - Accountability



COMPANY OVERVIEW



A
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TECHNOLOGIES
COMPANY

- Roots dating back to 1860, Crafts Technology has a longstanding history of technology & manufacturing innovation.
- Company has evolved into a market leading manufacturer of tooling & components from super-hard materials, including Tungsten Carbide, Advanced Ceramics, and PCD (Polycrystalline Diamond)
- Subject Matter Expertise from Engineering, Manufacturing, and Materials Engineering offers a unique mix of value add to end customers.

Key Facts

- Founded: 1893
- Headquarters: Elk Grove Village, IL
- Ownership: Hyperion Materials & Technologies
- Key Industries: Fluid Dispensing, Aerospace, Automotive, Wire & Spring, Telecomm, Non-Woven

Products & Technology

- Knives, Anvils, Cutters, Slitters
- Modular Countersink Drilling
- Nozzles & Needles
- AFP / ATL Blades
- Tungsten Carbide Core Pins for Injection Molding
- Micro Manufacturing
- Super-Hard Wear Parts



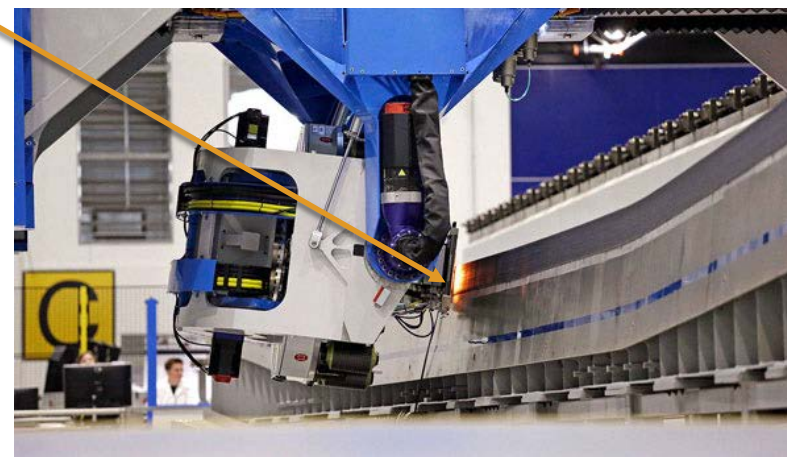
SOLUTIONS

- Laser Focused on The Cutting of Composite Pieces and Structures
- Countersink Drilling
- Fiber Layup – ATL & AFP

Modular
Countersink



AFP / ATL
Cutter



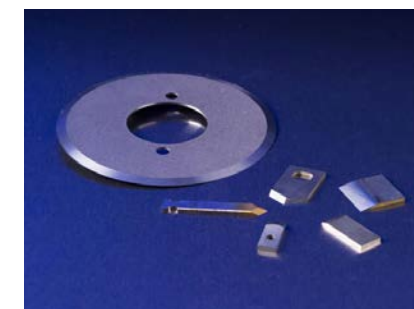
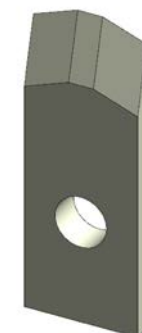
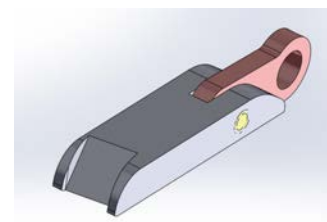
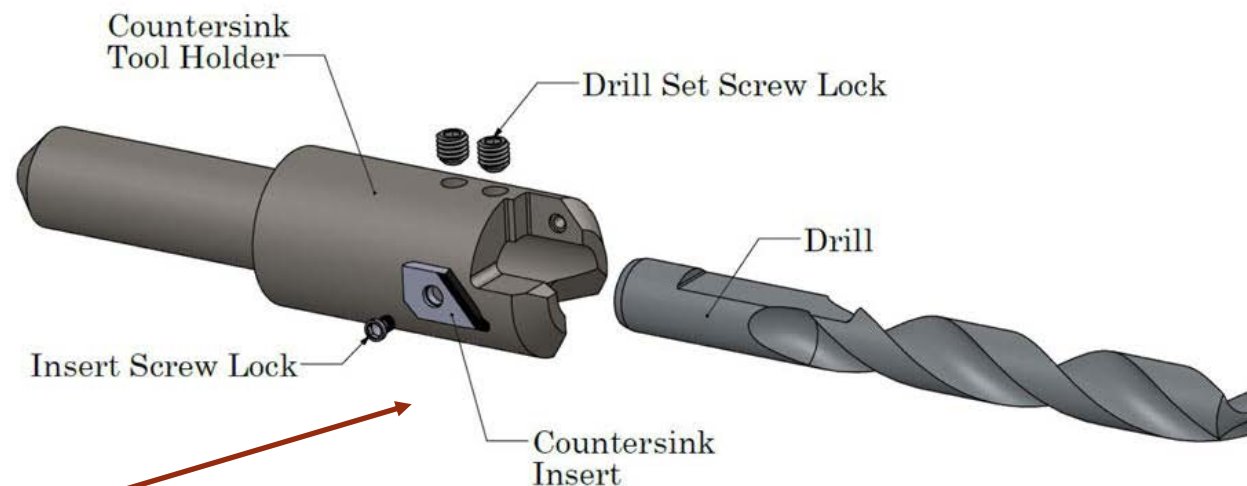
Modular
Countersink



SOLUTIONS

■ Modular Countersink Drill Holders

- Straight Shank Drills
- Coolant Fed Design (Fit Any Tool Holding)
- Countersink Inserts (PCD or WC)
 - Custom forms & sizes
 - 4x life of Carbide Coated Drills
 - Regrind Program
- Applications
 - Major Composite Aircrafts



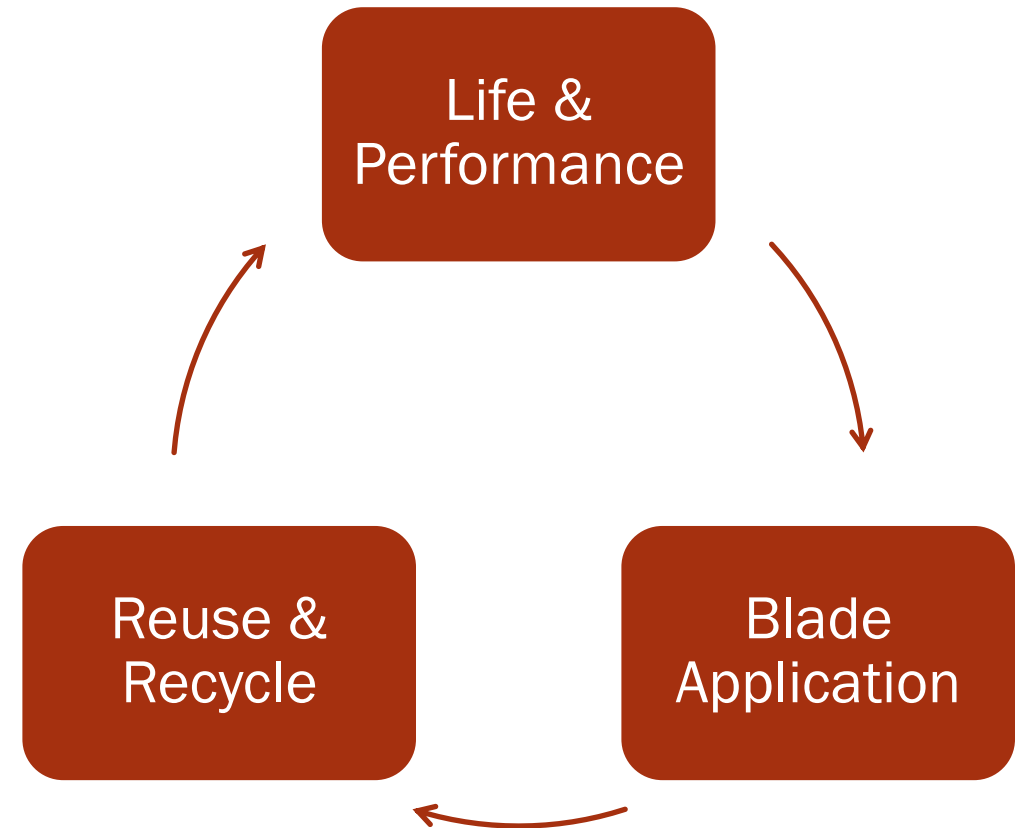
■ Composite Layup Blades (AFP/ATL)

- Reverse Engineered Aftermarket & Fives OEM
- Regrind Program
- Applications
 - All major OEM composite layup machines



STRATEGY

- Optimize Costs to Produce Composites Structures
Through the Cutting Application
 - Systematic Enhancement of Life & Performance
 - Blade Usage
 - Erase - Cutter Errors that Lead to Poor Part Quality
 - Erase - Cutter Changeout Downtime
 - Reuse & Recycle
 - Sustainability
 - Further Reduce Cost per Cut

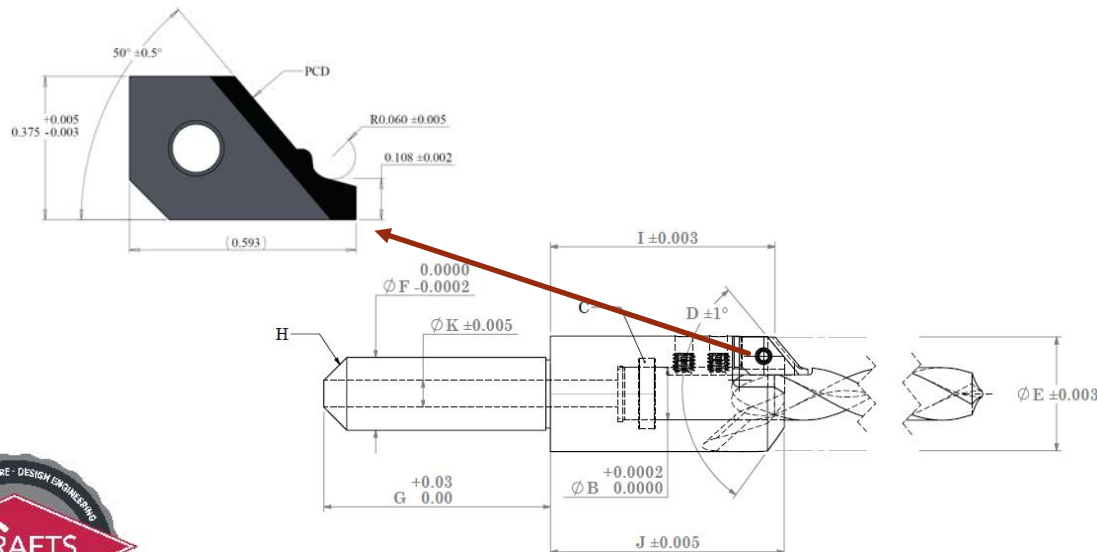


LIFE & PERFORMANCE



Life & Performance

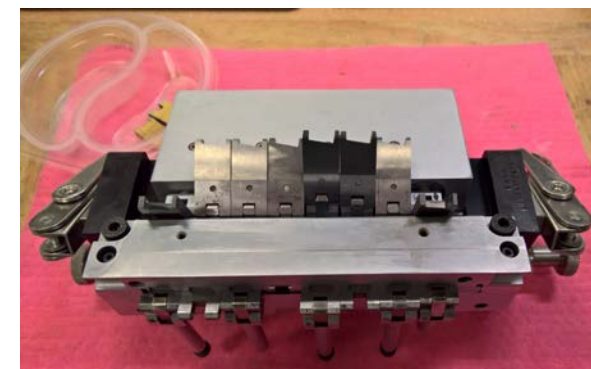
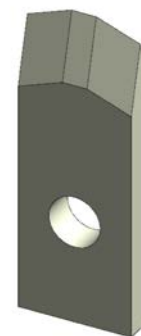
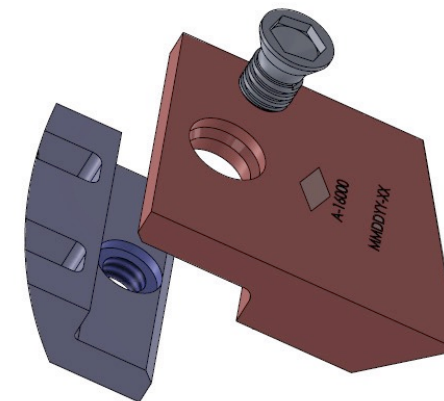
- Reduce Cut Quality Issues
- Reduce Cost per Cut
- Design for Manufacturability
 - Reduce Cost vs OEM alternatives
- Design Considerations
 - Cutting Edge Geometry
 - Holistic Cutting-Edge Considerations – RPM, Actuation, Surface Finish, Anvil Design, etc.
 - Material Choice – PCD, WC, Coating
 - Blade Holding Design



BLADE APPLICATION

Blade Application

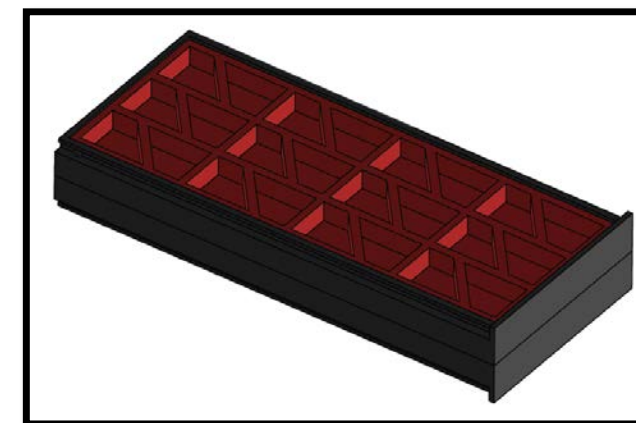
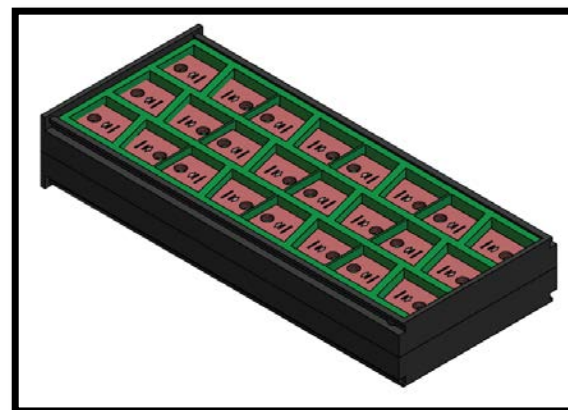
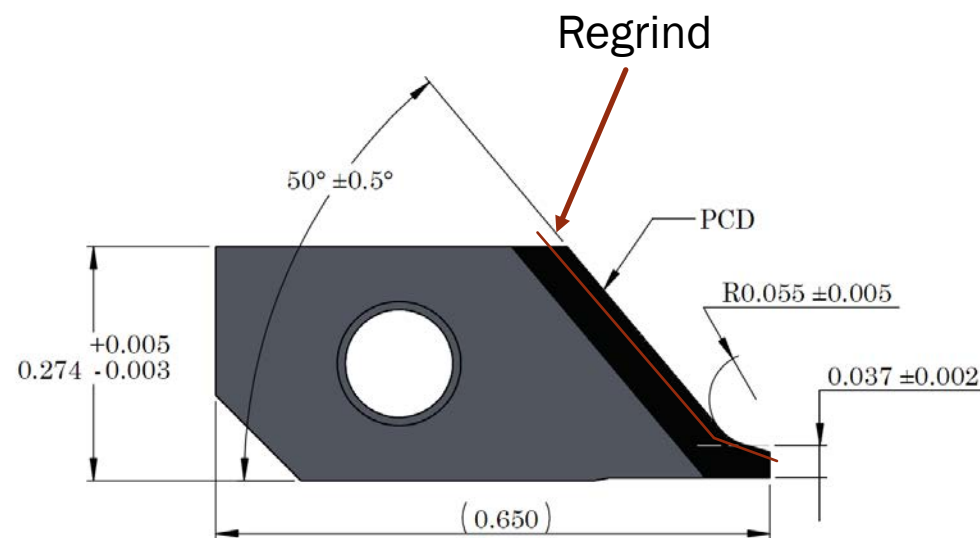
- Changeout Ergonomics
 - Setup / Touch-Off
 - Reduce Downtime
 - Align life with Blade Changeout or CCR Changeout Intervals
 - Tool Crib Handling



REGRIND & RECYCLE

Regrind &
Recycle

- Minimum regrind length
- Tool Crib Return Program
 - Visual Management Packaging
 - Return & Reuse w/o Chipping



CASE STUDY #1

Countersink Drilling – Composite Fuselage Section w/ Al Stack



Modular Countersink vs Integral

WC Coated Integral Drill (Startup Cost = \$0)

- Life = 30,000 holes
- Cost = \$1,200 each

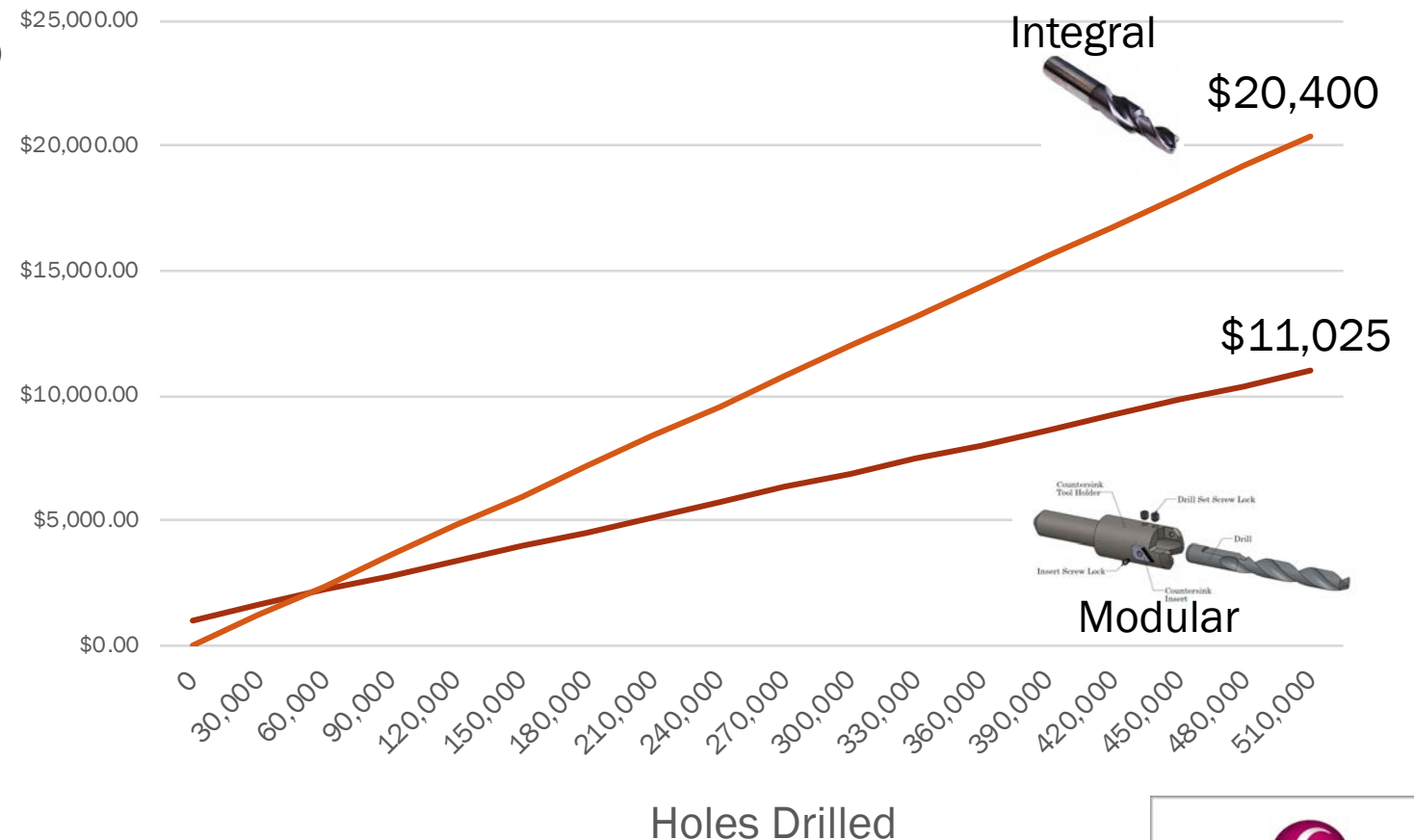
Modular (Startup Cost = \$1,000)

WC Coated Drill

- Life = 30,000 holes
- Cost = \$500 each

PCD Insert

- Life = 90,000 holes
- Cost = \$125 each
- Regrind = \$75 each (3x)



CASE STUDY #2

- AFP Cutting – Composite Fuselage
 - Replaceable AFP Blade vs Brazen AFP Blade
 - 32 Blades / Tow Lanes in CCR
 - Brazen AFP Blade
 - Life = 25,000 Cuts
 - Cost = \$125 each
 - Regrind = \$40 each (3x)
 - Replaceable AFP Blade Modular
 - Life = 35,000 Cuts
 - Cost = \$65 each
 - Regrind = \$40 each (3x)
 - Base
 - Life = Theoretical Infinite (no wear)
 - Cost = \$125 each

Barrel = 27k -31k Cuts
@ 35k Blade Life Equates
to 0 Downtime

