

# INDEXABLE INSERTS—WORLD MARKETS, APPLICATIONS & COMPETITION: 2006-2011 ANALYSIS AND FORECASTS

PUBLISHED FEBRUARY 2006: BRAND NEW 2006-2011 REPORT!!

WITHIN THIS  
REPORT YOU  
WILL FIND...

#### ANALYSIS OF MARKET TRENDS

- What forces currently drive the inserts industry?
- How will technologies such as high-speed machining & hard turning affect future market demand?
- Developing commodity markets
- Machining Productivity and Cost Analyses
- Affects from the Machine Tools and Coatings Industries

#### DATA USEFUL IN:

- Market sizing (\$MM) by product type: 2006-2011
- Developing Market Strategies
- Assessing End-User Needs

- Finding New Regional Markets
- Analyzing Distribution
- Analyzing the Competition
- Creating Forecast Models
- Presentations to Sales & Marketing Teams

#### WORLDWIDE MARKET STATISTICS

- Global demand (\$MM) by country: 2006-2011
- Shifts in Market Dynamics
- Developing Markets: China, Asia, Eastern Europe...

#### WORLD COMPETITIVE ENVIRONMENT

- Market Share (\$MM) by Product Type
- Marketing Strategies
- Company Background • Corporate Families
- Trends and Supplier Objectives
- New Market Entrants

## SUMMARY OF REPORT CONTENTS

#### TOOL TYPE

- Indexable Inserts

#### INSERT GRADES COVERED

- Cemented (Tungsten) Carbides
- Micrograin Carbide
- Cermets
- Ceramics
- cBN/PcBN
- Diamond Tools

#### APPLICATIONS

- Turning—ISO Turning, Parting
- Milling—Facing, Slotting/Slitting,
- Boring, Plunging, Contouring
- Profiling • Threading
- Drilling—Standard Depth, Deep Hole
- Grooving • Hobbing
- Tapping • Sawing
- Micromachining
- Specialty Applications
- Heavy Duty • Roughing • Finishing

#### END-USER INDUSTRIES

- Aerospace
- Automotive
- Chemical Processing
- Communications
- Construction
- Defense/Military • Die & Mold
- Electronic • General Machining
- Medical/Research
- Oil & Gas
- Paper & Pulp Industry
- Power Generation

#### WORKPIECE MATERIALS

- Cast Irons • Aluminum
- Carbon Steels • Stainless Steels
- High-Temperature/Super Alloys
- Hardened Materials
- Non-Ferrous Metals

#### COATINGS

- Uncoated • TiN • TiCN • TiAlN
- AlTiN • Al<sub>2</sub>O<sub>3</sub>
- CrN • ZrN
- Diamond Thin Film • DLC

#### GEOMETRIES

- Circular • Diamond • Triangle • Trigon
- Square • Rectangular
- Rhombic/Parallelogram
- Pentagon • Hex • Octagon
- Ball Nose Mill • Radius Tip
- Chamfer Tip • Dogbone
- Positive vs. Negative

#### GEOGRAPHIC COVERAGE

The global insert market is broken down by each of the following regional markets:

- China • United States
- Japan • Korea • Taiwan
- Germany • Italy • France
- United Kingdom • Brazil • Switzerland
- Other EU • Other NAFTA
- Other Europe • Other Asia/Pacific
- Other Latin America • Rest of World

#### TIMEFRAME

- 2005 base year • Forecasts: 2006-2011

#### DISTRIBUTION CHANNELS

- Distribution Channels: international, national, regional, local
- Producer shipments (MM) by channel
- Distributor markups
- Discounting practices
- Changes in distribution channels & supply chain

#### END-USER ANALYSIS

- End-User Industry Growth, Trends and Analysis: Automotive, Aerospace, Electronics, Medical, Military/Defense...
- What end-users look for—criteria for vendor selection
- World Market by Application
- Purchasing trends by application
- Product Sophistication
- Technological Innovation

#### TECHNOLOGY AND PRODUCT DEVELOPMENT

- New Technologies Market Impact
- Standards and Specifications
- Product Introductions • Product Comparisons
- Pricing by product type

#### FUTURE OUTLOOK

- Product Forecasts thru 2011
- Impact on market growth and development
- Technological Advances • Advances in R&D
- High-growth Markets: 2006-2011

#### WHO SHOULD USE THIS REPORT:

- Manufacturers & End-Users
- Raw Materials Suppliers
- Investment Bankers • Venture Capitalists
- Distributors
- Manufacturer's Representatives
- Government Agencies
- Marketing & Sales Teams
- Internal Research Departments

## SECTION ONE: TECHNOLOGY OVERVIEW

### GENERAL INSERT DEFINITIONS

- General Terminology: ANSI, grade, insert...more
- Geometries • Coatings
- Milling, Turning and Drilling Tools by Type
- Micromachining Tools

### INSERT SELECTION & DESIGN

- Application Definition
- Specifications: Grade, Angle, Thickness, Features
- ANSI versus ISO classification systems
- Insert geometry significance
- Characteristics by geometry
- Use of chipbreakers
- Workpiece Material Evaluation

### DEVELOPMENTS IN INSERT GRADES

- Trends in General Materials Science
- Sintered Tools • Brazed Tools
- Insert Technology Overview
- Insert Geometry Refinements

### ADVANCES IN MACHINING

- Developments in Machine Tool Design
- Insert versus Machine Tool Development
- Impact of Advances in Insert Grade
- Adjusting to Ceramic versus Carbide Tooling
- Impacts of Advances in Workpiece Material
- Quick-Change Tooling • Multitasking Lathes
- Modular Tooling
- High-Speed Machining (HSM)
- Coolant Based Machining
- Dry Machining & Environmental Impact
- Hard Turning
- Powder Metallurgy
- Micromachining • Swiss Machining

### IMPACT OF COATINGS ON MANUFACTURING

- Ceramic Coatings
- TiN, TiCN, TiC, TiCN, TiAlN
- Diamond Coatings
- Advances in Coatings Technology
- TiAl Black and gold developments
- Diamond-like-carbon (DLC) Developments
- Nanostructured Material Coatings
- Impact on Tooling and Productivity
- Coatings Processes
- CVD (Chemical Vapor Deposition)
- PVD (Physical Vapor Deposition)
- Developments in Coatings Technology

### TECHNOLOGY OUTLOOK

- Insert Technology on the Horizon
- Advances in Insert Design and Application
- Advances in Materials Science
- Nanostructured Materials
- Ultrafine Grain (Micrograin) Carbides
- Ceramics
- Material Advances Increase Efficiency
- Increasing Productivity with New Designs

### GLOBAL TECHNOLOGICAL ENVIRONMENT

- International Standards
- ANSI Standards
- ISO (International Standards Organization)
- JIS, AFNOR, BSI, DIN, UNI, SACS and CAM

## SECTION TWO: MARKET OVERVIEW

### GENERAL INSERT MARKET TRENDS

- Global Demand (\$MM) for Inserts by Region: 2006-2011
- Trends by Region
- Global Demand (\$MM) by Workpiece Material: 2006-2011
- End-User Trends by Workpiece Material
- Global Demand (\$MM) by Grade: 2006-2011
- Global Demand (\$MM) for Indexable Inserts by End-User: 2006-2011
- Global Demand (\$MM) by Application: 2006-2011

### DISTRIBUTION CHANNELS

- Producer shipments by distribution channel (\$MM): 2006-2011
- International • National • Regional • Local
- Distributor markups (%)
- Discounting percentages by volume
- Other factors affecting discounts: supply agreements, regional coverage
- Vendor selection criteria

### CUTTING TOOLS INDUSTRY OVERVIEW

- Global Industry Trends
- Cutting Tool versus Machine Tool Development
- Global Demand (\$MM) for Cutting Tools by Region: 2006-2011
- Global Demand (\$MM) for Cutting Tools by Product Type: Milling, Turning, Drilling & Other: 2006-2011
- Cutting Tool Market by Tool Type: Indexable versus Solid Global Demand (\$MM): 2006-2011
- Trends in Solid versus Indexable Tooling
- Distribution Channels
- Global Demand (\$MM) by Distribution Channel: 2006-2011
- Regional Trends • Manufacturing Trends
- Cutting Tool Grade Trends
- Carbide Tools
- Ceramic Tools • Cermet Tools
- CBN/PCBN Tools • Diamond Tools
- Global Demand (\$MM) for Cutting Tools by Grade: 2006-2011

### MACHINING INDUSTRY OVERVIEW

- General Trends in Manufacturing
- End-User Strategies in Reducing Cost
- Offsetting Increasing Labor Costs
- Global Demand (\$MM) for Machine Tools by Region and Type: 2006-2011
- General Machining • Milling/Turning
- Screw Machining • Swiss Style
- Trends in Machine Tool Productivity Designs
- Impacts of Just-In-Time Practices
- Economics of Machining
- Economics of High-Speed Machining (HSM)
- Advantages of HSM for aerospace, die/mold making
- Economic Benefits of Dry Machining
- Impacts of Advances in Workpiece Material
- Productivity and Manufacturing Research
- Super Alloys
- Waste Removal • Coolant Use and Disposal
- Relevant Legislation • Work Environment

(continued next page)

## EACH PROFILE CONTAINS THE FOLLOWING CATEGORIES:

- Ownership
- Company Background
  - Key Employees
  - Total Employees (#)
  - Products/Services
- Cutting Tool Revenue (\$MM 2005, 2006E)
- Distribution Channels
  - Key Markets
  - Marketing Strategy

## SUPPLIERS PROFILED WITHIN THIS REPORT INCLUDE:

- Allegheny/Stellram
- Asahi Diamond Industrial
- Balax • Balzers • Böhler
  - Bohler GmbH & Co
- Carbide Processors
  - CeramTec NA
  - Ceratizit
  - Crystallume
- CVD Diamond Corp
  - Dapra Corp
  - Dijet Industrial Co.
  - Greenleaf
  - Gühring
- HAM Precision Tools
  - Hardinge
- Ingersoll Cutting Tools
  - Iscar Metals
- J&M Diamond Tool
  - Kennametal
- Kennametal/Carmet
  - Kieninger GMBH
  - Kennametal/RTW
  - Kieninger
  - Komet • Korloy
  - Koyemann
- Kyocera/Ceratip
- LMT-Fette GmbH
- Mitsubishi Carbide
- Newcomer Products
  - NTK Cutting Tools
  - OSG Tap & Die
  - Paul Horn
- Sandvik Coromant
- Schumacher GmbH
- Seco Tools AB • sp3
- Sumitomo Electric Carbide
  - Technodiamant
  - Tungaloy Corp.
  - Valenite
  - Walter AG

- Automotive Industry Increases Use of Aluminum
- Aerospace Industry and Hardened Materials

#### COATINGS MARKET OVERVIEW

- Global Demand (\$MM) for Coatings by Type: 2006-2011
- Global Demand (\$MM) by Coated versus Uncoated Inserts: 2006-2011
- Global Demand (\$MM) for Indexable Inserts by Coating Type: 2006-2011
- Nanostructured Materials Coatings

#### ADVANCED TOOLING

- Micromachined Tools
- Global Demand (\$MM) for Micromachined Tools: 2006-2011
- Advances and Market Growth in Small-Part Machining • Custom Tool Market

#### WORLD COMPETITIVE ENVIRONMENT

- Supplier Sales and Market Shares (\$MM)
- Producer marketing strategies
- Competitive Market Factors (e.g., pricing, product development...)
- Marketing Strategies

#### INDUSTRY FUTURE OUTLOOK

- General Conclusions
- Factors affecting future demand
- Pricing changes
- High-growth Markets (\$MM): 2006-2011

### SECTION THREE: CARBIDE INSERTS

#### GLOBAL MARKET FOR CARBIDE INSERTS

- Production Trends & Total Demand by Type
- Carbide Insert Demand (\$MM): 2006-2011
- World Market for Coated versus Uncoated Carbide Tools by Type (\$MM): 2006-2011
- Multilayer coated • TiN • TiAlN
- Al2O3 • Diamond Thin Film • Uncoated
- World Value of Carbide Insert Consumption by Application (\$MM): 2006-2011
- Turning • Milling • Drilling
- Factors Affecting Insert Demand by Region
- Carbide Insert Demand by Geometry (\$MM): 2006
- Positive vs. Negative Geometry Outlook
- World Value of Carbide Insert Consumption by Workpiece Material (\$MM): 2006-2011
- Competitive Environment
- Future Outlook (\$MM): 2006-2011

### SECTION FOUR: CERAMIC INSERTS

#### GLOBAL MARKET FOR CERAMIC INSERTS

- Production Trends & Total Demand by Type
- Cost Advantages of Ceramic Tooling
- Ceramic Insert Demand (\$MM): 2006-2011
- Factors Affecting Insert Demand by Region

- Special machining considerations
- Global Ceramic Insert Demand by Type (\$MM): 2006-2011
- Alumina Solid/Coated
- SiN (silicon nitride) Solid/Coated
- SiC Whisker Reinforced Tools
- CMC (ceramic matrix composites)
- Sidebar: Solid Ceramic Tools
- World Value of Ceramic Insert Consumption by Application (\$MM): 2006-2011
- Turning • Milling • Drilling
- Global Ceramic Insert Demand by Geometry (\$MM): 2006-2011
- Positive vs. Negative Geometry Outlook
- World Value of Ceramic Insert Consumption by Workpiece Material (\$MM): 2006
- SiC Reinforced Insert Consumption by Workpiece Material (\$MM): 2006
- Benefits of SiC Reinforced Inserts
- Global SiC Reinforced Ceramic Insert Demand by End-User (\$MM): 2006
- Competitive Environment
- Future Outlook (\$MM): 2006-2011

### SECTION FIVE: CERMET INSERTS

#### GLOBAL MARKET FOR CERMET INSERTS

- Production Trends & Total Demand by Type
- Cermet Insert Demand (\$MM): 2006-2011
- World Market for Coated versus Uncoated Cermet Tools by Type (\$MM): 2006-2011
- TiN • TiAlN • Al2O3 • Uncoated • Other
- World Value of Cermet Insert Consumption by Application (\$MM): 2006-2011
- Turning • Milling • Drilling
- Factors Affecting Insert Demand by Region
- Cermet Insert Demand by Geometry (\$MM): 2006
- Positive vs. Negative Geometry Outlook
- World Value of Cermet Insert Consumption by Workpiece Material (\$MM): 2006-2011
- Competitive Environment
- Future Outlook (\$MM): 2006-2011

### SECTION SIX: CBN/PCBN INSERTS

#### GLOBAL MARKET FOR CBN/PCBN INSERTS

- Production Trends & Total Demand by Type
- CBN/PcBN Insert Demand (\$MM): 2006-2011
- World Market for Coated versus Uncoated CBN/PcBN Tools by Type (\$MM): 2006-2011
- Solid PcBN • Medium Content • Low Content
- Savings in machining
- High-speed machining
- World Value of CBN/PCBN Insert Consumption by Application (\$MM): 2006-2011
- Turning • Milling • Drilling
- CBN/PCBN Insert Demand by Geometry (\$MM): 2006
- Positive vs. Negative Geometry Outlook

- World Value of CBN/PCBN Insert Consumption by Workpiece Material (\$MM): 2006-2011
- Competitive Environment
- Future Outlook (\$MM): 2006-2011

### SECTION SIX: DIAMOND TOOL INSERTS

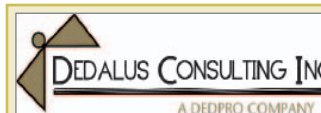
#### GLOBAL MARKET FOR DIAMOND INSERTS

- Production Trends & Total Demand by Type
- Diamond Insert Demand (\$MM): 2006-2011
- World Value of Diamond Insert Consumption by Application (\$MM): 2006-2011
- Turning • Milling • Drilling
- Growth Levels for Diamond Tooling
- World Market for Diamond Inserts by Type (\$MM): 2006-2011
- Polycrystalline • Diamond Thin Film • Other
- Savings in machining
- High-speed machining
- Machining of Non-Ferrous Materials
- Competitive Environment
- Future Outlook (\$MM): 2006-2011

### SECTION SEVEN: SUPPLIER PROFILES

(SEE SIDEBAR ON PAGE 2 FOR LIST OF PROFILED COMPANIES & DETAILS)

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