LUREN

Gear Cutting Tools

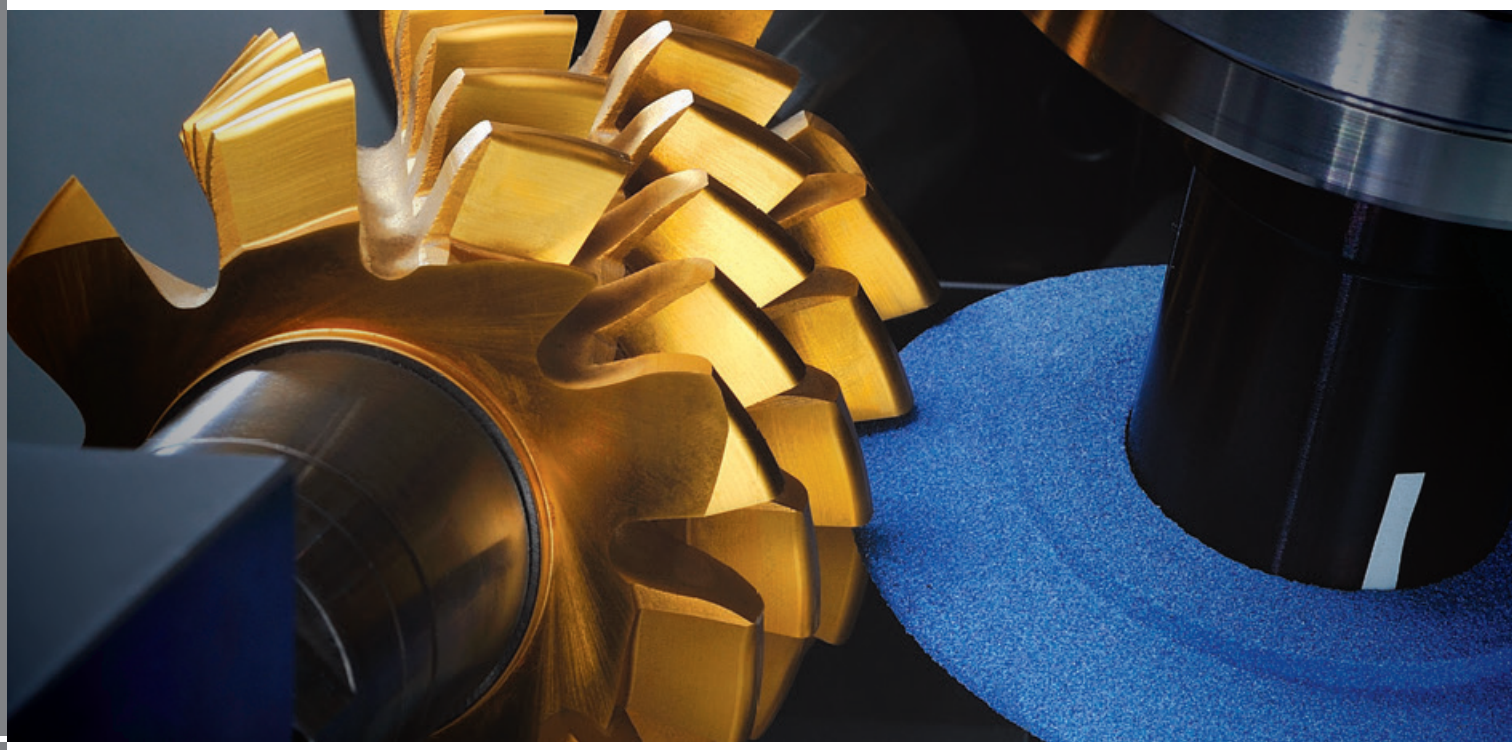
Showing Our Core Technology & R&D Strength

Contents

Introduction

Founded in 1994, **Matrix Precision Co., Ltd.** started the production of gear cutting tools at Hsin-Chu Science-Based Industrial Park, Taiwan. The close relationship with academic and research institutions equipped **Matrix** with the ability to develop a high quality gear cutter manufacturing system, and also its own gear design and machining software compatible with our various special purpose machines. Based on the core technology in high-precision machinery and gear production, **Matrix** provides hobs, carbide hobs, shaving cutters, shaper cutters, master gears and technical service.

Many years of experience in the market has allowed **Matrix** to collect an enriched database, which of fers ef f iciency in designing software and production system. **Matrix** is also known for on time problemsolving, innovative design and technique exchange seminars according to the customers' needs, continuing to respond to the market and lead the future trends.



To be a first-class cutting tools supplier, **Matrix Precision Co., Ltd.** will head to self-developing software, processing innovations, and rigorous inspection which enhances the cost-effectiveness of the products. Responding to the customers' special requests, **Matrix** also offers the best customized products which enables **Matrix** to simultaneously grow and make significant contributions with customers in the competitive market place.

Hobs Dry / Wet Cutting

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Module 0.5 – 8
(DP 50.8 – 3.175)

Types	Gear, Worm Gear, Rack, Special Form
Patterns	Finishing, Roughing, Pre-shaving, Pre-grinding
Outside Dia.	25 – 160 mm (1.102 – 6.299 inch)
Length	≦ 220 mm (8.66 inch/ Bore), ≦ 400 mm (15.75 inch/ Shank)
Precision	AAA, AA, A (DIN3968)
Material	High Speed Steel (HSS): Conventional or Powder Metallurgy
Coating	TiN, TiCN, TiAlN, Alcrona

Carbide Hobs Dry / Wet Cutting

Module 0.5 – 3
(DP 50.8 – 8.467)

Patterns	Finishing, Skiving
Outside Dia.	25 – 75 mm (0.984 – 4.724 inch)
Length	≦ 120 mm (4.724 inch)
Precision	AAA, AA, A (DIN 3968)
Coating	TiAlN, Alcrona

Any special requests, contact us for more details.

Shaving Cutters

Module 1 – 8
(DP 25.4 – 3.175)

Types	Conventional, Diagonal, Plunge, Underpass
Outside Dia.	59 – 250 mm (2.323 – 9.842 inch)
Width	18 – 68 mm (0.709 – 2.677 inch)
Helix Angle	≦ 30°
Material	High Speed Steel (HSS): Conventional or Powder Metallurgy

Shaper Cutters

Module 0.5 – 6
(DP 50.8 – 4.233)

Matrix offers customize profile, such as protuberance and semi-topping

Types	Disc, Bell, Shank
Patterns	Finishing, Pre-shaving, Pre-grinding
Outside Dia.	30 – 200 mm (1.181 – 7.874 inch)
Precision	AA, A (DIN 1829, JIS B 4356)
Material	High Speed Steel (HSS): Conventional or Powder Metallurgy
Coating	TiN, TiCN, TiAlN, Alcrona

Any special requests, contact us for more details.

Master Gears

Module 0.5 – 8
(DP 50.8 – 3.175)

Matrix offers master gears for mesh testing, gear measuring and correction, the result corresponds to DIN 3970, JIS B 1751 or any customer's requirement. Besides, it is component to use special materials to ensure the quality and tool life.

Master gears are used in gear meshing and measuring, based on any index and graph or other instruments to confirm that master gears and gears mesh together. Master gears also apply for aeronautical and automobile industries.

Outside Dia.	30 – 250 mm (1.181 – 9.842 inch)
Helix Angle	≦ 35°
Precision	DIN 4 or M 0
Material	High Speed Steel (HSS): Conventional or Powder Metallurgy.
Coating	TiN

Take the "Hobbed Relief" method to design the master gear, it could be reground many times.

Patents

Dual-involute Shaving Cutter

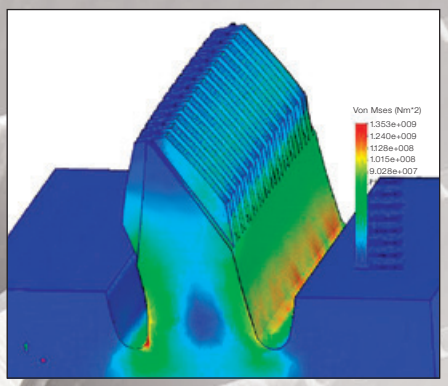
Application Number: 092124533
Taiwan Patent Number: I231237
Japan Patent Number: 41219310
China Patent Number: 03154451.7
Authorized Date: 4 Mar, 2005

Invention

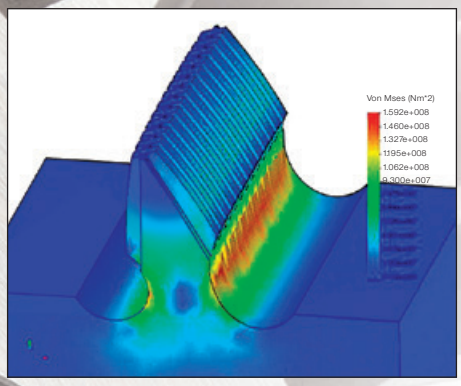
Method of Dual-involute shaving cutter manufacture

Character

The method also called hobbed relief is to process the tooth root relief of a shaving cutter. And the strength of the root would be stronger than traditional drilling methods, it would be more efficient than traditional milling methods.



Strength of root of teeth by " Hobbed Relief " method.



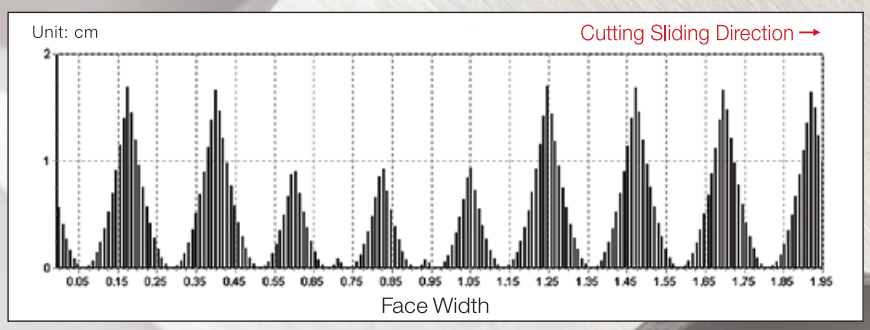
Strength of root of teeth by drill method.

Plunge Type of the Shaving Cutter

Taiwan Patent Number: 100116005
Authorized Date: 2014/04/21
China Patent Number: 201120241665.3
Authorized Date: 2012/03/21

Character

The method is called plunge type of the shaving cutter, it is designed on the cutting data which is collected from the cutting status, to make the plunge type shaving cutter gets more efficient.



Simulation of Repeated Cutting Cycle

Services

Matrix is devoted to produce precise gear cutters, which includes designing, producing and measuring.

Moreover **Matrix** also offers the following services.

Resharpening for hobs and shaving cutters

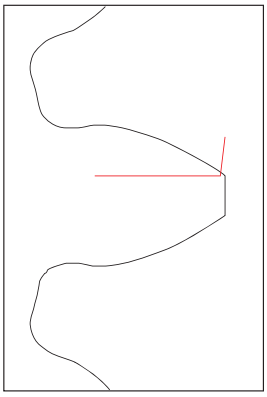
Recoating for hobs and shaper cutters

Modifying the profile of gear cutters

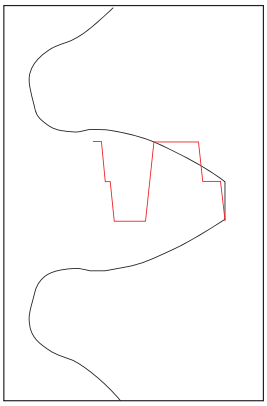
Designing the custom products

Solving any technical or processing problems

Contact Point Meshing Analysis

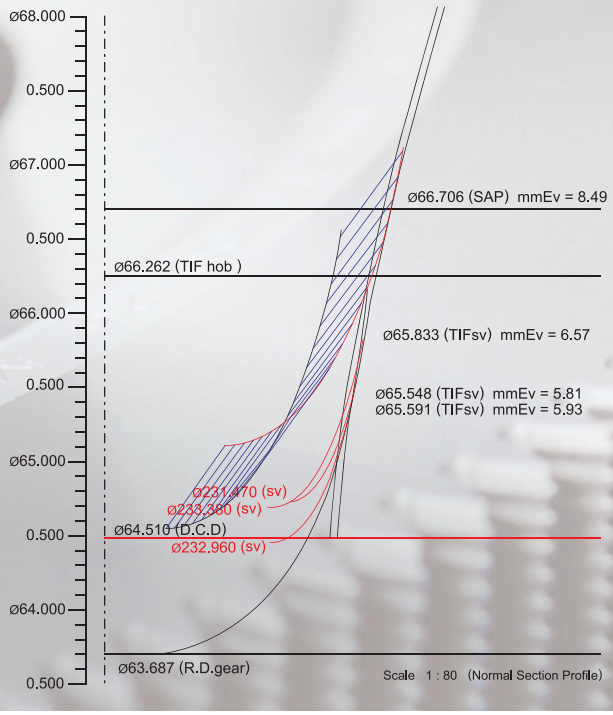


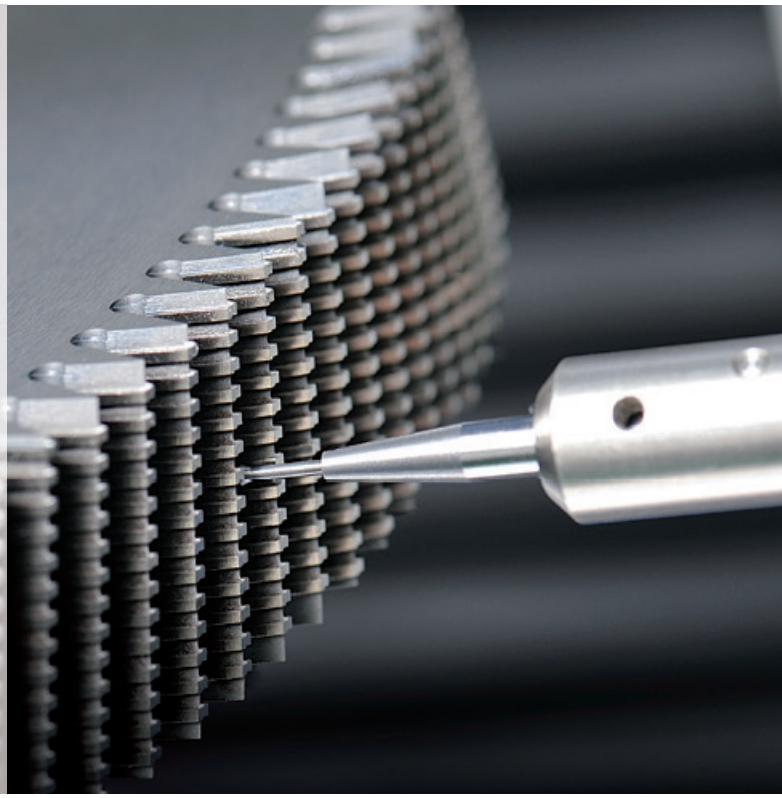
Tooth Contact Points Analysis
Max Rotation Angle=20D 16M15S
Min Rotation Angle=-(19D57M32S)
Contact Points on Left Flank
22222111111111122222222222222
22222111111111122222222222221
Contact Points on Right Flank



Tooth Contact Points Analysis
Max Rotation Angle=16D 4M10S
Min Rotation Angle=-(26D40M14S)
Contact Points on Left Flank
22222111111111222222222222222221
11122222222221111111111111222222
Contact Points on Right Flank

Shaving Route of Meshing Analysis



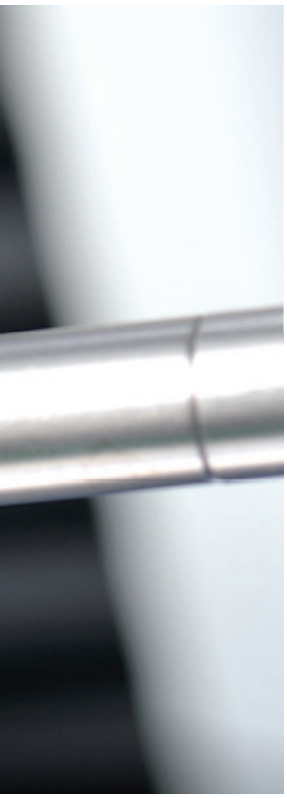


Quality Control

Approaching the Pinnacle of Perfection

Based on over 20 years of precision gear design and manufacturing experience, **Matrix** has developed a high quality gear cutter manufacturing system. This system includes a comprehensive R&D, design and production infrastructure. Our gear cutters are of the highest quality and 100% defect free.

In addition to strict quality control, we also carry out strict inspections of all our manufactured products, constantly refining our production operations to produce the perfect products for our customers.



3D Measuring System

Roughness & Profile Measuring System

Roundness Measuring System

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