



精异特新 熔铸丁鼎 你我同行 实现共赢



# Shenzhen Dingding Ceramics Technology Co., Ltd. Introduction to CIM

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# CATALOG



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R&D·QDM · Marketing



Product & Service



Corporate Culture



Look Ahead



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PART 01

# About Us





- ◆ Dingding is the leading enterprise using powder injection molding technology (PIM) earlier in China.
- ◆ Specializing in the production of precision ceramics (zirconia, alumina, silicon carbide, etc.), tungsten alloys, high specific gravity tungsten-based alloys, stainless steel and other powder metallurgy products; Outstanding achievements have been made in the fields of wearables and cutting-edge materials. The company is committed to the design, development and production of metal and ceramic powder injection molding and manufacturing processes.



## Branches

Nanjing Dingding  
Shenzhen Dingding  
Shandong Dingding



## Number of employees

Nanjing Dingding 200 people  
Dongguan Factory 300 people  
Shandong 500 people



Eight years and more than 8,000 experiments, the first domestic company to apply PIM technology to the leading enterprise in the field of superhard materials





01

## Nanjing Dingding Alloy Materials Co., Ltd.

Address: No. 9, Gaoke 7th Road, Nanjing High-tech Development Zone

02

## Shenzhen Dingding Ceramics Technology Co., Ltd.

Address: No. 5, Xinyang Road, Tangxia Town, Dongguan City (Block 23, Xinsun Industrial City)

03

## Shandong Dingding Technology Development Company

Address: No. 17, Huanghe Street, Jibei Development Zone, Jiyang District, Jinan City, Shandong Province

\*



- Nanjing Dingding was established in 2002
- New high-tech industrial park, about 20,000 square meters; a specialized production enterprise that produces various products such as cemented carbide, ceramics, high-density alloys, tungsten alloys, and absorbing materials.



Geographically located in the Yangtze River Delta Economic Zone, it is committed to the design, development and production of metal and ceramic powder injection molding and manufacturing processes.



- Shenzhen Dingding was established in 2007; business expanded, increased investment in overseas markets, and mainly produced ceramic watches, case and bezel;
- In 2011, the first branch factory in Dongguan was put into operation. The factory covers an area of about 6,000 square meters. The ceramic production line was expanded and the MIM industry was opened and officially put into production;
- In 2017, the second branch in Dongguan was put into operation. The plant covers an area of about 5,500 square meters, and the back-end processing is expanded.



Located in the Pearl River Delta Economic Zone, it is committed to the design, development and production of metal and ceramic powder injection molding and manufacturing processes, mainly for civilian products, mobile communications, smart wear, mobile phone covers, electronic cigarettes, case rings, structural parts, etc





- Business expansion, Shandong Dingding Technology will be established and put into production in 2020. The plant covers an area of about 12,000 square meters, (50 mu of land planned in the later stage) to expand production and back-end processing.



Geographically located in the Greater Bohai Bay Economic Zone, it is committed to the design, development and production of metal and ceramic powder injection molding and manufacturing processes. In addition to big health, smart wear, microelectronic ceramics, and 5G filters, Shandong's main business pays more attention to Research and development of aluminum nitride high-tech ceramics for aerospace and face recognition applications.

**June 1985**

Founded  
Dingding

1985

**May 2002**

Nanjing Dingding was established. We has obtained a number of independent research and development patents.

2002

**May 2016**

Won the "First Prize" in Shenzhen Division of the First National Intelligent Manufacturing (Industry 4.0) Innovation and Entrepreneurship Competition

2016

**January 2018**

The CIM/MIM field has started mass production, and great achievements have been made in the fields of 5G filters, smart wear, and microelectronics and precision ceramics.

2018

2019

**December 2019**

Dingding opened the big health industry and the company's sales exceeded 120 million yuan

2020

**December 2020**

The company obtained new breakthroughs in high-tech ceramic materials

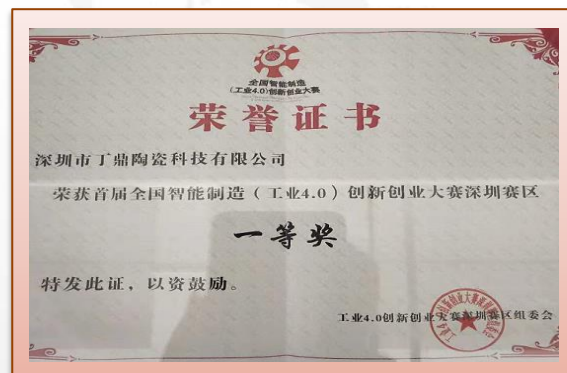






# Qualification

- attaches great importance to the improvement of its own quality. In recent years, the company has made breakthroughs in market access and qualification certification. The relevant qualification certificates obtained by our company recently; the implementation of ISO9001/ISO14001/OHSAS18001/GB2828 and other specifications

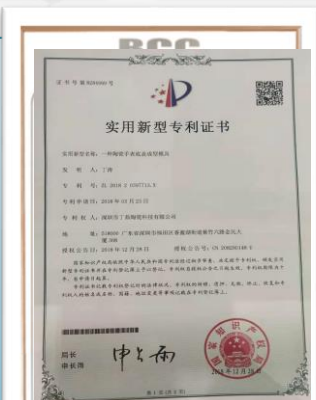
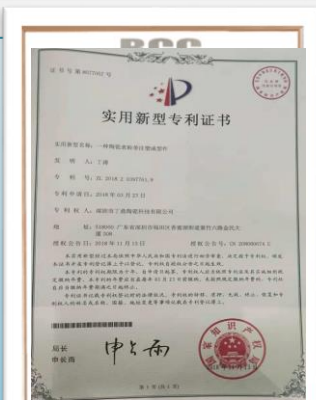
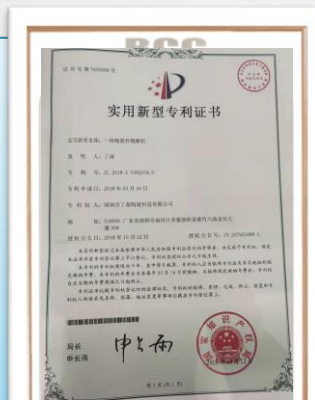
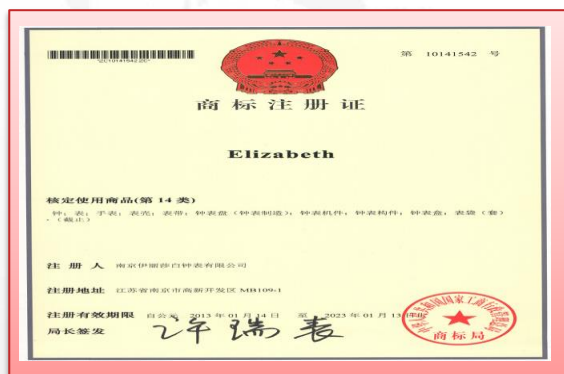






# Qualification

Dingding attaches great importance to the improvement, innovation and breakthrough of its own quality. Among them, 7 invention patents, 4 utility models, and more than 60 patents (including invention, appearance, and utility model) are applied for in 2020, and 50 patents are to be submitted in 2021, including 18 invention patents.



The road to glory is the mileage of constantly surpassing quality...

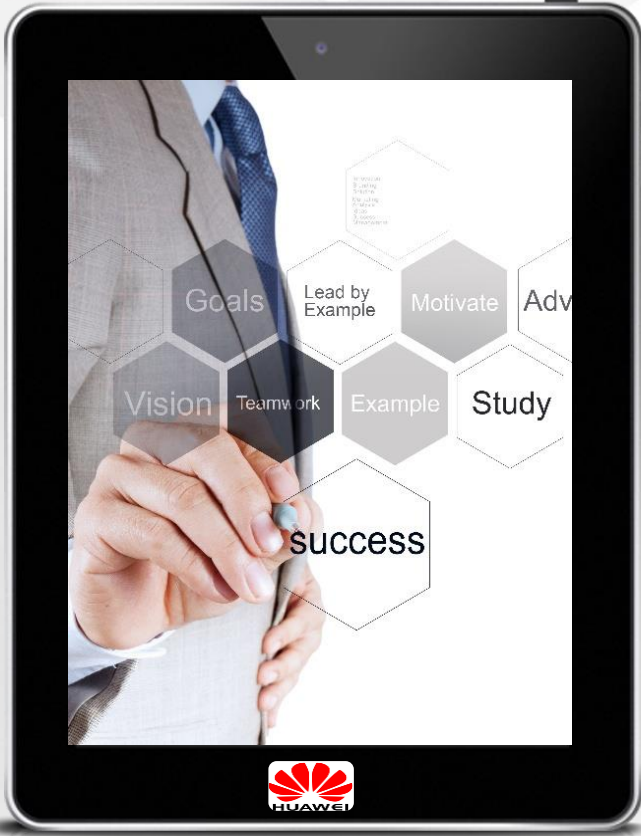


PART 02

## R&D•Production • Marketing



# Overview



- R&D Center and Technical Capability
- Hardware conditions and production capacity
- Quality Assurance
- Ceramic materials and manufacturing process technology
- Classic customer gathering • marketing network



- ✓ Self-made raw materials and formula development capabilities
- ✓ Decades of research experience in professional fields
- ✓ Multi-directional hard material integrated service
- ✓ Professional talent team in the industry
- ✓ Independent operation model is more flexible and efficient



Innovation is the life of an enterprise. Dingding Manufacturing pursues sustainable operation, especially focusing on R&D and innovation. Four major product R&D and production centers have been set up in Shenzhen, Dongguan, Nanjing and Shandong respectively. The factory grasps the pioneer of the times, closely integrates with the production line, and successively introduces the old and brings forth the new.



## ◆ Dingding is leading the industry in research and development, process development and production technology

### Research and Development (25 people)

- New material, new product development
- Zirconia, alumina, aluminum nitride, etc.
- Mold development
- Ultra-fine holes, ultra-precision molds, etc.



### Process development and design

- Injection molding technology, dry pressing and other ceramic molding technologies
- PIM molding technology
- Degreasing and sintering technology
- Grinding and polishing technology
- Surface treatment technology
- Ultra-fine hole precision forming and processing technology



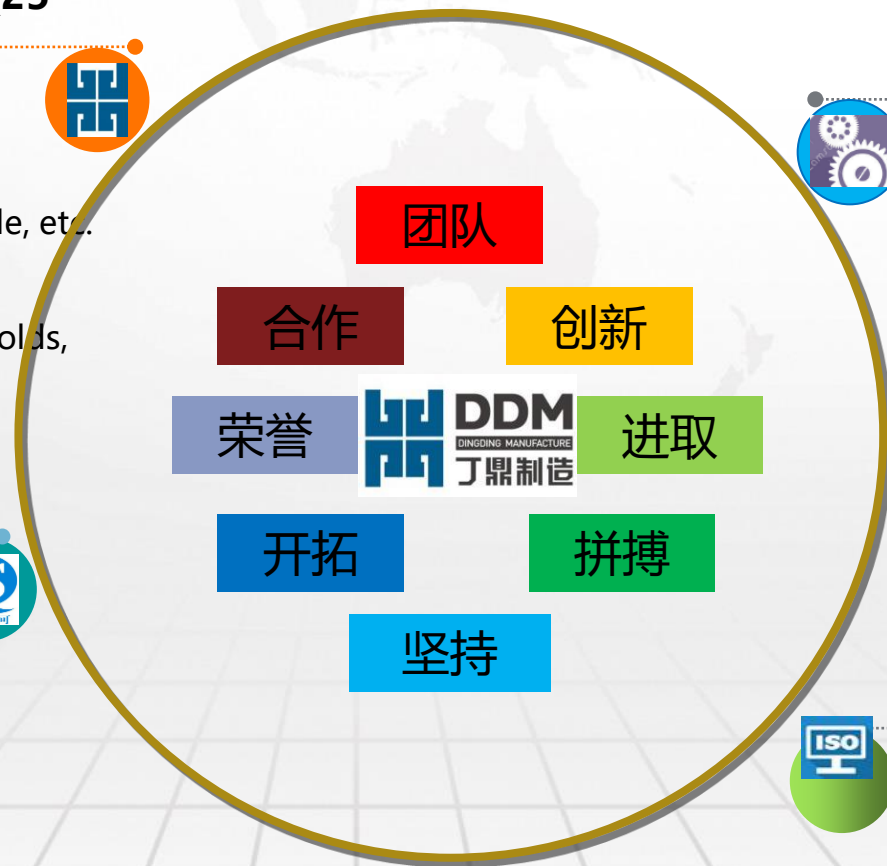
### Engineering Technology (50 people)

- Injection molding, dry pressing, die casting,
- Forming technology such as grouting and stamping
- Degreasing, sintering, grinding, polishing
- CNC machining center



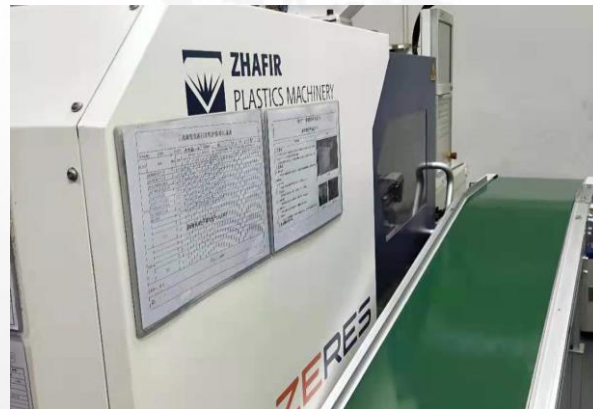
### Quality Assurance (40 people)

- Quality Inspection
- ISO related certification recognition





- ◆ Has advanced equipment such as internal mixer, injection molding machine, degreasing and sintering furnace, dry pressing molding machine, pipeline continuous de-sintering furnace, CNC machining center, etc.
- ◆ Mainstream configuration in the industry, mainly semi-automatic and fully automatic equipment





# CIM Equipment List 1

No.	Primary device name	Amount	Project type	Remark
1	Internal mixer	8	<p align="center"><b>CIM Project</b></p> <p>(Ceramic electronic parts, smart wearable ceramic parts, structural parts, industrial parts, ceramic atomizing cores, ceramic suction nozzles and other precision ceramics)</p>	
2	Granulator	4		
3	Injection machine (vertical + horizontal)	20		
4	Dry hydraulic press 100T/250T	4		
5	Tableting machine	2		
6	Cold isostatic press 400Mpa	2		
7	Grouting machine	40		
8	High temperature degreasing furnace	8		
9	High temperature continuous degreasing production line	2		
10	High temperature sintering furnace	12		
11	High temperature continuous sintering production line	4		
12	Spray Granulator	2		
13	Surface Grinder	6		
14	Internal and external grinding	6		
15	Turning and milling machine	8		
16	Sandblasting machine	3		
17	Engraving machine	12		
18	Double Disc Polisher	20		
19	Grinding and polishing machine	5 sets		
20	Centrifugal high-speed serializer	30		

# CIM Equipment List 2

No.	Primary device name	Amount	Project type	Remark
21	Ultrasonic cleaning line	1	CIM Project  (Ceramic electronic parts, smart wearable ceramic parts, structural parts, industrial parts, ceramic atomizing cores, ceramic suction nozzles and other precision ceramics)	
22	Centrifugal high-speed vibrator	15		
23	laser marking machine	7		
24	Sandblasting machine	2		
25	Polisher	30		
26	Double-sided grinding and polishing machine	2		
27	Single-sided grinding and polishing machine	2		
28	Thermostat	12		
29	CNC engraving machine (single head / double head)	9		
30	3D intelligent grinding and manufacturing machine	1		
31	CNC machining center	600		
32	Precision plane grinding and polishing machine	2		
33	Five-axis linkage CNC machine tool	1		
34	Corrosion Machine	1		
35	Metal fixing machine	1		
36	Chamfering Grinder	1		
37	Threaded coaxial grinder	1		
38	Inner diameter grinder	1		
39	Face grinder	2		
40	Spherical Grinder	1		



Moisture detector



CCD projection detector



Vickers hardness tester



2D projection detector



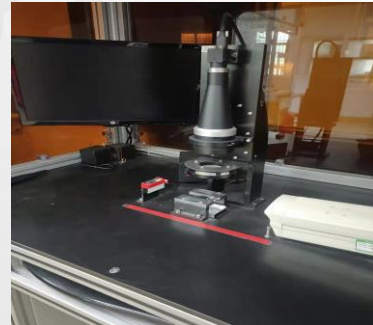
High magnifying glass



End tester



Abrasion Tester



Projection detector



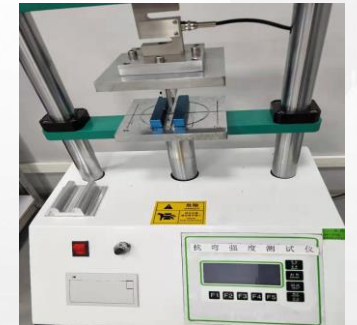
High temperature oven



Waterproof testing machine



Density Analyzer



Flexural Strength Tester



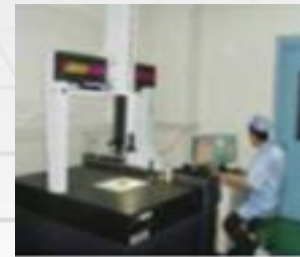
Falling Ball Impact Tester



Salt spray tester



Roughness Tester



2.5D projection



Material testing machine



Height gauge





# Introduction of ceramic materials

## Excellent physical properties

High strength, good toughness, high hardness, strong compression and impact resistance, no wear, no scratches, commonly known as "ceramic steel"

## External presentation

As smooth and warm feeling as jade, with high refractive index and strong dispersion

## Chemically stable

Resistant to the corrosion of various acids and alkalis, even if it is boiled in aqua regia for several hours

## Good electrical performance

High dielectric constant, good insulation, sensitive signal, can realize wireless charging

## Visual and tactile

Strong jade texture, good skin-friendly, low thermal conductivity, beautiful appearance, can be customized in color

## Strong machinability

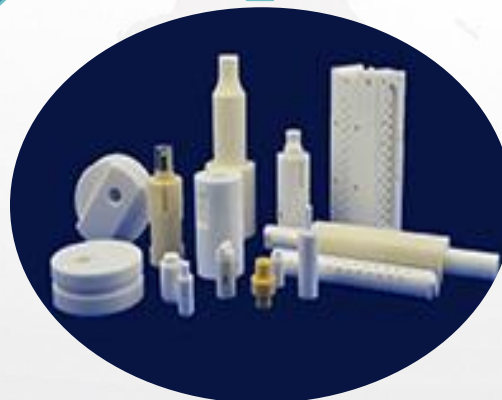
Grinding, milling, polishing and cutting processes can be realized, and the dimensional accuracy can reach  $\mu\text{m}$  level

## Mature mass production process

Domestic technology has basically been in line with international standards, and the main molding processes include dry pressing, injection, casting and gelation, etc.

## Safe and non-toxic

Sintered above 1350 degrees, no impurities, no magnetism, no contamination, no bacteria, easy to clean

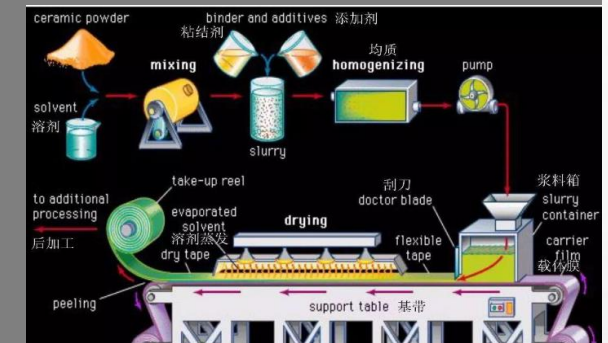
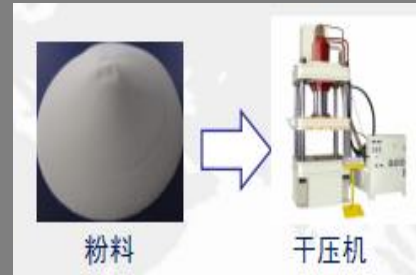




# Ceramic physical parameters

No.	Performance	Unit	Zirconia	Sapphire	SUS304	Tempered glass	Plastic PP
1	Yttrium oxide content	Wt%	<b>5.2±0.5</b>	—	—	—	—
2	Density	g/ cm <sup>3</sup>	<b>≥6.0</b>	3.97	7.93	2.4~2.8	0.9~1
3	Vickers hardness	HV	<b>≥1200</b>	1700	600	900	180
4	Melting point	°C	<b>2680</b>	2303	1398~1454	600	250
5	Room temperature flexural strength	/MPa	<b>800~1500</b>	800	≥515	≥400	≥200
6	Room temperature fracture toughness	K <sub>1c</sub> /MPa <sup>1/2</sup>	<b>6~10</b>	2	85	3	105
7	Young's modulus	GPa	<b>210~238</b>	380	206	70	3.9
8	Thermal expansion coefficient	×10 <sup>-6</sup> /K	<b>10.2</b>	8.8	16.0	8~10	7~9
9	Room temperature thermal conductivity	W · (m · k) <sup>-1</sup>	<b>1~2</b>	24	12.1	0.4	0.2
10	Thermal shock resistance	ΔT/°C	<b>250</b>	200	400	80	120
11	Dielectric constant	F/m	<b>32~35</b>	9.3~11.5	—	3.5~3.7	1~2

# Commonly used ceramic forming techniques



## Injection molding

The organic matter is cured at low temperature or at high temperature. The powder and organic carrier are mixed in special mixing equipment, and then injected into the mold under high pressure for molding.

## Dry pressing

Under the action of external force, the powder particles approach each other in the mold, and are firmly combined by internal friction to maintain a certain shape to obtain a uniform and dense blank.

## Gel forming

The solvent water, ceramic powder and organic additives are fully mixed to form electrostatically stable, low viscosity, high solid content slurry, and then the slurry is injected into the non-porous mold.

## Tape casting

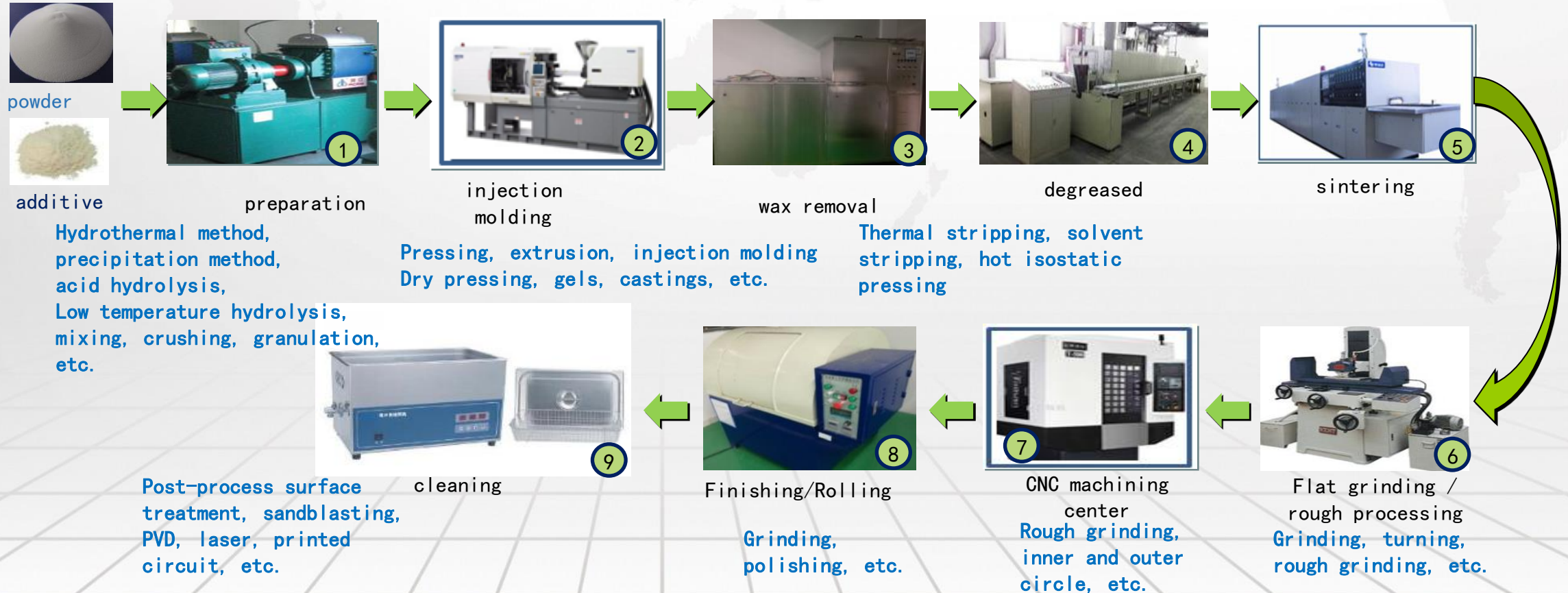
The ceramic powder is fully mixed with organic binders, plasticizers, dispersants, etc. to make a flowing viscous slurry, which is added to the hopper of the casting machine, and the thickness is controlled with a scraper. blank.





# Ceramic manufacturing process

◆ Ceramic powder → adhesive mixing and feeding → injection molding machine → heated to form molten viscous fluid → cooling and shaping in mold cavity → shape embryo.





# Ceramic Appearance Technology



**01**  
sandblasting/  
glossy

**02**  
mirror /  
facet  
highlight



**06**  
brushed

**03**  
Laser /  
engraving



**05**  
PVD/Decals

**04**  
colored  
ceramics





## PART 03

# Product & Service





# Product description

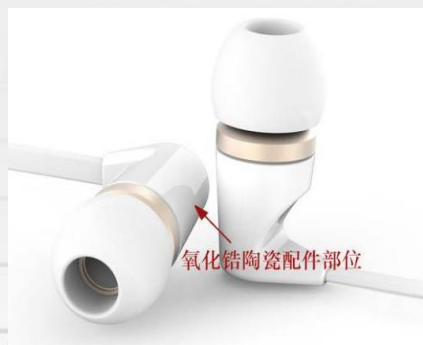
◆ The company continues to apply and extend its own technology in consumer electronic products, ceramic smart wearables, 5G filters, electronic cigarettes, precision ceramic cleavers and ceramic nozzles, industrial structural ceramics and other fields.

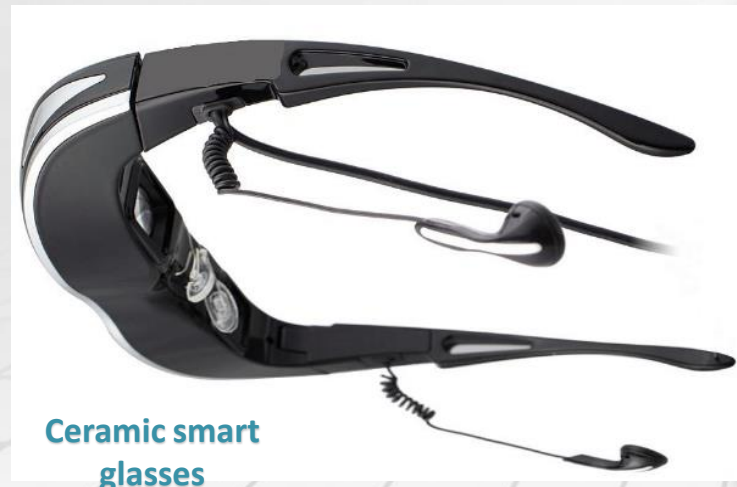
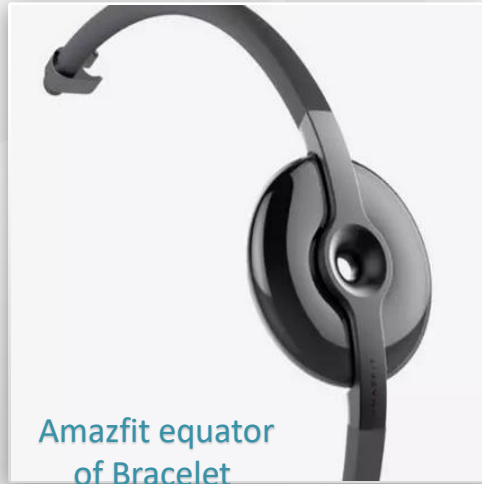




# Ceramic wear parts

◆The nano-injection molding technology of ceramic smart wearable devices has been applied on a large scale; in the 5G era, smart wearable devices have shifted from metal to glass, ceramics, etc., and the wearable Dingding has a rich technical background of no less than 17 years. Served Apple, Huawei, Xiaomi, Fitbit, Samsung, LG, Mobile, Jeep, Chow Sang Sang jewelry, etc.









# Ceramic wearable Watch

Ding Ding has provided high-quality services for many well-known brand enterprises at home and abroad to produce various high-end ceramic watch rings, shells, bottom covers, watch particles, keys, etc.



**Huawei WATCH 2 Pro**

Ceramic bezel body, high strength, good toughness, high hardness, strong compression and impact resistance, no wear, no scratch



**Huawei WATCH 2**

Ceramic bezel, with round color, high refractive index and strong dispersion



**Huami amazfit smart sports watch 2**

Ceramic bezel body, high dielectric constant, good insulation, sensitive signal, can realize wireless charging



**Apple Watch Series 3**

Ceramic shell, with comfortable visual touch, strong jade quality, good skin affinity, low thermal conductivity, beautiful appearance, and can be customized in color



## Ceramic case



Various complex shaped structure ceramic wearables can be developed according to the actual needs of customers





# Ceramic Industrial Structural Parts

Ceramic shaft



Ceramic plunger



Ceramic bushing



Ceramic Bearings



Textile Ceramics



Grinding media



Ceramic pipe rod



Electronic ceramics





# Electronic cigarette ceramic products



◆ Main ceramic components of electronic cigarette:

Porous ceramic atomization (shown in black frame)

Ceramic heating element (indicated by the yellow frame in the picture)

Ceramic nozzle (shown in red frame)

Ceramic nozzle outer shell, etc. (shown in green frame in the picture)

◆ Dingding electronic cigarette production line, more than 40 sets of grouting, degreasing and sintering equipment, etc., can meet the monthly production capacity of 10 million ceramic heating cores and ceramic parts.



# Precision ceramics

◆ Ceramic cleaver, also known as porcelain mouth, welding and packaging of LED, IC chips and other circuits; at present, ceramic cleaver mainly relies on imports, and there are not many domestic enterprises with production capacity. Dingding Ceramic Technology has the technology of this project R&D and production capacity, and also produce non-standard precision ceramic parts, precision ceramic nozzles, sleeves, etc.



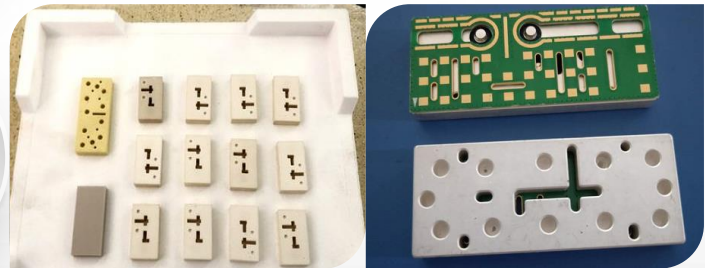




# 5G ceramic dielectric filter

◆With the rapid development of the 5G industry and the acceleration of the construction of base stations, the filter is a very critical technology in 5G, and it is also an indispensable basic component for the development of 5G. The demand for filters and optical communication precision ceramics will be greatly increased.

◆Dingding also officially launched the electronic cigarette ceramics, 5G filter, and electronic communication industries in 2018.





◆The ceramic backplate has the advantages of high hardness, good thermal shock resistance, fast heat dissipation, high bending strength, good fracture toughness, and strong wear resistance.

The "high-value" features such as appearance, smoothness, and warmth like jade have been favored by consumers.

◆Dingding Manufacturing also officially started the manufacturing of communication electronics, ceramic cover plates, and microelectronic ceramic industries in 2017.

Ceramic middle frame

1



Ceramic integrated cover

2



2D/3D Ceramic Backplane

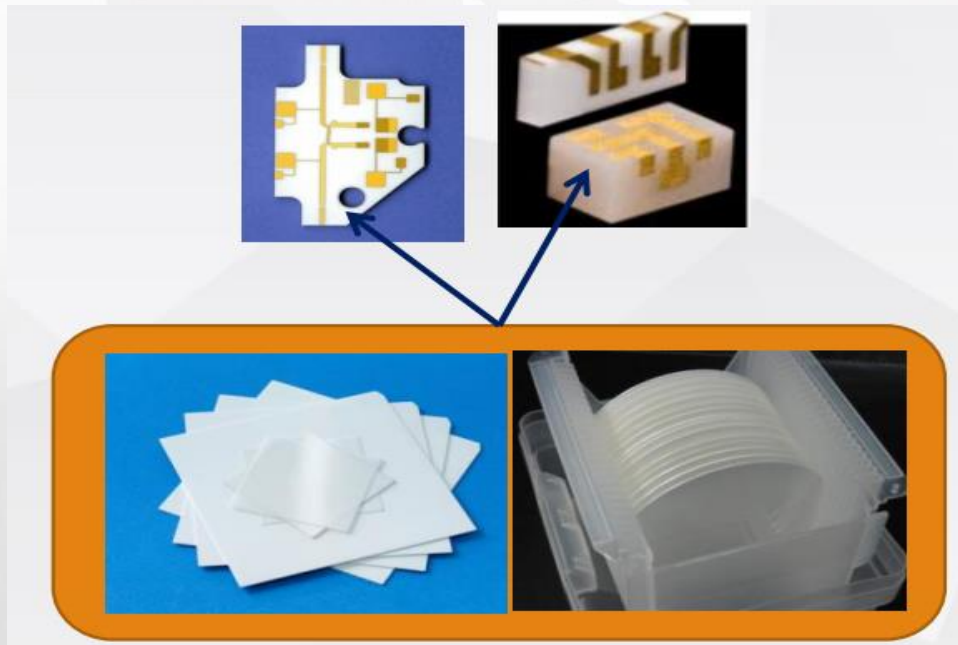
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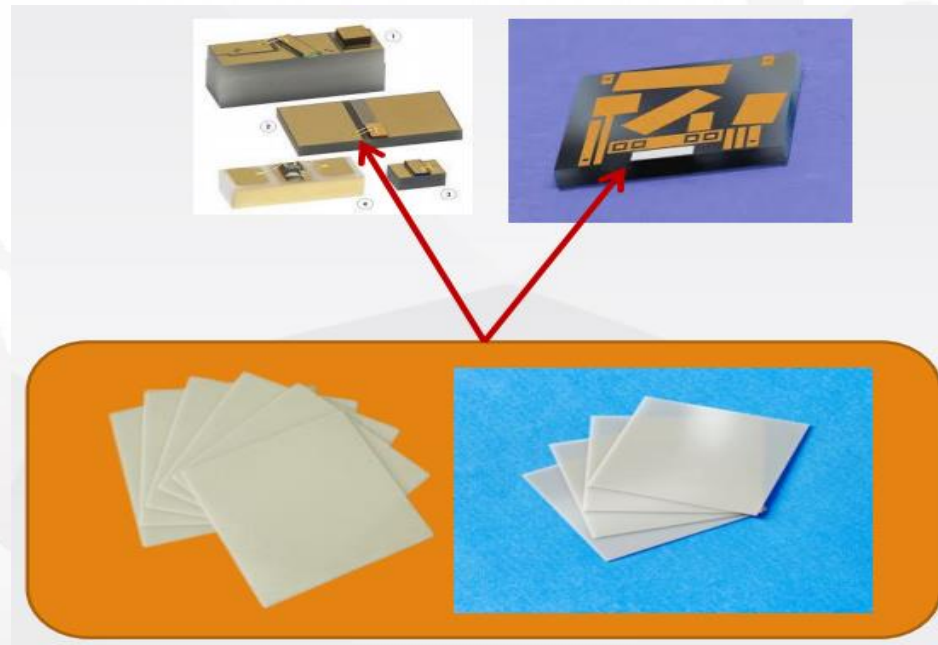
Color ceramic backplane

4





## 996 alumina thin film ceramic substrate



## Aluminum Nitride Thin Film Ceramic Substrate

- ◆ It is used as a carrier for thin film circuits, and has a large market demand and is widely used in communications, optoelectronics, automotive electronics, medical equipment and other fields; it is suitable for the production of various high-density, Small size, high performance electronic components;
- ◆ At present, they are all restricted by foreign monopoly, and the price is high and the delivery cycle is long (2-4 months for customized products); Shandong Dingding cooperated with many well-known enterprises in the industry to complete the The development and production of this technology has changed the pattern of only a few Japanese companies that dominate the world, and once again filled the gap of this technology in China.







PART 02

# Corporate Culture



## Based on strugglers

Selfishness and fear of danger do not enter the door;  
Peace and comfort please go elsewhere

## Dare to dream, be brave to innovate, be good at practical work

There are dreams, innovations, and hard work.  
Integrate into the great journey of building Ding Dingmeng together, lead the direction with dreams, help dreams with innovation, put hard work throughout the whole process, and realize dreams can be expected !

## Keep improving

Pursuit of excellence, full participation,  
continuous improvement



**Integrity creates quality**

**Innovation leads the future**

**Foresight**

**Executive power**

**Decision-making**

**Creativity**

**Appeal**



**Excellent, unique and new, you and I walk together to achieve a win-win situation**

Dingding people always adhere to the same original intention of "Lean, Innovative, Forging Dingding", integrating rigorous science into ideals, determined to move forward, work together with one heart, open up a better future, and jointly meet the company's bright future.





Beyond oneself

Keep improving

Reject mediocrity

Pursue quality excellence

**Life exists because of struggle, and struggle is eternal because of life**



1

## Experience

Since 1985, Dingding has owned a 36-year-old enterprise, professional, dedicated, pragmatic, innovative, and constantly surpassing and breaking through.

2

## Reasonable structure

The general manager Ding Tao, the project department and engineering technicians, and the professional technicians of each production and processing workshop together constitute the main body of research and development, thus forming a research and development system covering all production systems and all technological processes of the company from top to bottom.

3

## Professional technology

It has reached the advanced level of domestic precision ceramics (zirconia, alumina, aluminum nitride, etc.), tungsten alloys, high specific gravity tungsten-based alloys, stainless steel and other powder metallurgy products, and all technologies have been widely used in the company's production and operation activities.

4

## Market awareness

Dingding has established long-term and close scientific research cooperation relationships with many well-known manufacturers at home and abroad, which further strengthens the company's R&D innovation capabilities and an open attitude towards win-win cooperation.









PART 05

# Look Ahead

Competing Business Directory	Main items	Main business income (Unit: RMB 100 million/year)
CCTC	Ceramics	30
Biel crystal	Ceramics	15
Lens	Ceramics	15
BYD	Ceramics	15



Chart 2020 Market Comparison of Peer Competition Status

## Development trend

With the rapid development of China's economy, the market space for high-tech industrial (traditional) structural ceramics and smart wear is huge. It is estimated that by 2021, the market demand for structural and smart wearable ceramics will reach 50 billion yuan per year.

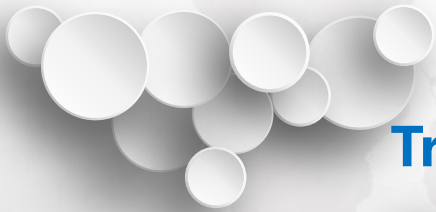


PART 05

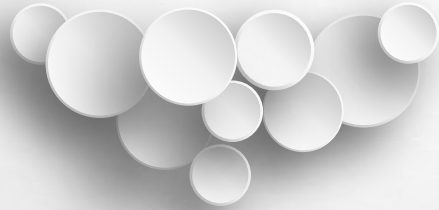
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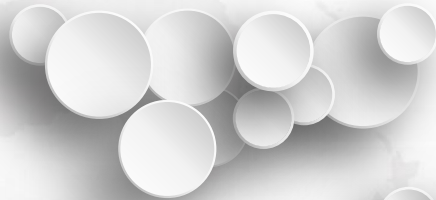
Innovative and pragmatic



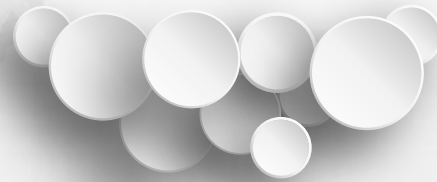
Transcend oneself



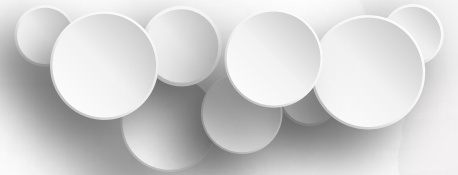
Pursue excellence



Forge ahead



Unity and struggle



Wisdom is in action...

Excellent, unique and new, casting Dingding, you and I walk together, and achieve a win-win situation. The future has come, we are passionate and heroic. Ding Ding, with a history of 35 years, is taking firm steps to live up to the great rejuvenation of the Chinese nation and forge ahead; continue to grow and fly high.

# Appendix 1: Introduction to Shandong Dingding



立足世界工厂



• Due to business and development, Shandong Dingding Technology was established and put into production in December 2020. The plant covers an area of about 12,000 square meters, (50 mu of land planned in the later stage) to expand production and back-end finishing manufacturing.

• Mainly carry out research and development and production of big health industry, smart wear business, microelectronics precision ceramics and conventional ceramics, etc.



Mainly high-tech ceramics (zirconia, alumina, aluminum nitride and other nano-new material ceramics). It mainly develops various complex shapes and high-performance appearance parts, smart wearable parts, precision ceramic rivets, large health products and functional parts.





# Attachment 2: A corner of Shandong Dingding workshop



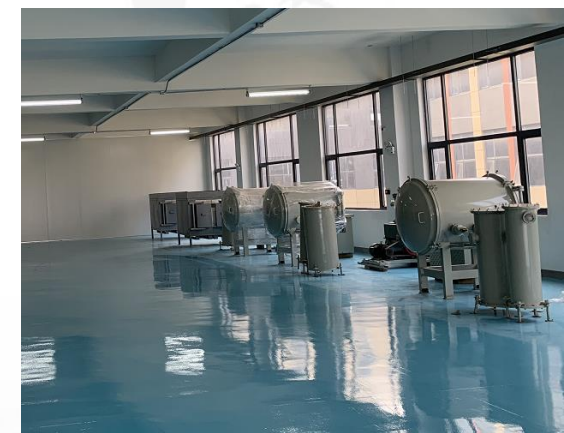
CNC machining center



CNC machining center



Degreasing sintering production line



Sintering / blackening production line



Precision machining center



Isostatic pressure production line



Injection molding workshop





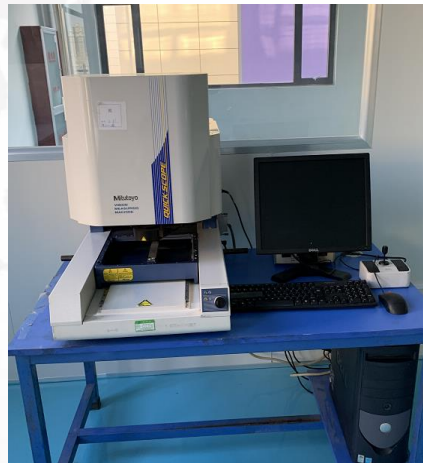
# Attachment 3: Shandong Dingding hardware overview



Wear resistance testing equipment



Aging detection equipment



2.5D testing equipment



Grinding and polishing equipment



End face polishing equipment



Injection molding machine equipment



De-burning electric furnace equipment



CNC



Automatic finishing equipment



Roller grinding and polishing equipment



# 2022 Shenzhen Dingding Ceramics Technology Co., Ltd.

**精异特新 熔铸丁鼎**  
**你我同行 实现共赢**