



Trinity Precision Technology Co.,Ltd.

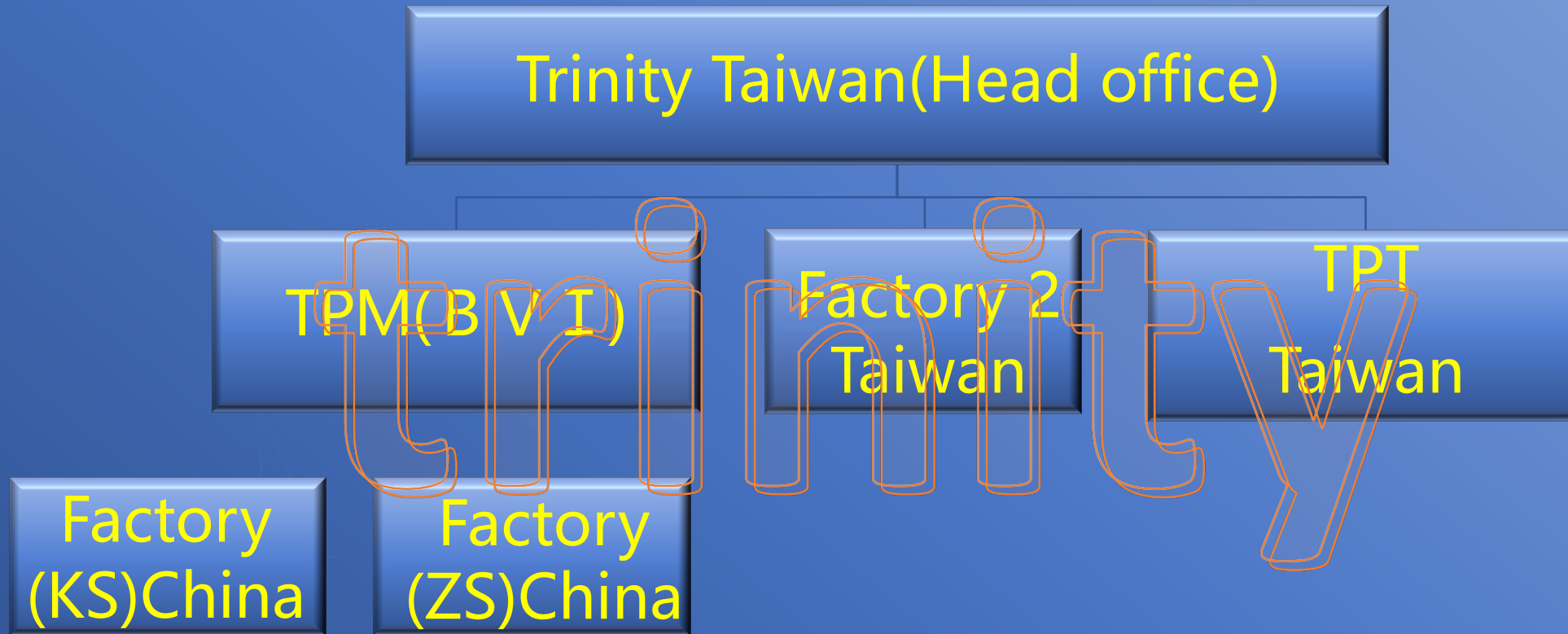
Operating Report

2023. 12.5

Leading brand for powder metallurgy
& Innovative pioneer for gearbox



Organization



Factory distributions



Certificate of

ISO 9001

ISO 14001

IATF 16949

Certificate

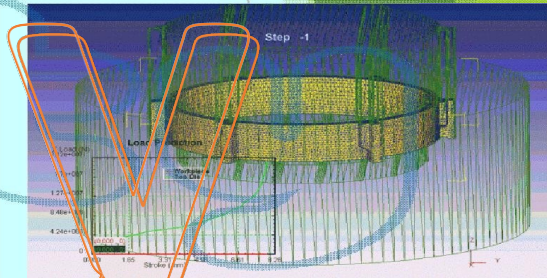


Milestones

- Established in 1993, major market in power tools.
- 2002, set up factory in Dongguan China.
- 2003, listed in Taiwan stock market
- 2009, set up factory in Zhongshan(ZS) China.
- 2011, set up factory in Kunshan(KS) China.
- 2010, set up factory 2(ZL) in Taiwan and built gearbox production line
- 2010, MIM production line built in (ZS)
- 2012, spiral face gear launched with breaking through design
- 2017, powder forging product launched in China & Taiwan.
- 2021, developed alloy products successfully.
- 2023, built gearbox & MIM production line in Kunshan(KS) China.



Powder forging production process



Powder forging characteristics

一般粉末冶金產品的密度有一定的極限在，為了提高密度接近材料理論密度並提升產品物理性能，故實施粉末冶金再鍛造的手段

Combining sintering process with forging process to improve density and physical properties of Powder metallurgy components .

優點Advantage:

a. 節省材料(餘料少)

Reduce raw material lose

b. 提升產品密度

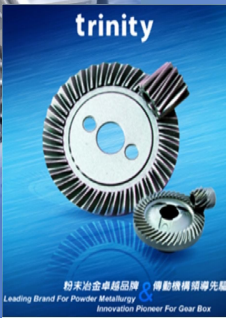
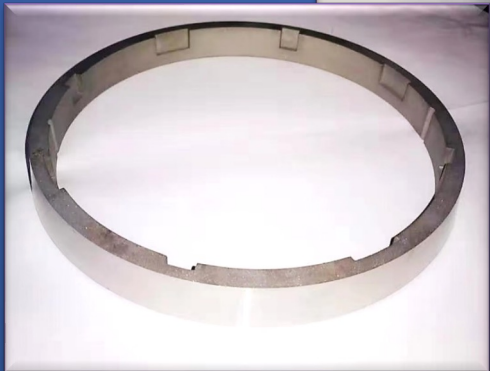
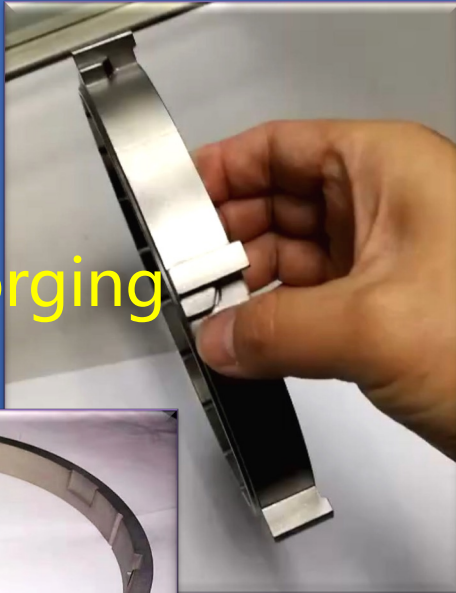
Improve parts density (7.7以上 g/cm^3)

c. 提升產品強度

Improve parts strength

d. 製程少

Less process



Powder Forging

PM products-automotive



PM products-others

Parts for

Power tools

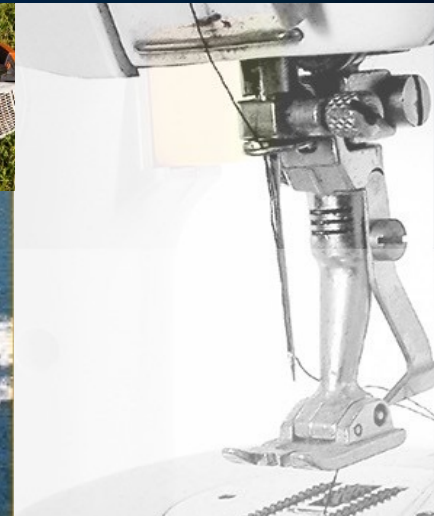
Sewing machine

Floor care

Ship

Gardening tools

Sports equipment



MIM Division

MIM Injection	20
Dewaxing	6
Vacuum furnace	9
Vacuum furnace-RD	1



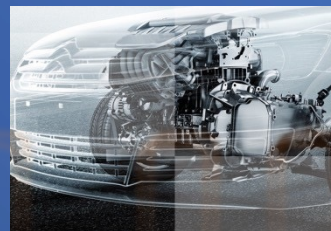
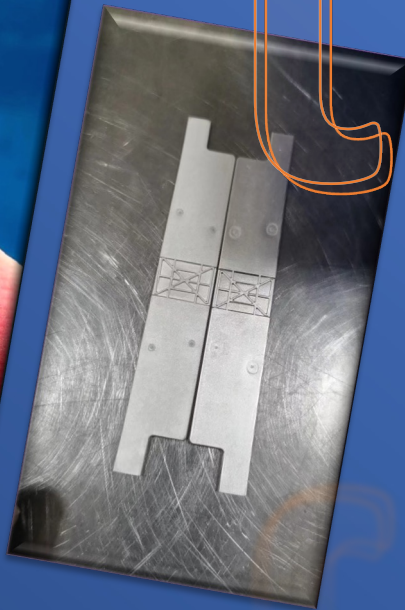
Major facilities are from Japan.

MIM products

Major products are for
automobile, motorcycle,
power tool, kitchen tool,
floor care, bicycle,
electronics, wireless
communication, medical
device & AI hardware



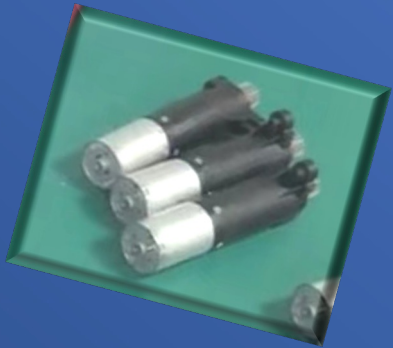
trinity



粉末冶金卓越品牌 傳動機構精確先驅
Leading Brand For Powder Metallurgy & Motion Mechanism Precision Pioneer
Innovation Pioneer For Gear Box

Gearbox Division

- Gearbox applications in power tools, household appliances, logistic managing system, solar energy & medical device.
- Production lines in Taiwan(ZL) and China(KS)



Industry overview

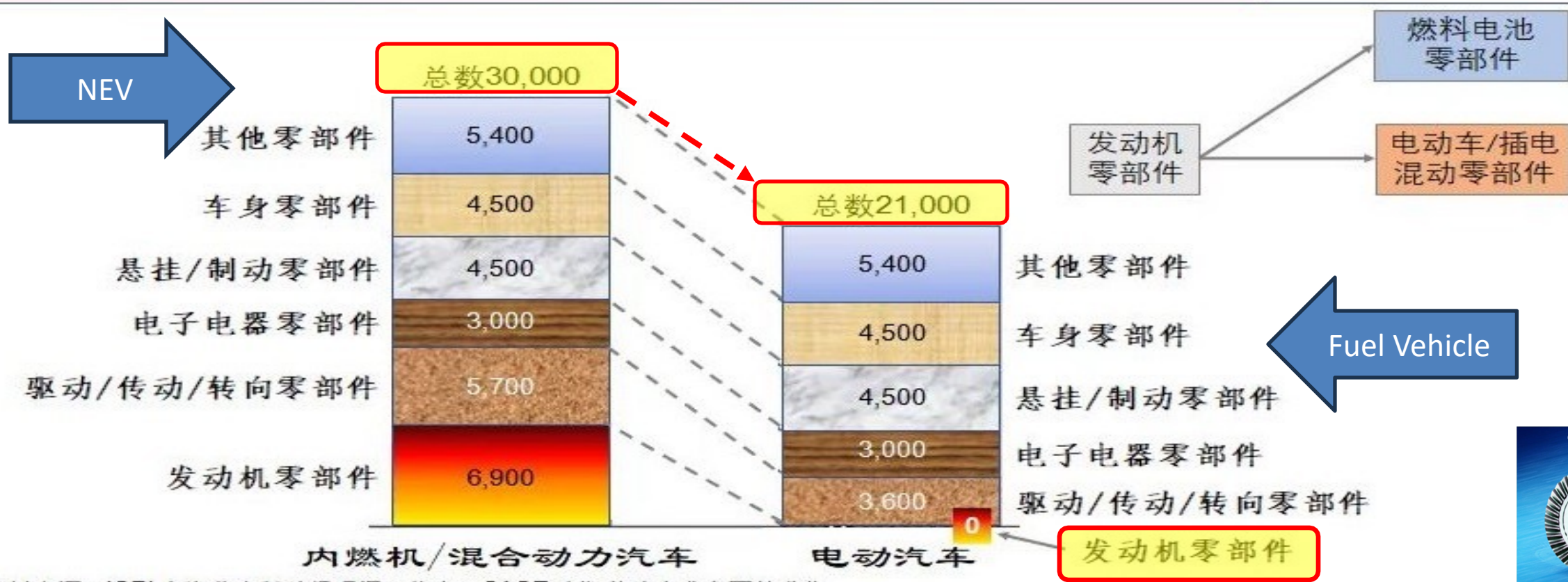
Powder metallurgy- Application in traditional market	Automotives	Powertrain systems(transmission, synchronizer, starting motor, steering wheel)/oil pumps and brake system, power window, power chair, power curtain..	70%	90%
	Power/Air& Hand tools	Mainly used in various gearbox reducer (screwdriver、 electric drill、 hammer drill、 cylinder、 hand tool parts)	15%	
	Sewing machine	Connecting lever crankshaft、 eccentric shaft、 functional parts and fasteners.	5%	
	Others	Aerospace、 medical、 home appliances、 locks、 fuel cells..	10%	10%

- 1.)PM industry has been thriving over 50 years due to improvements on material、 mold、 equipment. Many new comers create market competition.
- 2.)Traditionally, automotive power train system is biggest application for powder metallurgy. However ; electric vehicle do not require powertrain system.
- 3.) Engineering plastic improvements replace some power metallurgy market. **low Cost Chinese forging producers also erode PM market.**
- 4.)Wars between Russia & Ukraine/Israel & Palestine;COVID-19;global inflation; Sino-US trade war lead industrial restructuring. Powder metallurgy industry faces unprecedented challenges.



NEV- Industry migrate

汽车转型升级引发零部件数量变化
Number of Components Change Caused by Transformation



资料来源: IGPI 上海董事长总经理沼田俊介: CASE时代 传统企业必要的进化

Strategy for challenges

Embracing future **BIG** market

Utilizing advantages on material improvement

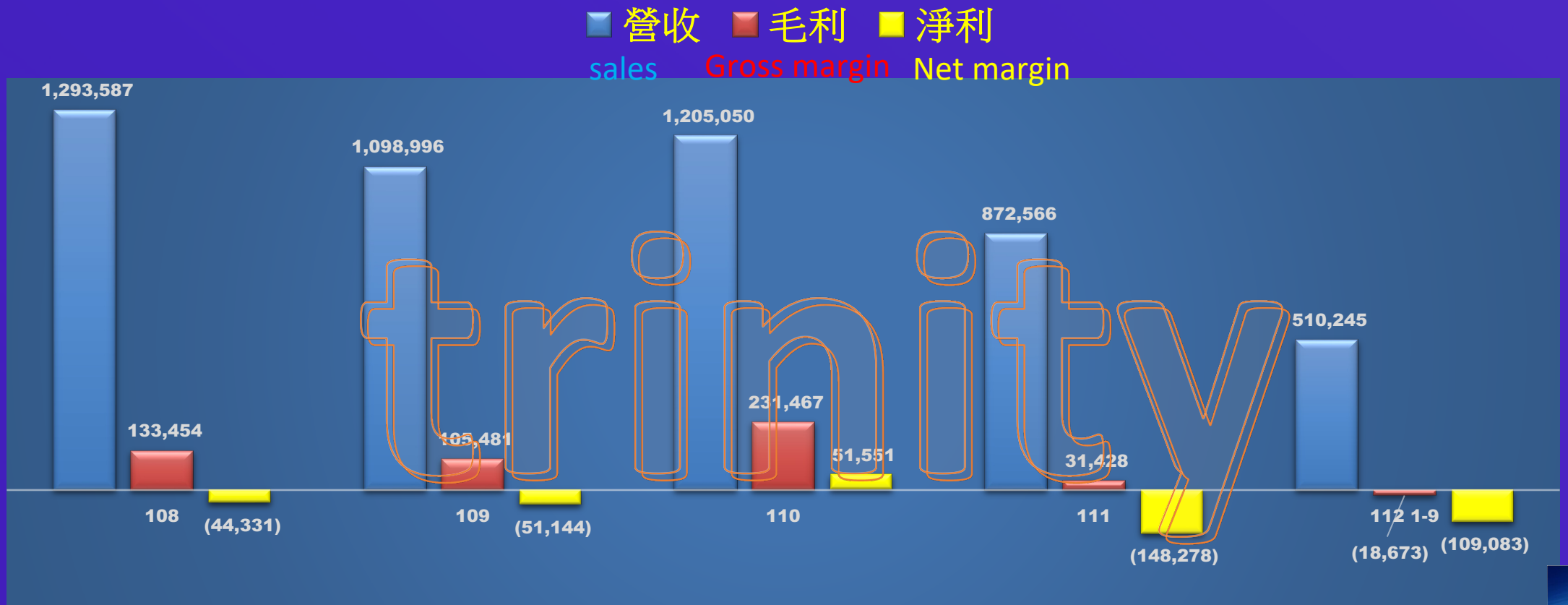
High density/High strength/High wear resistance/High ductility/High conductivity

Customization / Personalization / Differentiation

trinity



Historical operating outcome



Trinity advantages

The only one in the Chinese world owns powder metallurgical 、MIM 、 powder forging 、 gearbox technology and production line. For 3 consecutive year Trinity won Taiwan Excellence award.

- 2018 the first and only manufacturer in Taiwan to successfully develop powder Forging technology and mass production to auto Tier 1 customer.
- 2019 the first manufacturer in Taiwan to successfully develop high density powder metal products.
- 2020 Successfully developing magnetic and stainless steel magnetic materials.
- 2021 Successfully developing MIM parts for chip cooling applications
- 2021 the first company in Taiwan to successfully develop aluminum alloy products and mass production.
- Qualified by 2 different Tier1 auto brands
- 2023 successfully enter medical device industry.

