



eltic-Plus⁺

Smart Connected World



Celtic-Plus Event
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Eco Friendly Lightweight MMC Materials **<Multi-functional high performance light-weight metal matrix composite>**

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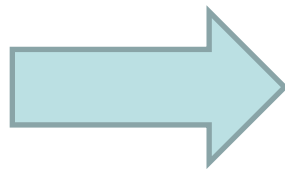


KCTECH
Korea Institute of Carbon Convergence Technology



Why need to Lightweight for Industry?

- Global warming accelerating
- Fossil fuel reserves limitations
- Strengthen of Lightweight policy in the world
- Reinforced Global Environment Regulations
 - Kyoto Protocol: CO₂ emissions reducing
 - EURO 6 Program for Diesel
 - : NO_x(mg/km) < 80.0
 - : Particle Matter(mg/km) < 5.0



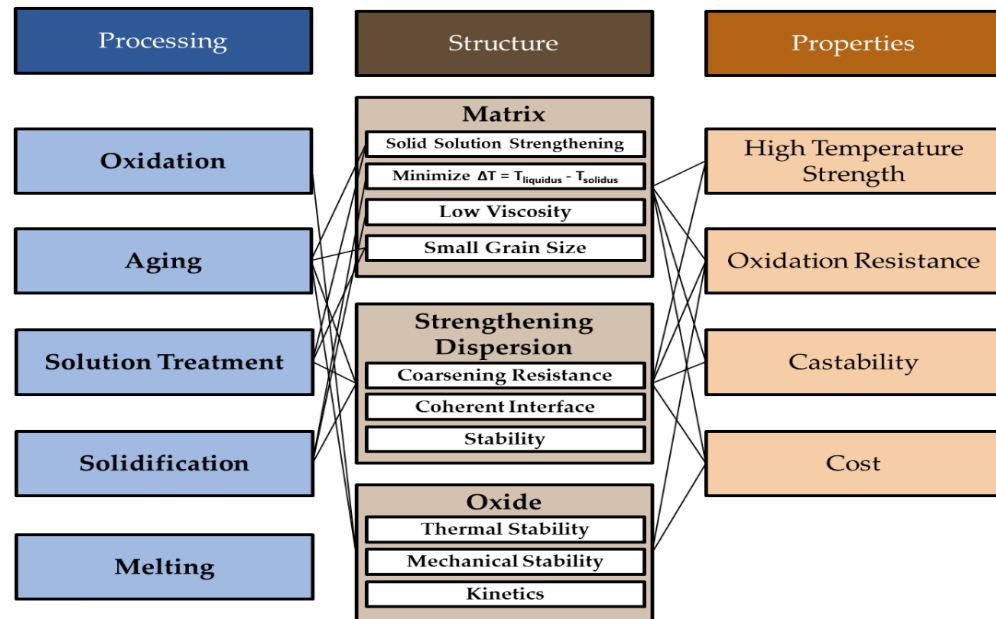
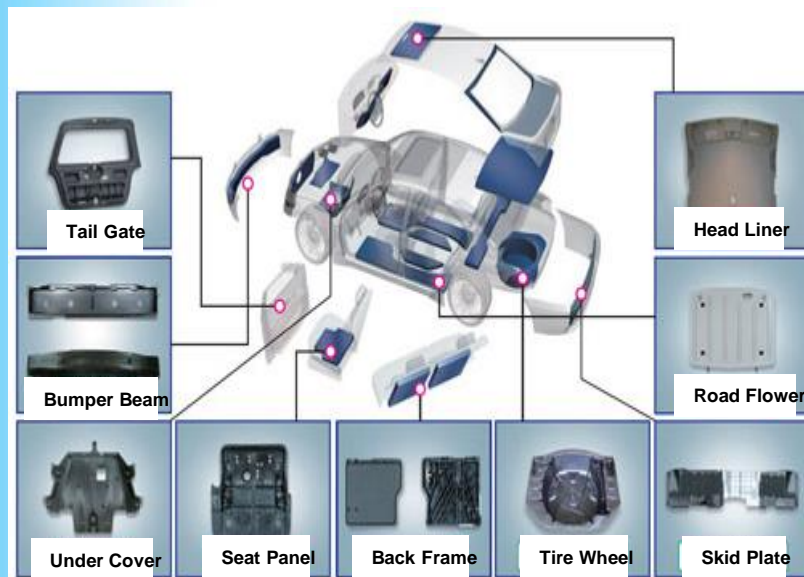
Now is a need to material switching technology for all kinds of industry.

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Proposal Introduction

- High Strength & Low density material necessary.
- Conventional technology need to Nano-technology.
- Nano-scale's MMC material development
- Alloy design for the effectively dispersion property.



Ref. : Hanwha L&C

Ref. : Z.L. Bryan et al, A Microstructurally-Driven Materials Design Approach for Mg Alloy Development, TMS2013

- KCTECH has preparation to the massive high-vacuum die-casting machine.
- KCTECH is looking for the nano-scale alloy design & manufacturing R&D center or Company.

▶▶▶▶ Main Equipment

KCTECH High pressure High Vacuum Die Casting Machine: 4100tons

- Maker : Oscar FRECH (Germany)
- Model : GDK4100-185S
- Budget : 6.09 million USD (7.00 Billion KRW)

Term	Unit	Value
Locking force	kN	41,000 (Max.44,000)
Closing stroke	mm	1,800
Ejector force	kN	900
Ejector stroke	mm	350
Die height	mm	900 - 2,000
Size of platten	mm	2,800 x 2,800



▶▶▶▶ Main Equipment

KCTECH High pressure Vacuum Die Casting Machine: 3200tons

- Maker : Buhler (Switzerland)
- Model : Evolution B 320D
- Budget : 4.35 million USD (5.00 Billion KRW)

Term	Unit	Value
Locking force	kN	32,000
Closing stroke	mm	1,600
Ejector force	kN	680
Ejector stroke	mm	280
Die height	mm	900 - 2,000
Size of platten	mm	2,600 x 2,600



▶▶▶▶ Al-based alloys

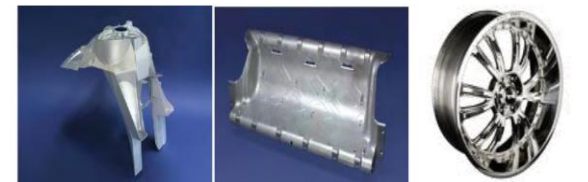
KCTECH Future R&BD Plans: 4,100tons application



A & B Pillars(Audi)

Engine Cradle (VW)

Chassis



Shock tower(BMW)

Fuel Tank Partition (Benz)

Light & High Strength Wheel/
Rheo-posing Wheel

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