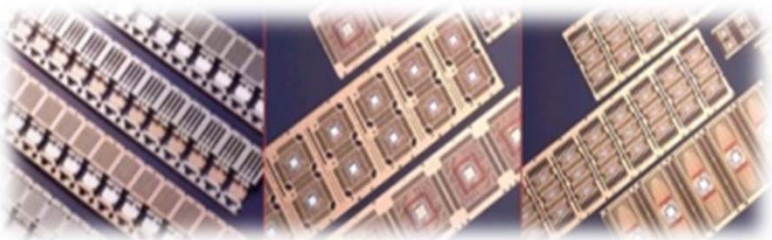
Premier Tooling Partner

Introduction - History

- ▶ 2009 JT Solution established
  General Carbide Exclusive Dealership
- ▶ 2010 Registered as venture business
- ▶ 2010 1'st Patent
- ▶ 2010 Export business started
  (USA, China, Japan, Mexico, Philippine)
- ▶ 2011 2nd & 3rd Patents
- ▶ 2011 ISO 9001:2008 ce rtified
- ▶ 2011 ISO14001: 2004 certified
- ▶ 2012 Hybrid Index System
- ▶ 2013 4th Patent
  Skew + Index Die with Servo Motor
- ▶ 2014 Back Pressure System
  High Speed Index Servo Motor
  Stacking Die Stamping System
  R & D Center established
- ▶ 2015 Selected as Technology Innovation Company (INNO-BIZ)
  Moved to new location
- ▶ 2016 5th & 6th Patent
- ▶ 2017 Servo Motor Coupling System, 7th & 8th Patents
- ▶ 2018 IATF16949:2016 certified
  Glue Core Die, 9th Patent
- ▶ 2020 Started to stamp 0.1, 0.15, 0.2 materials
  10 & 11 Patents
- ▶ 2022 90º Segment Die for Hybrid Motor Rotors
  12th patent

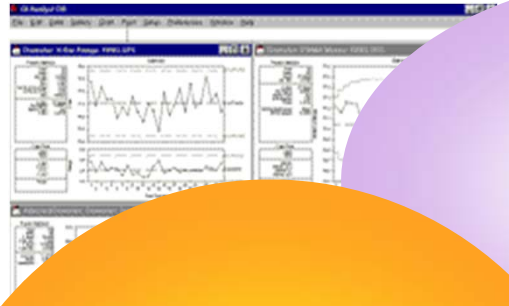


Technology Development History

- 1988~1995
  - Motor Stack Die
  - Emboss Punch Analysis per Type
  - Die Design Standards
- 1996~1999 Process Control System
  - Standards for Die Details and Assembly
  - Press Stamping Accuracy System
- 2000~2003 [R&D, Delivery Control]
  - Multi-row Index System
  - 3-Row Stacking Die for 44-Frame Compressor Motor
  - Concurrent Egineering & CPM System
  - Control Process for Short Delivery at Lower Cost
- 2003~2008
  - Indexing Die for 0.2t Material (Rotor 180°, Stator 90°)
  - 5-Row Pencil Core Die
  - Support for Hyundai Hybrid Motor Development (Part Configurations and Die Development)
- 2008~2009
  - 2-Row LED Lead Frame Die
- 2009~2010
  - Extend Die Guarantee to 30 Million
  - Dies for Saving Materials (Scrapless/Semi-Scrapless)
  - Patents for Stacking Dies & Stamping
- 2011~2012
  - Patent for Back Pressure System
  - Patent for Stacking Die with Half-Blanking Station
- 2013~2014
  - Back Pressure System Sales
- 2015~2016
  - Patent for Generator Stator Manufacturing Method & Stators
  - Patent for High Efficient Generator Stator
- 2017~2019
  - Servo Motor Coupling System
  - Glue Core Die
  - Patent for Glue Core Die
- 2020 – 2022

  Production Dies for 0.1 mm thick materials
  Patent for Dies to stamp Sef Bonding materials
  Patent for 90° Segment Die for Hybrid Motor Rotors

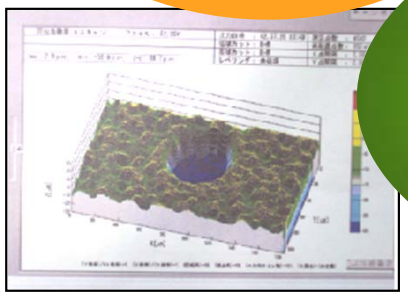
Total Management System



R&D/Design

R&D Focused Company

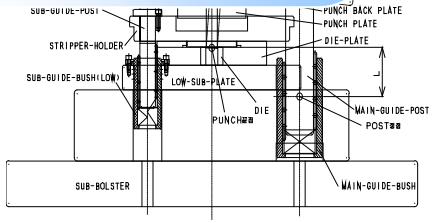
Process Control Design



Assembly & DTO

Core Competence Concentration (Design & Assembly)

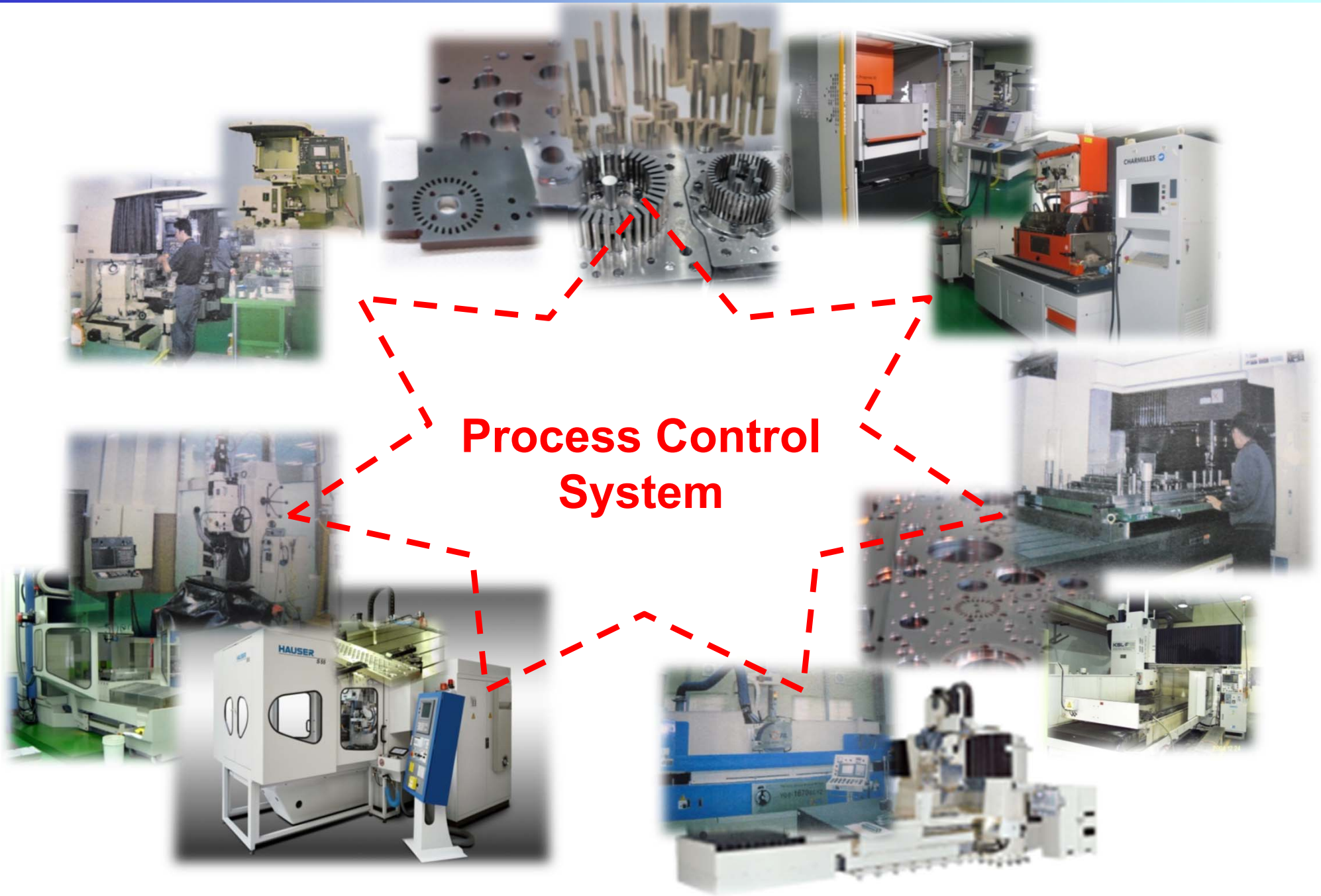
1. Concept Design to reflect part requirements
2. Design goal to fit stamping atmosphere and production volume
3. Propose Alternates after Understanding Customer Requirement
4. Advanced Product Quality Planning
5. Cost Analysis Design



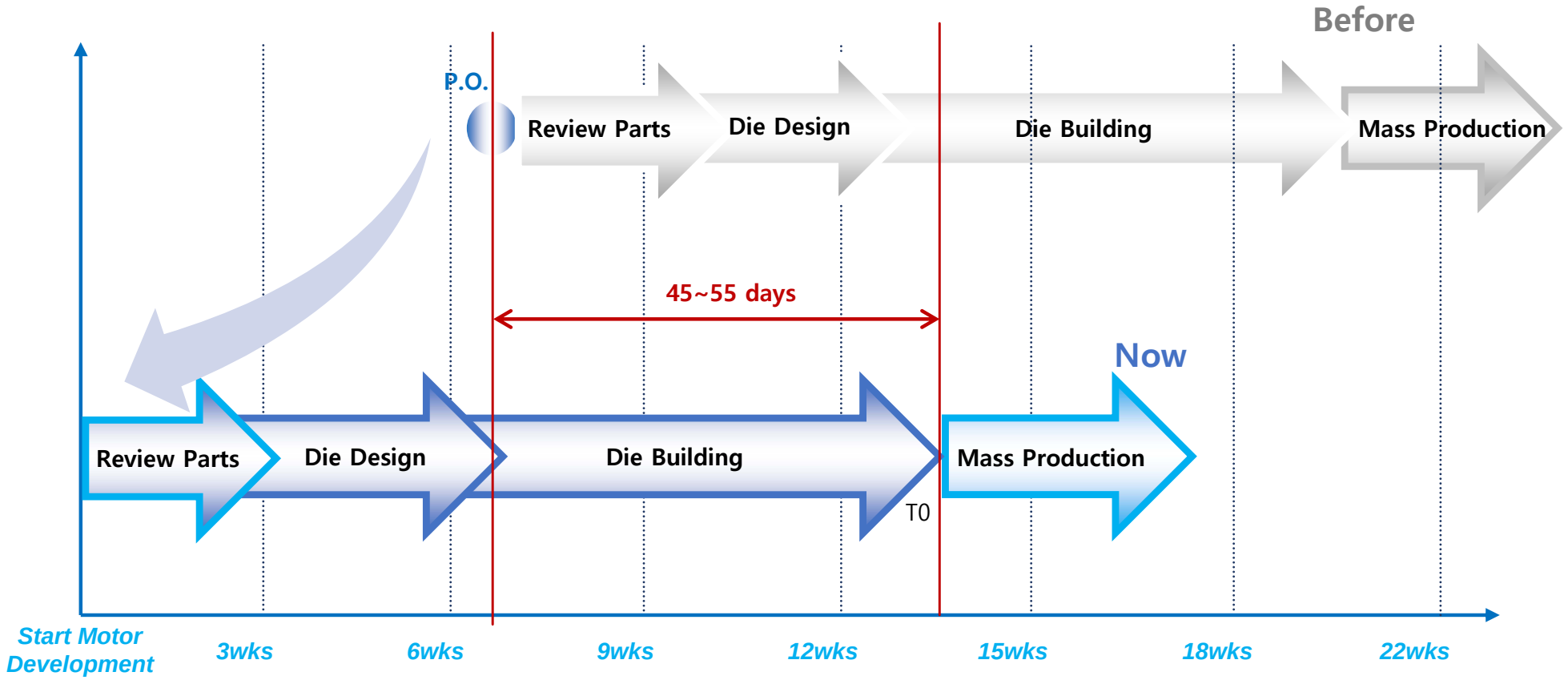
1. Process Control Design
2. Using Largest Jig-Grinder, Improve Precisions and Guarantee Die Accuracy

1. Set-up Best Conditions
2. Make sure to Meet Customer Requirements
3. Prepare Action Plans for Possible Issues
4. Get Feed-backs to make sure Validation

Interacted Process Control System



Concurrent Engineering to Shorten Delivery



- ✓ Shorten Delivery by Participating in Initial Motor Developments Stage
- ✓ Possible to Reserve Die Building Timing

Equipment List

Machine Name	Maker	Q'ty	Model	Remarks
CNC JIG Grinding M/C	**MITSUI SEKI**	3	**6GCN**	
Surface Grinding M/C	OKAMOTO	4	208, 155DX, 63DX, 500F	
Forming Grinding M/C	1	1	JFG-520M	
CNC Machining Center	KAFO	1	BMC3015	
	OKK	2	MCV660, MCV450	
Wire EDM	Sodick	5	AG600L, SL600L, ALN800G	
	MAKINO	1	U32K	
View Machine	MICRO VU	1	EXCEL4220	
3D CMM	ZEISS	1	MICURA	
CAD/CAM	GCE	3	EXCESS	
300TON PRESS	MINSTER	1	PM3(300TON)	
200TON PRESS	AIDA	1	PDA	
125TON PRESS	AIDA	1	PDA	
80TON PRESS	AIDA / ISIS	2	HMX / UMX	
40TON PRESS	KYORI	1	HMX	

3-Large Size Jig-Grinders

Presses

40TON
(KYORI)

80TON
(ISIS)

80TON
(AIDA)

125TON
(AIDA)

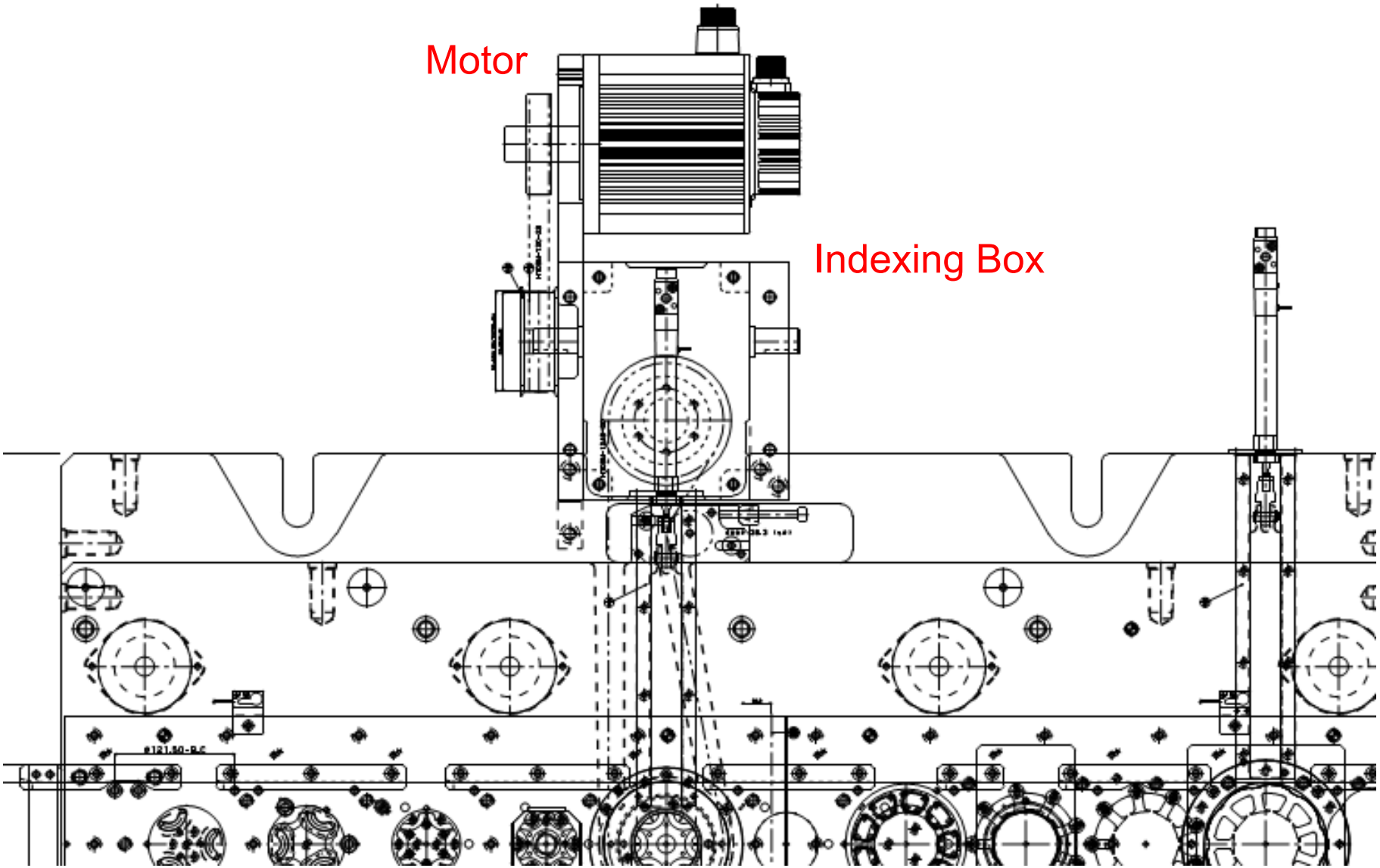
200TON
(AIDA)

300TON
(MINSTER)

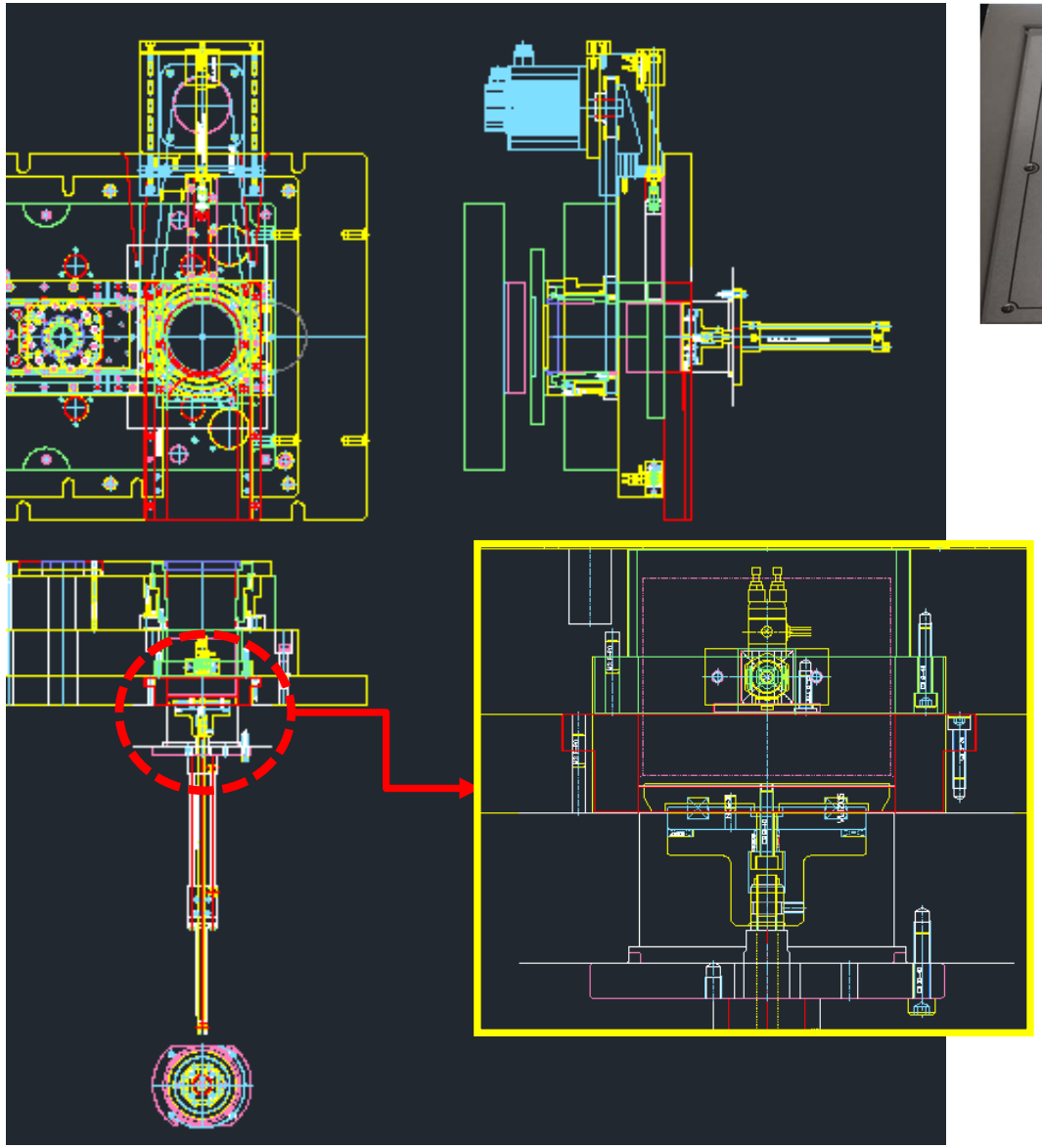
Capabilities and Technology

Hybrid Indexing Drive	✓ Servo Motor + Indexing Box
Back Pressure System	✓ Thin Material Stacks with High Quality
Skew + Index Die	✓ Multi-Row Skew & Index Combination System
High Speed & Long Die Life	✓ SPM: 600~700 ✓ Regrinding Cycle: 20million ✓ Die Guarantee: 300million
Prototype Parts	✓ Short Delivery 4- 6 weeks ✓ Same features as production, indexing, half blanking, … ✓ Plastic Overmolding
Part Handling Automation	✓ In-line Part Handling System with 100% Checking
Production Dies for Thin Gages	✓ 0.1, 0.15, 0.2 for EV Motors or High Efficiency Motors

Hybrid Indexing Drive

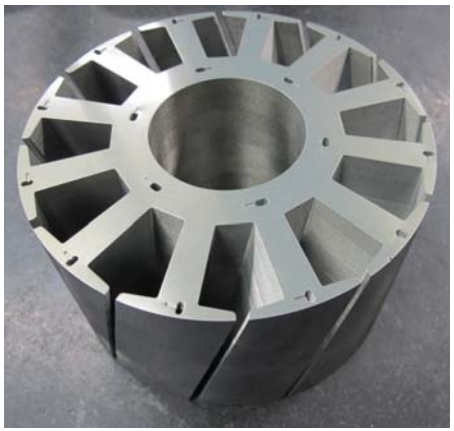


JTS Back Pressure System



- ✓ Easy to install
- ✓ Compact system easy to move
- ✓ Cylinders kept in a cart to move and store
- ✓ Interface with Die Controller

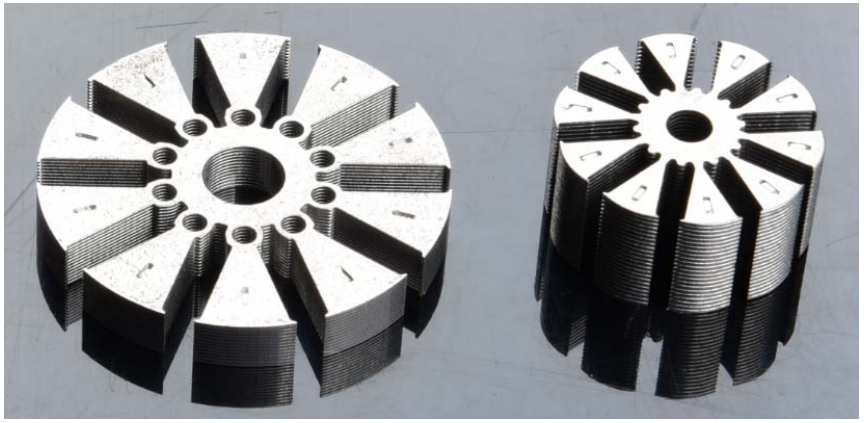
Sample Parts with Back Pressure System



- ✓ 1-row Index + Skew Die
- ✓ 120 mm tall with >99% Filling Factor

- ✓ 2-row indexing die
- ✓ 0.35 material

- ✓ 3-row die
- ✓ 0.5 material

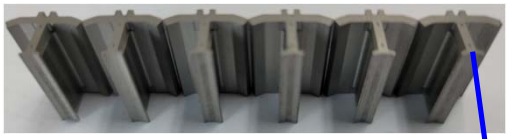


- ✓ Prototype parts with indexing

Sample Parts with Thin Materials

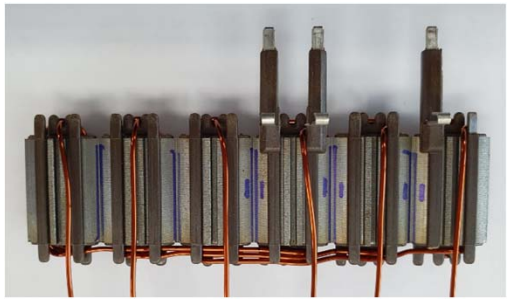
Thickness: 0.1

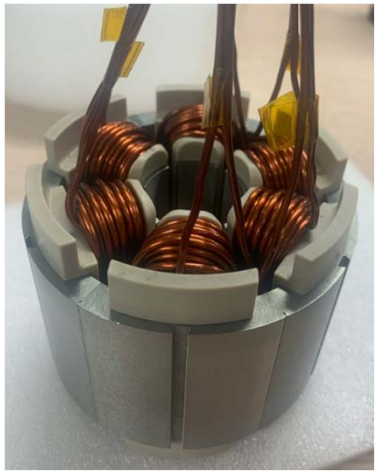
Thickness: 0.2

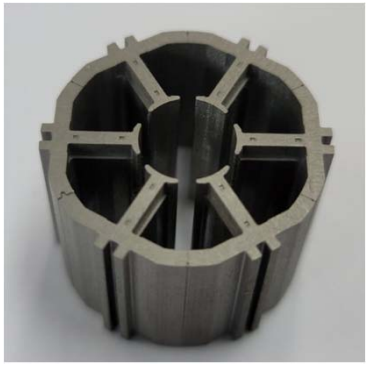


(12) 0.35 x 1 interlocks

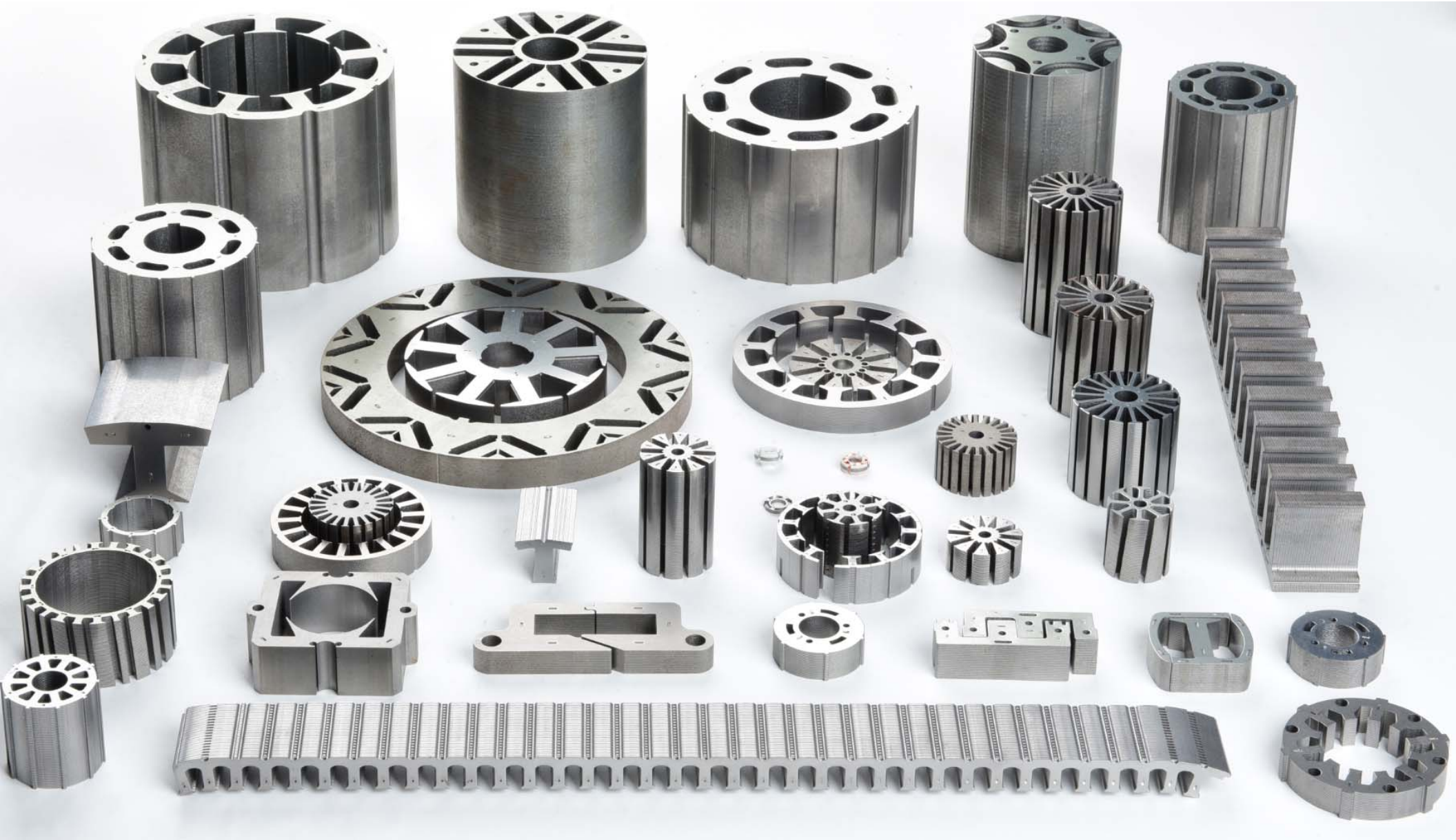
(12) 0.8 x 2.5 interlocks



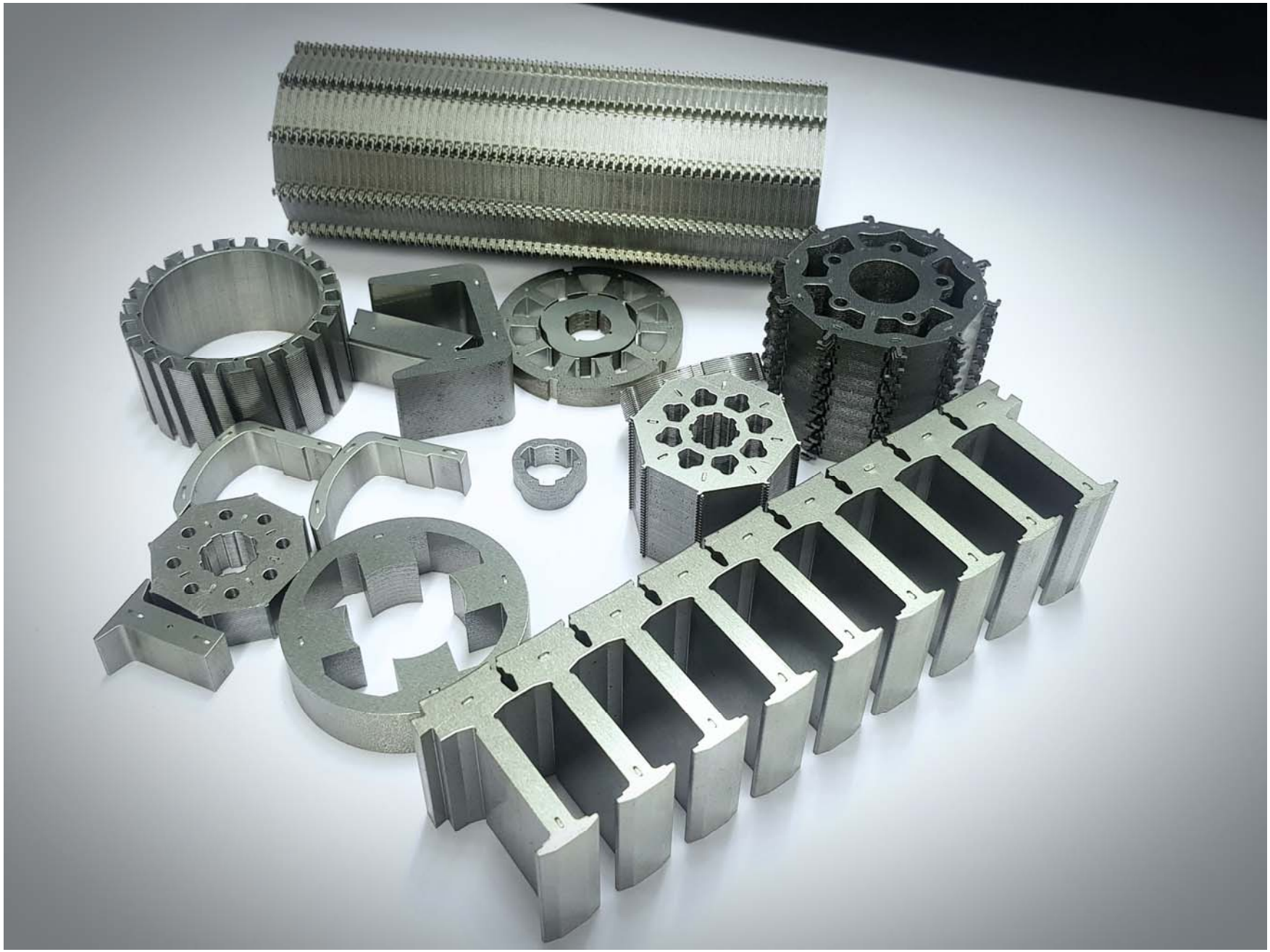




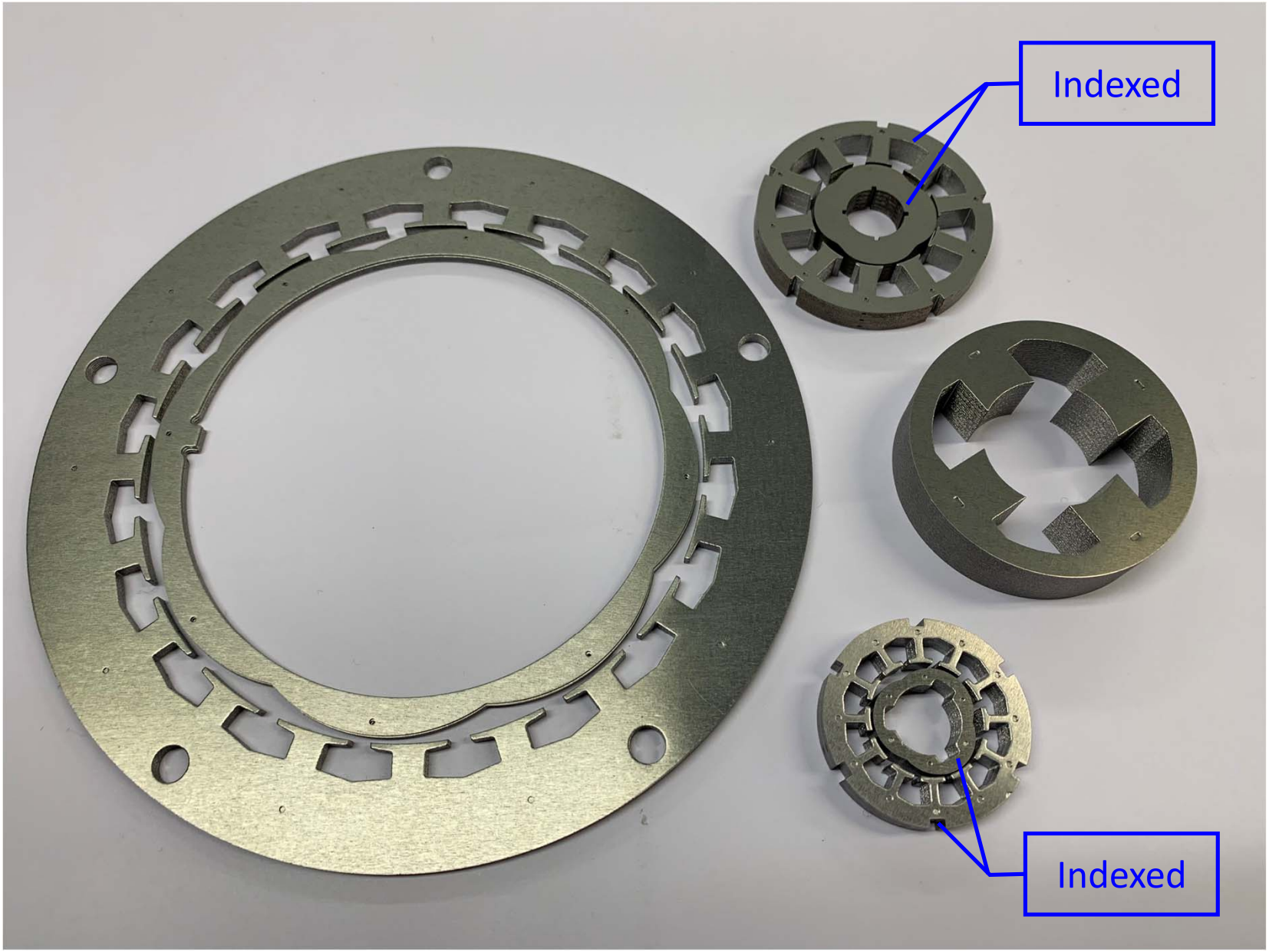
Various Sample Parts



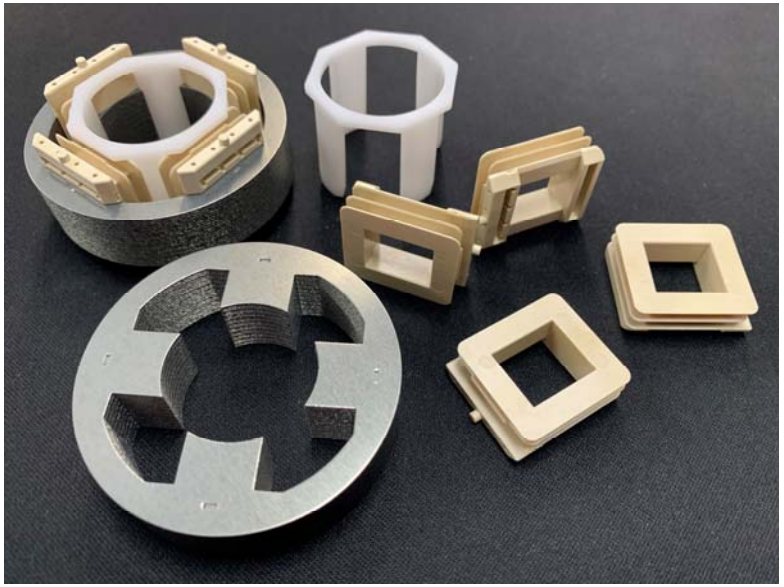
Prototype Part Samples

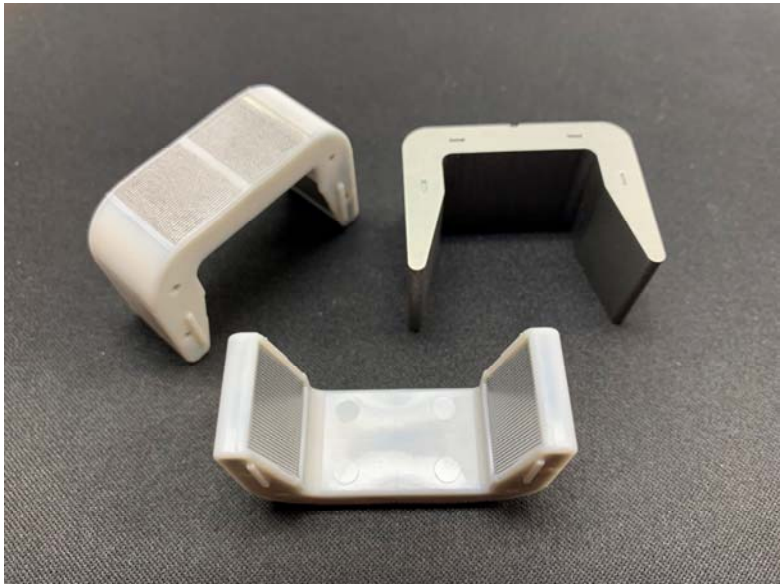


Prototype Resolver Part Samples

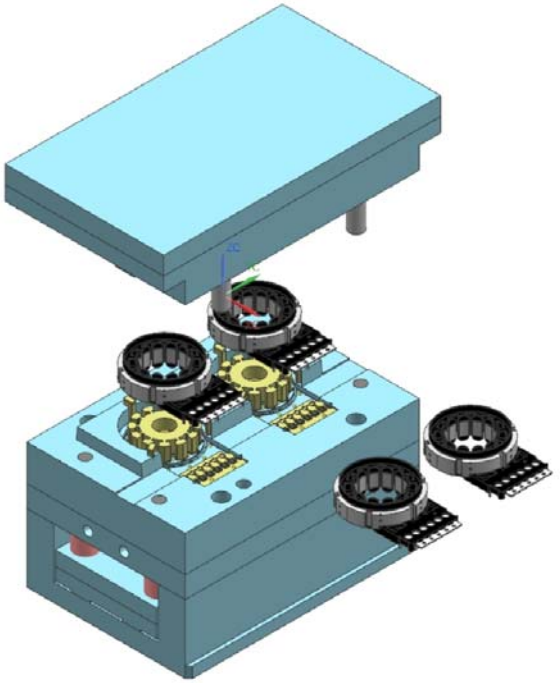


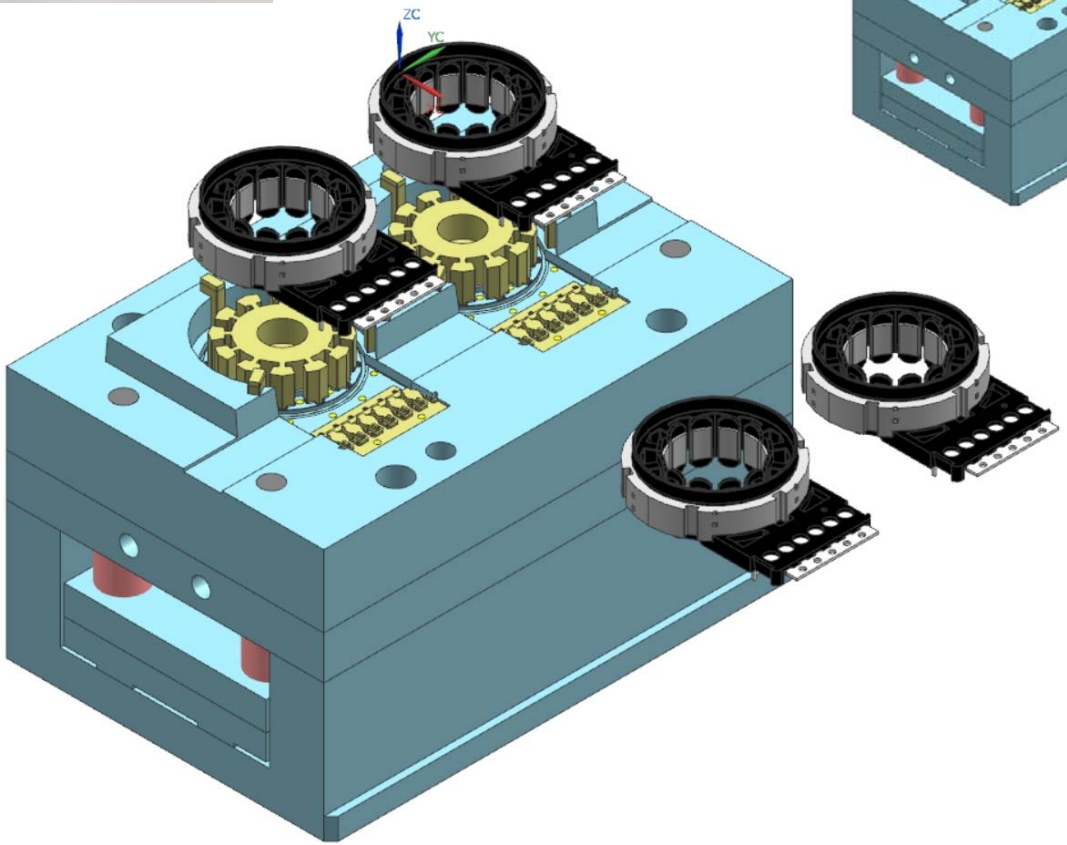
Prototype Plastic Overmolding Part Samples



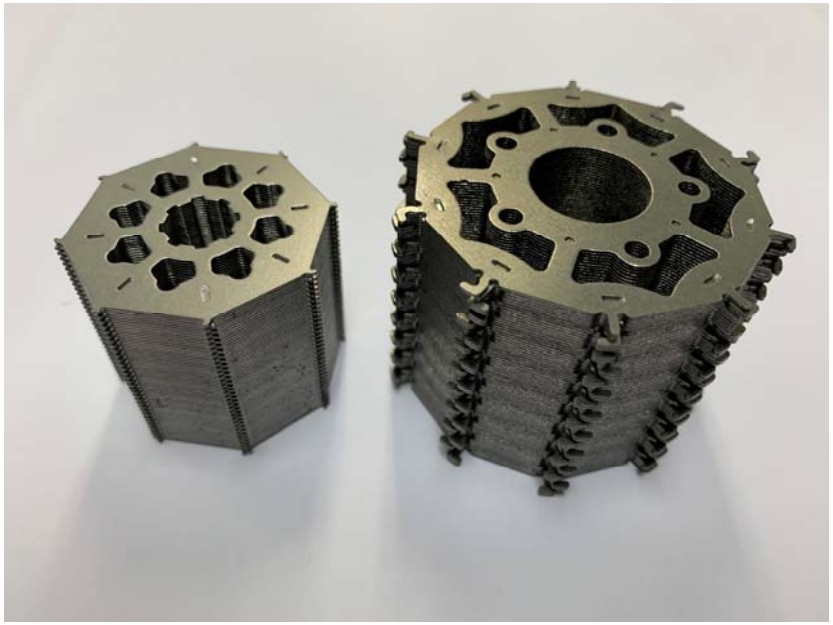


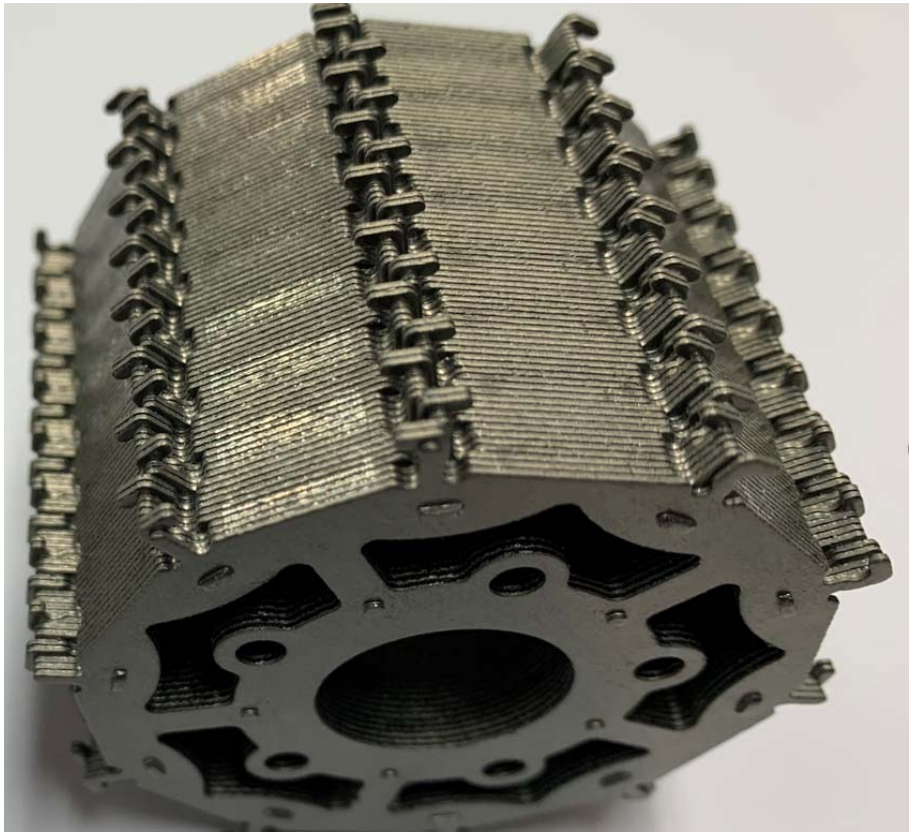
Prototype Plastic Overmolding Mold

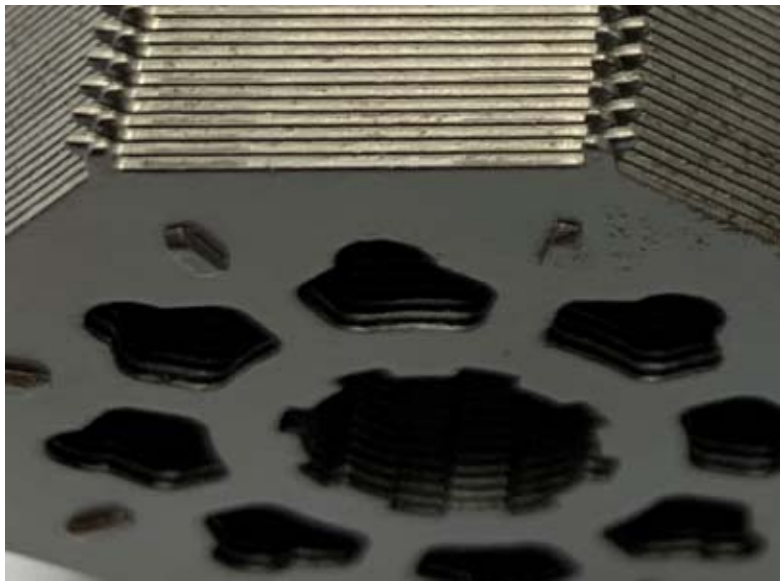




Prototype Half Blanking & Indexing Part Samples

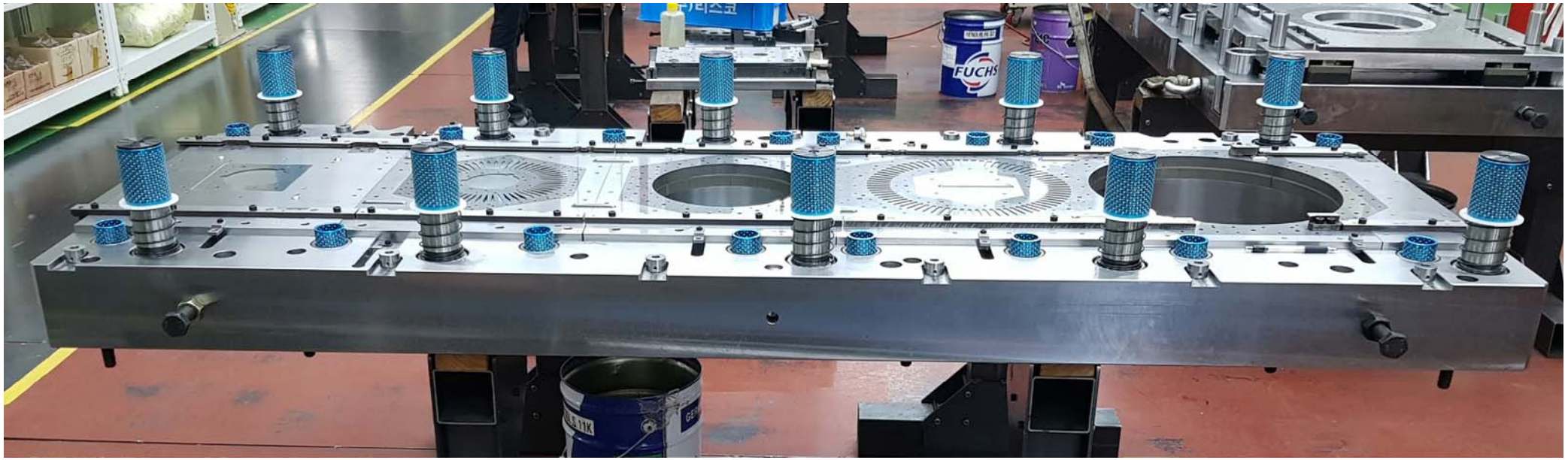




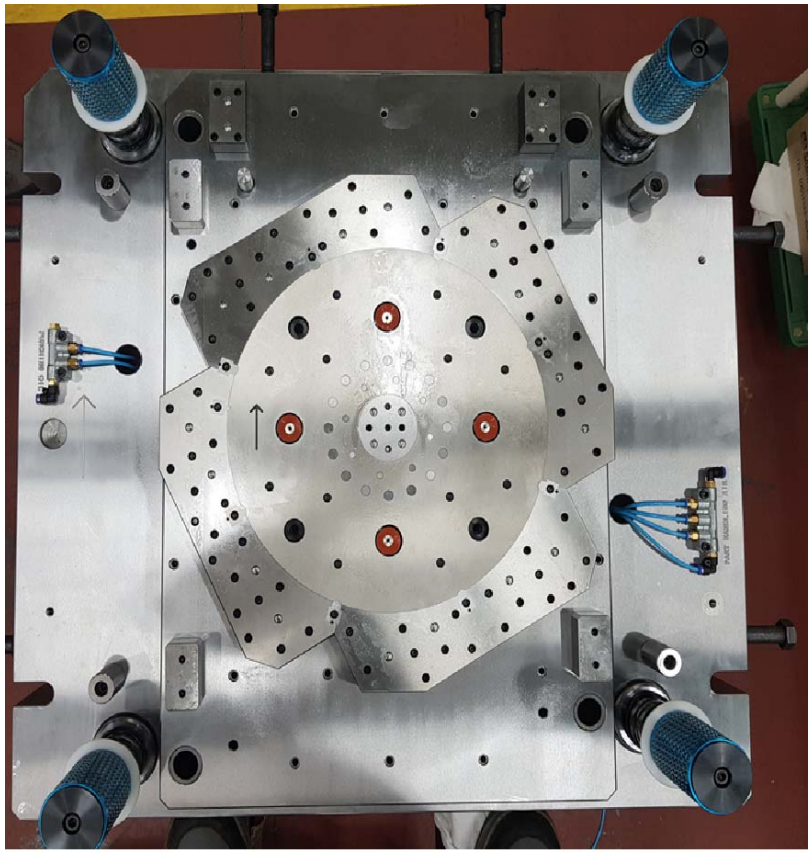


Large Progressive Loose Lam Die Sample

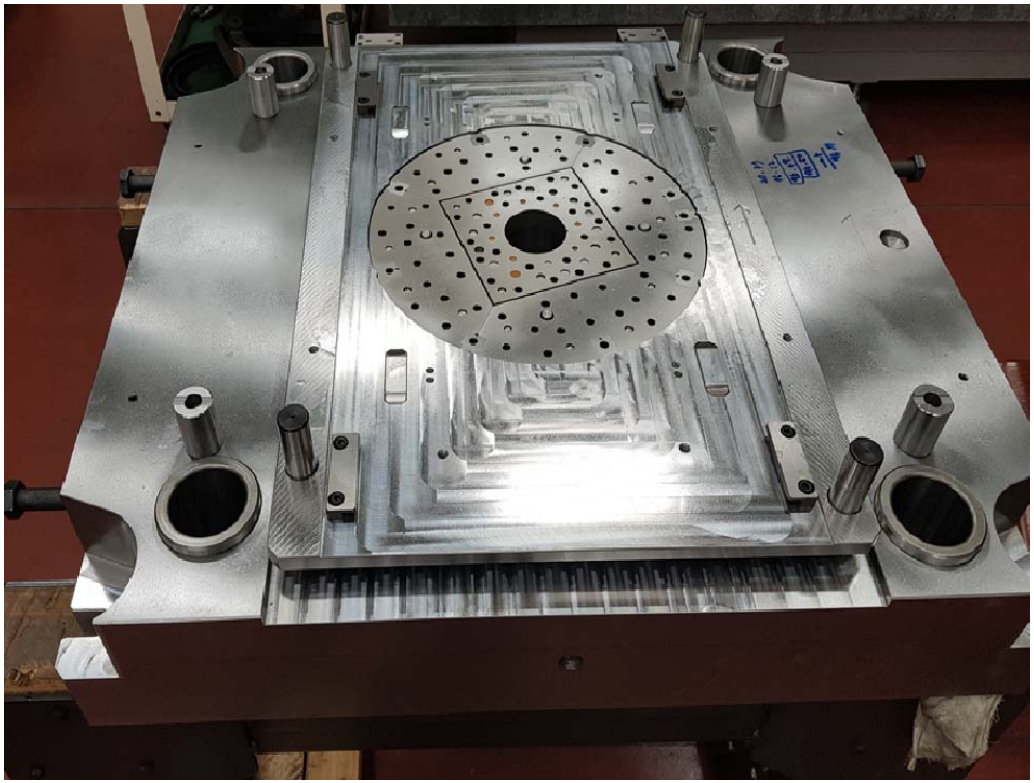
- ✓ Stator OD: 18.5” (470 mm)
- ✓ Die Size: 109” x 37.5”, 2770 x 950
- ✓ One piece die set
- ✓ Carbide punch and die



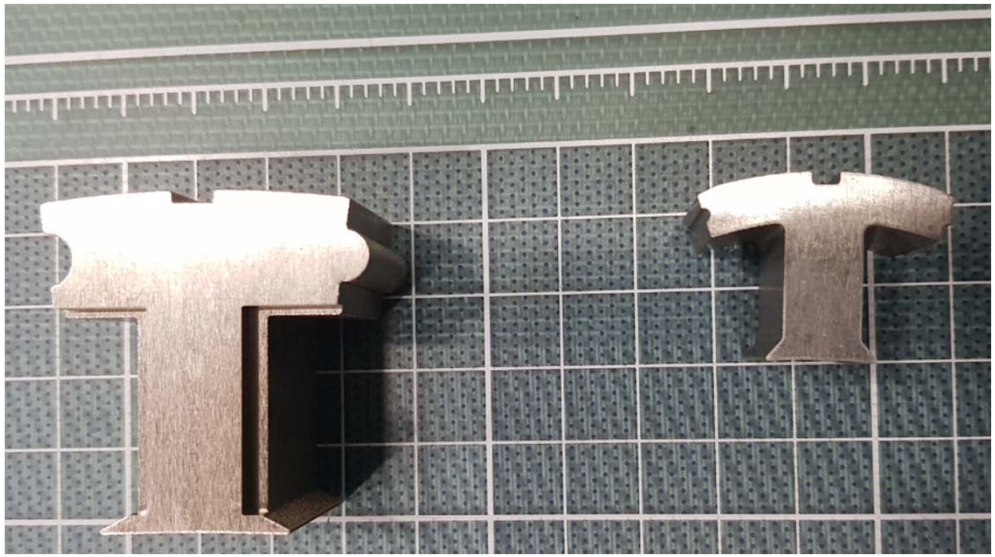
Cookie Die Sample

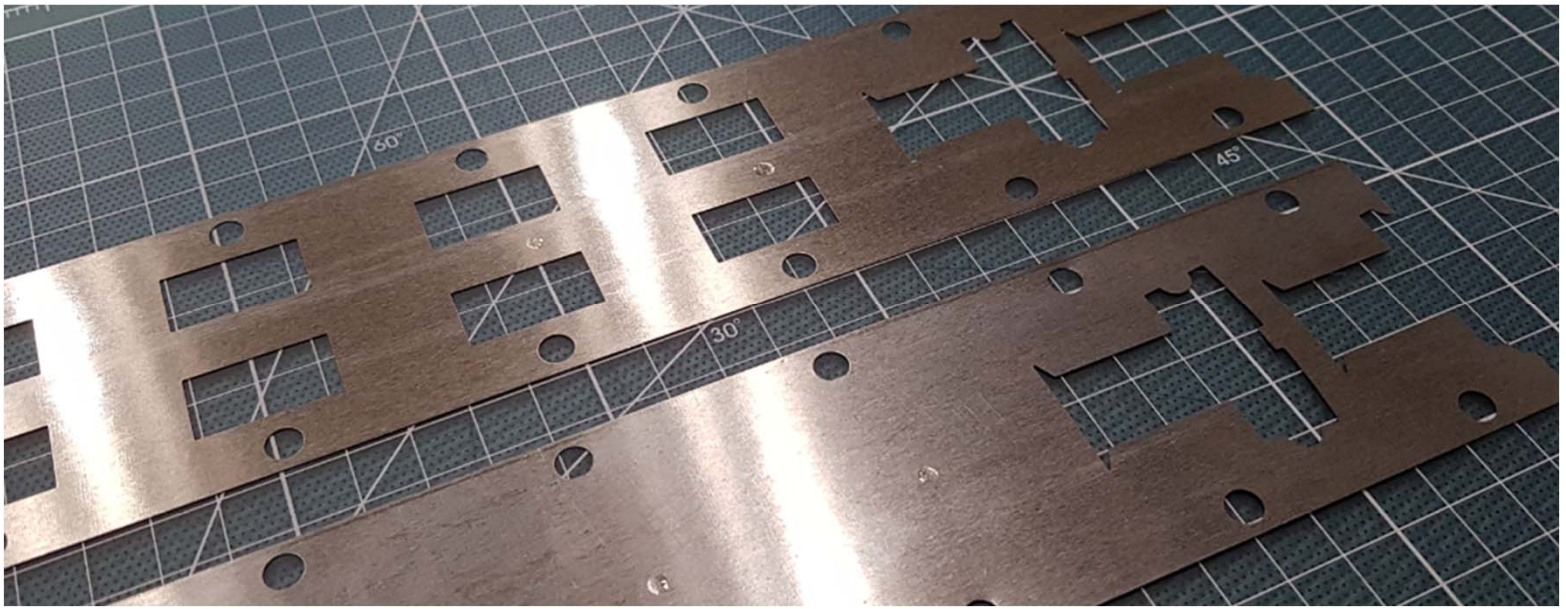


- ✓ No knockout pin used
- ✓ Clamp material with max. spring force for best flatness & size guaranteed,
- ✓ No blank drop issue



Glue In Die Core Samples





Certificates of Quality and Patent

ISO9001:2008

ISO14001:2004

IATF 16949

PATENT

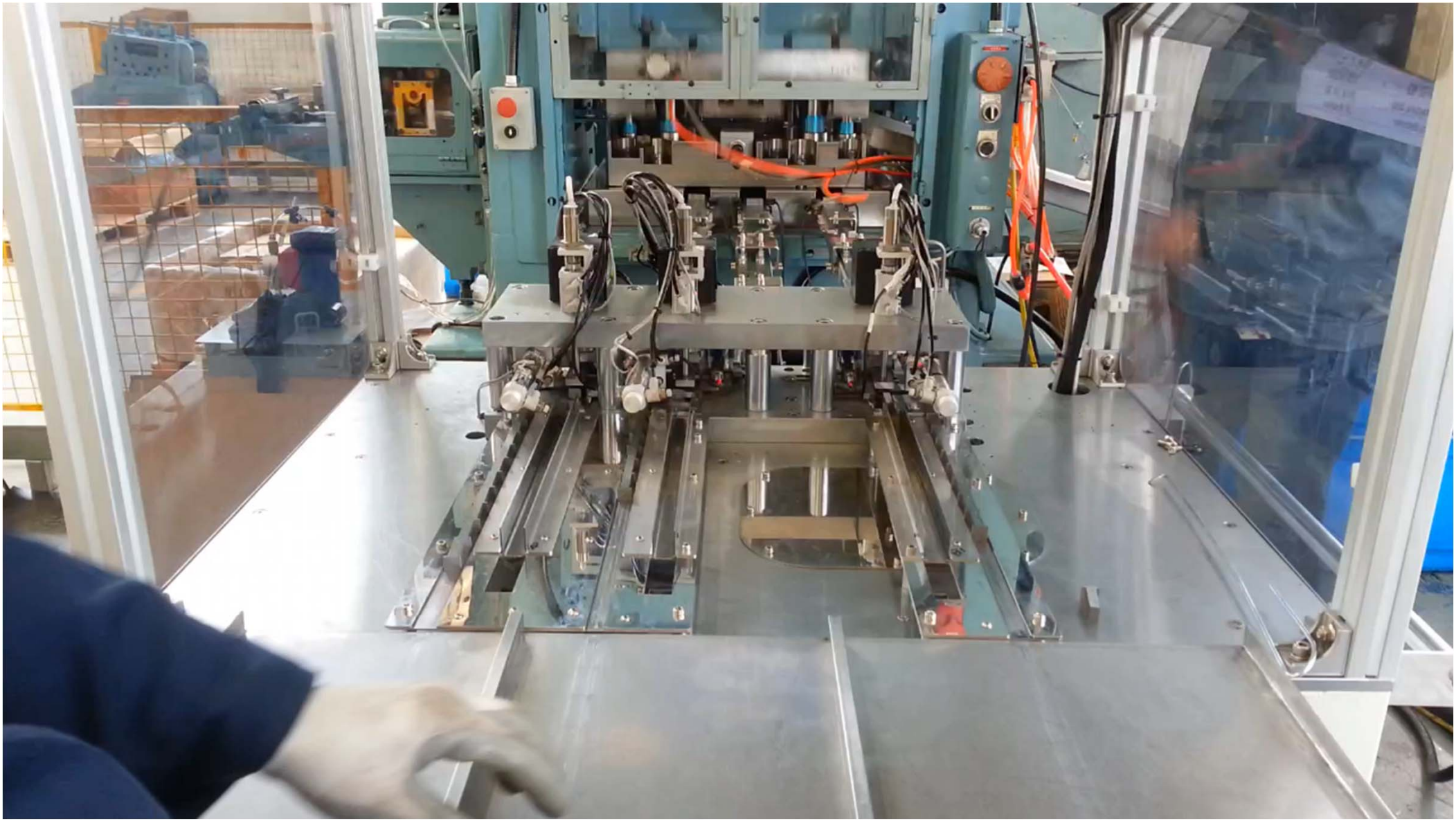
Video Clips to show JTS Capabilities

- Back Pressure System
- Double EE Stacking Die for Contactors, 4 E stacks at 650 SPM
- Inline Systems for Ignition Coil T or C stacks with 0.35 T
  - 3-row T stacks and 4-row C stacks
  - Running at 400 SPM
  - Rehit with 3-ton pressure
  - Measure stack heights at free condition
  - Store measurement data

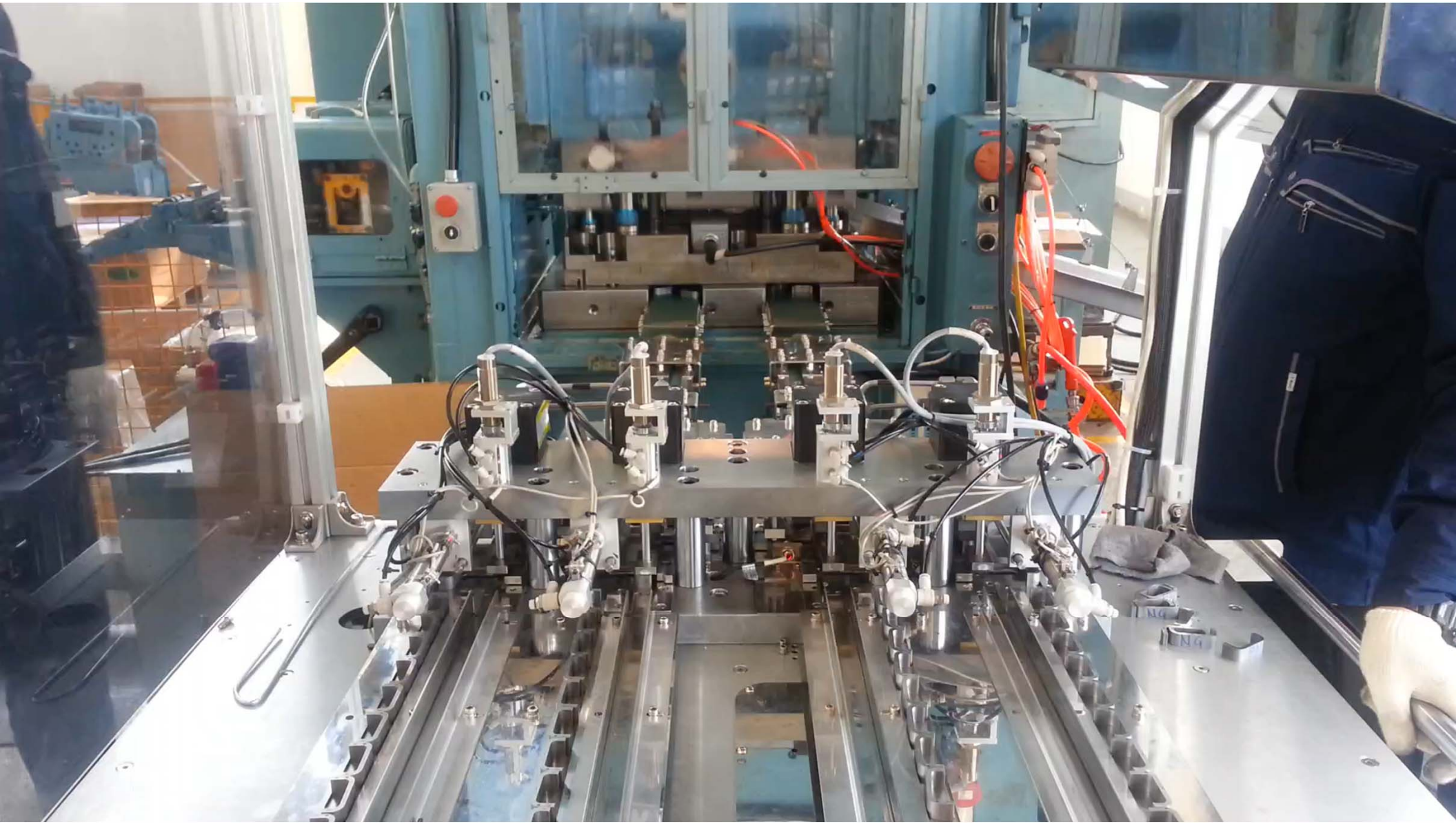
Back Pressure System for Indexed/Skewed Stack Lam Die

High Speed Performance Die – 650 SPM

Inline System_3-Row T Stacking Die



Inline System_4-Row C Stacking Die 1



Inline System_4-Row C Stacking Die 2