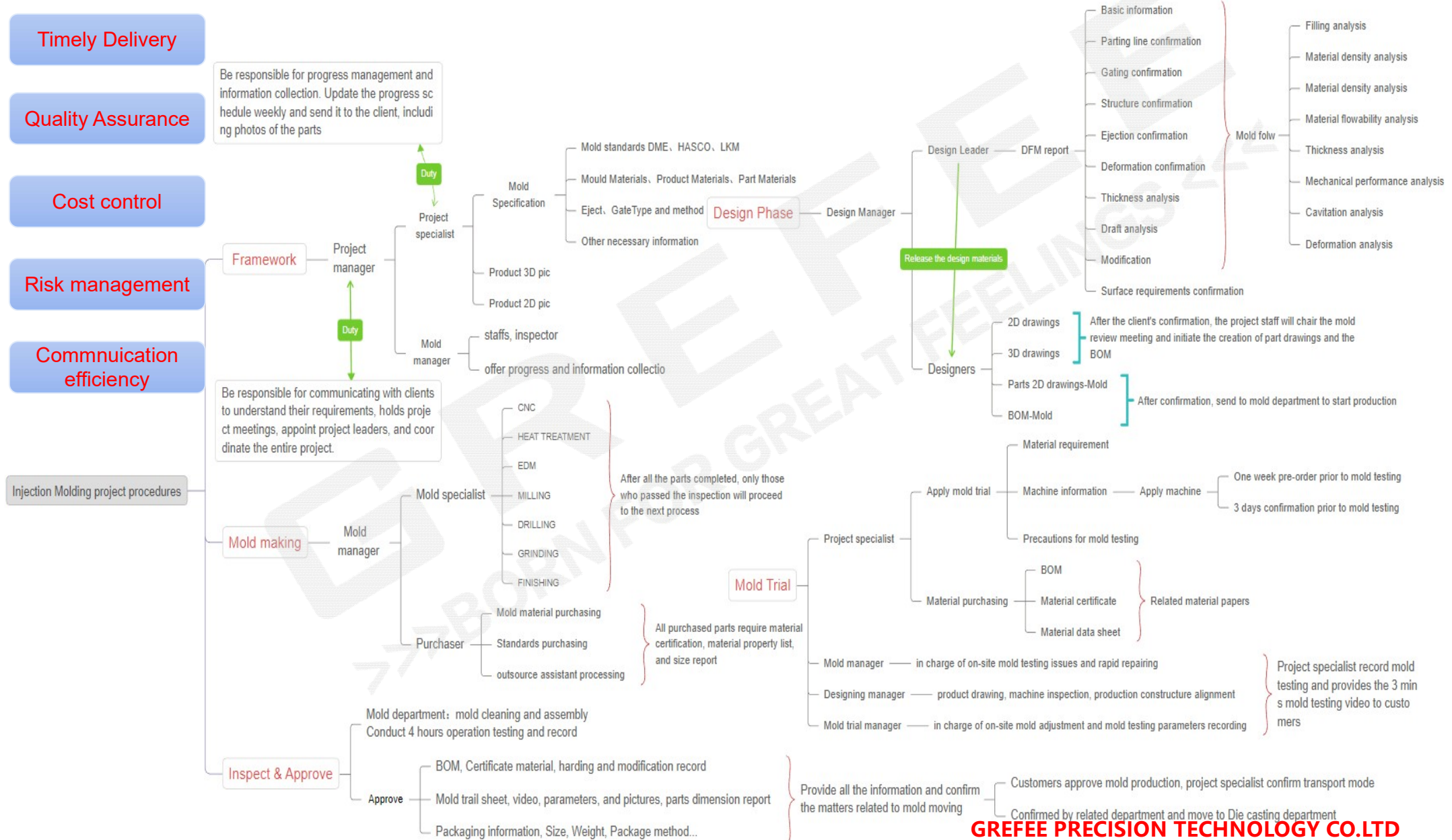
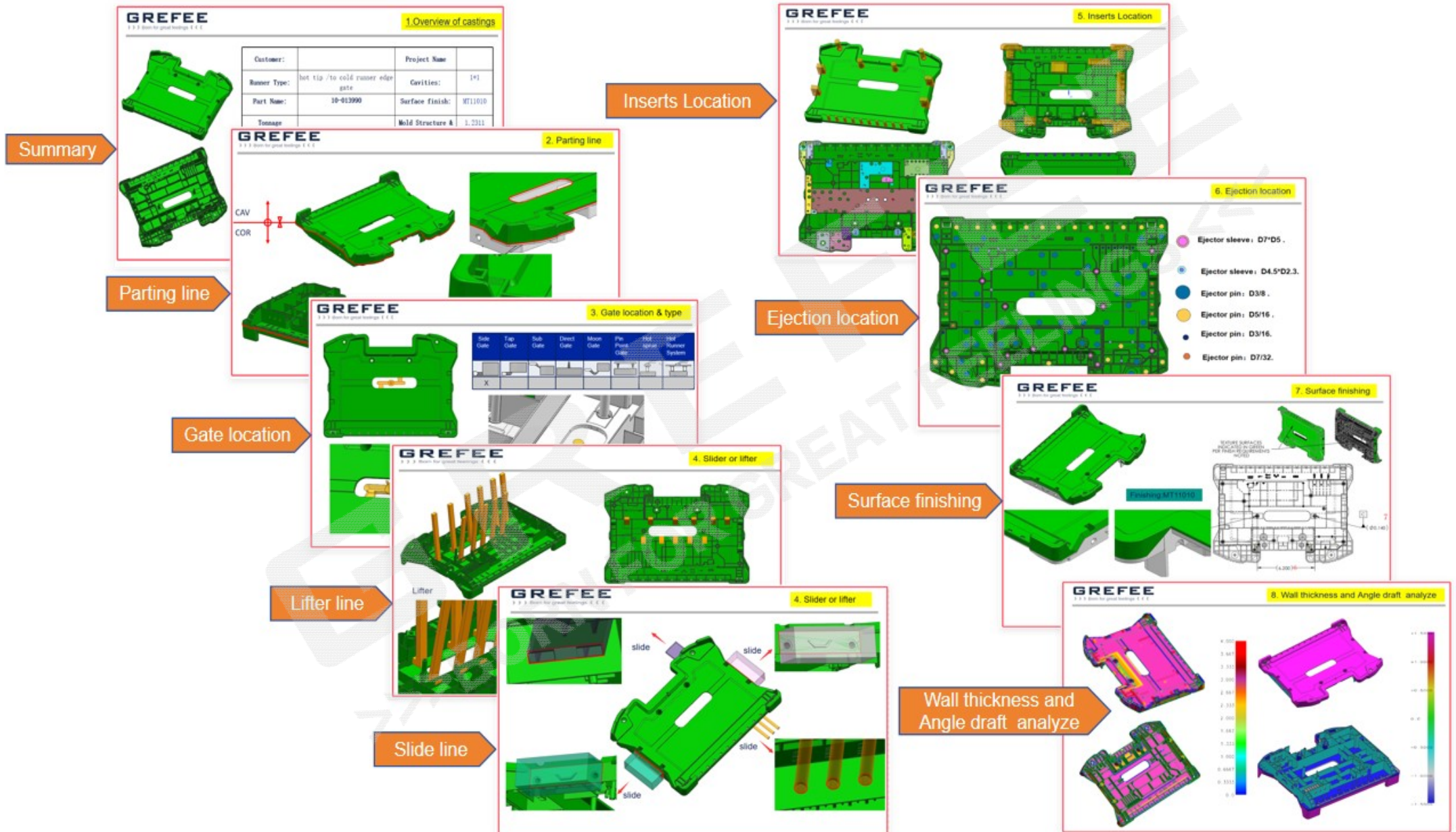


Precise control, achieving excellent quality

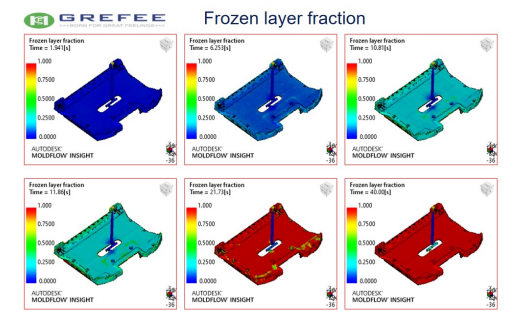
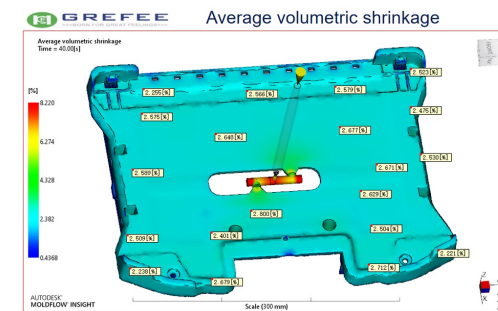
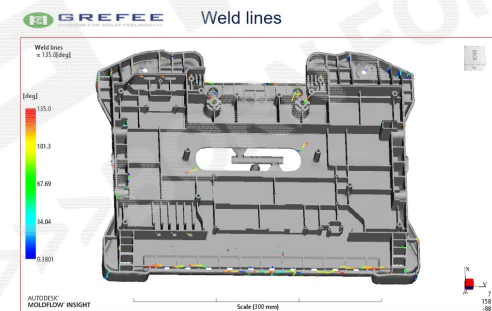
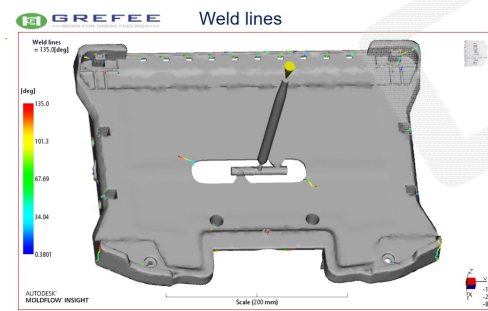
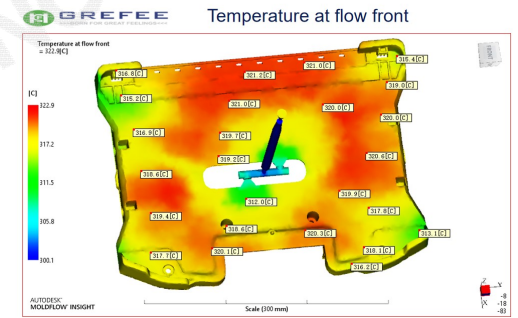
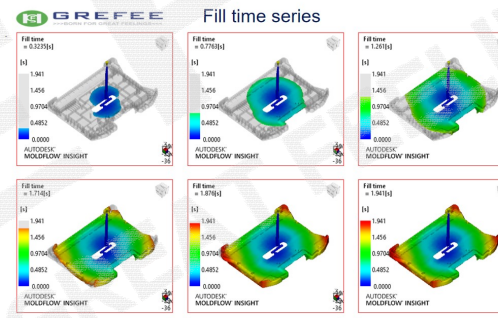
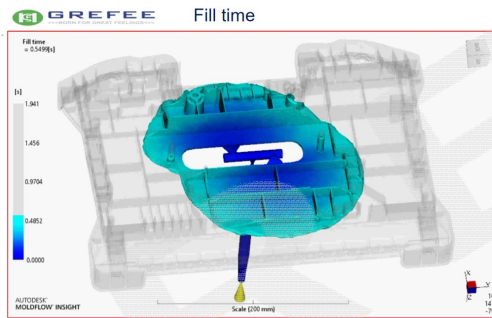
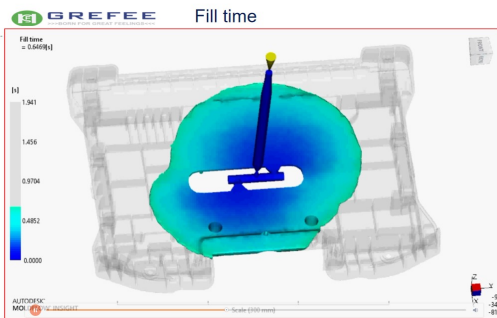
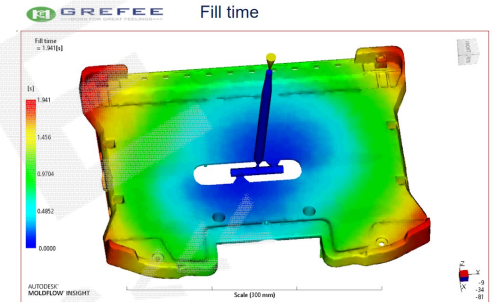
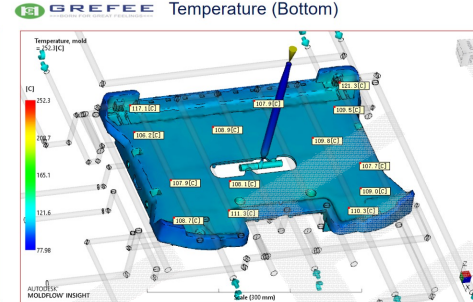
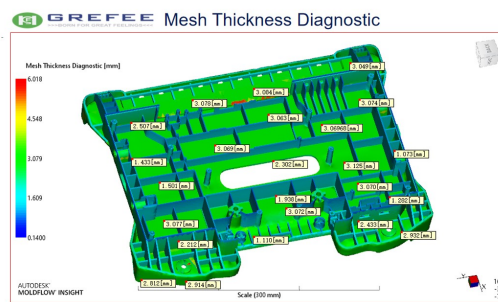
- At **GREFEE**, a well-structured project management plan is the core of delivering excellence in every project. From RFQ to final delivery, effective project management is the key to success.
- GREFEE** aims to ensure that the mold design and manufacturing process meet customer requirements while ensuring the smooth progress of the project.



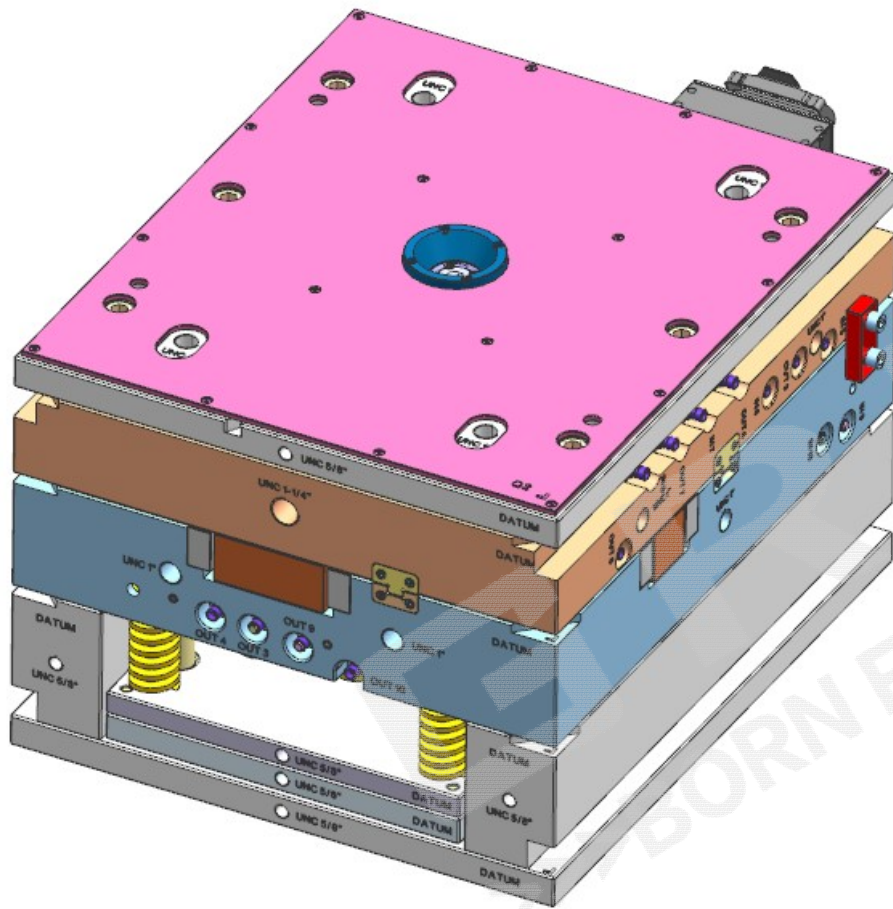
DFM report and proposal before mold design for customers review and confirmation



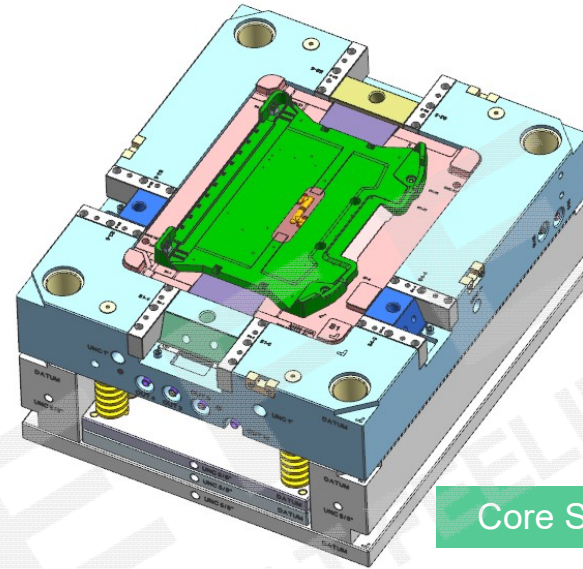
Mold flow report and proposal before mold design for customer review and confirm



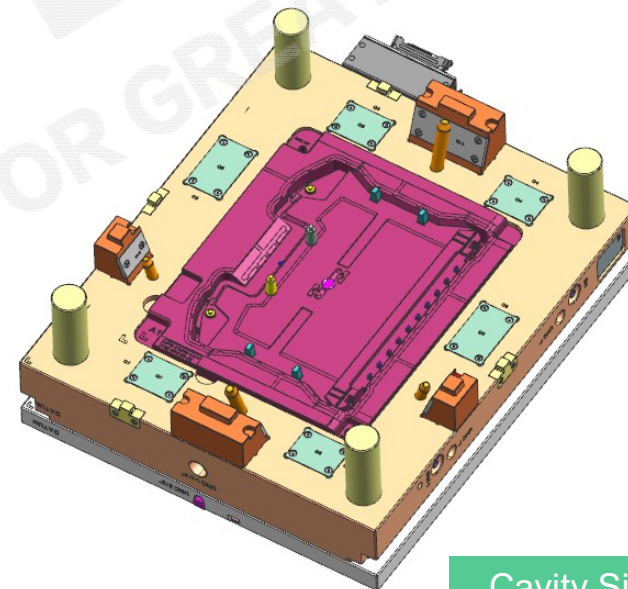
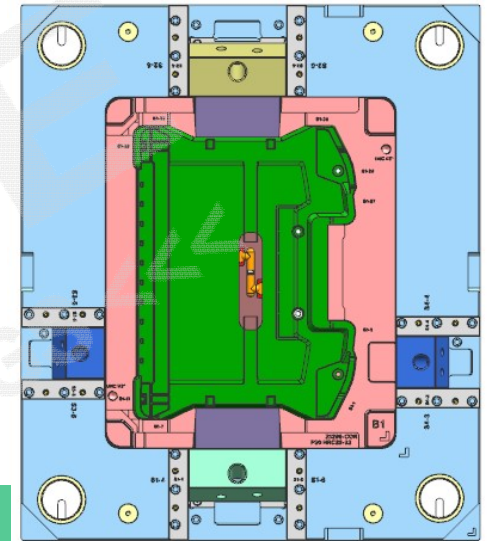
With all 3D mold drawings completed, the mold designer performs a self-check according to customer requirements. The drawings are then submitted to the mold manager for review. Finally, the approved 3D drawings that meet customer specifications are sent to the client for confirmation



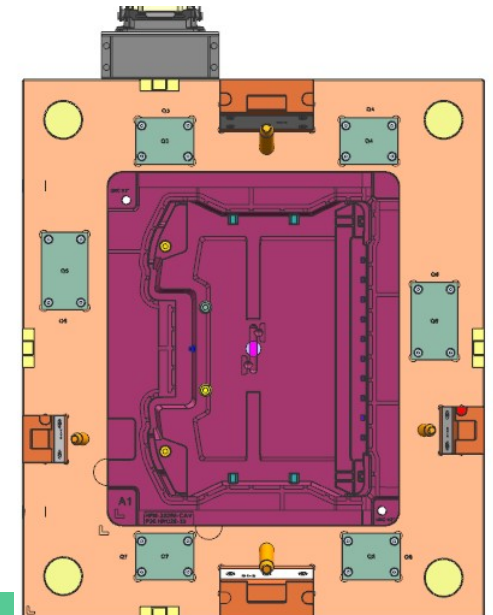
3D View



Core Side



Cavity Side



The final mold review is conducted based on product drawings and machine specifications to ensure the mold meets customer requirements. Additionally, an evaluation is carried out with various departments to ensure both mold quality and delivery timelines are met

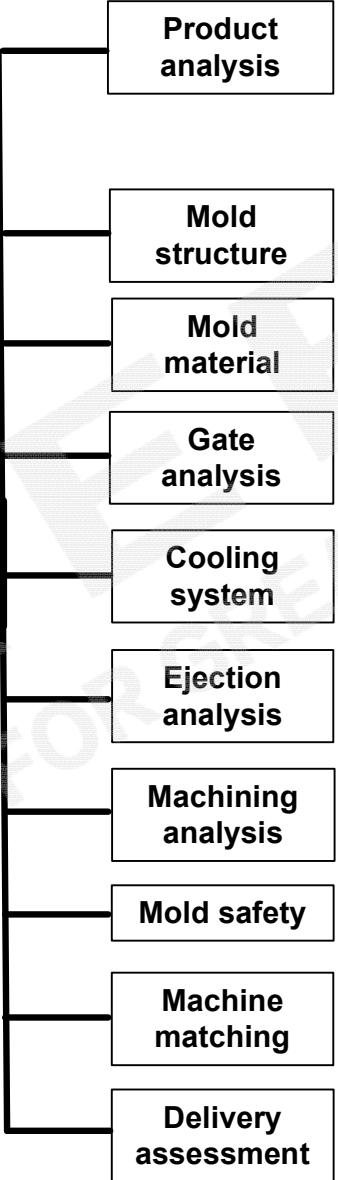


Mold Review Meeting to confirm mold delivery timeline

GREFEE		模具设计结构评审记录表					
客户:		产品编号:		模具编号:	2398	日期:	2022年11月26日
设计:	RICKY	工艺:	注塑	制模:	2	项目:	
检讨内容		NG/OK	产品图和模具图				
产品分析	产品的大小, 产品胶位厚度, 产品外观要求.	OK					
	产品的进胶方式.	OK					
浇口分析	产品的结构(行位, 斜顶, 推板).	OK					
	模仁的材质是不是适用产品材料	OK					
前模运水部分	浇口的大小, 浇道长度.	OK					
	浇口大小, 大端和浇道大小相同.	OK					
前模PL	浇道顶针与浇道大小相同.	OK					
	运水离产品胶位10mm~15mm.	OK					
前模顶板及顶件	运水离胶大小, 冷却平衡性.	OK					
	运水与孔壁的距离一定要在3MM以上.	OK					
后模运水部分	分模线是否方便加工.	OK					
	拆出的前模顶板是否合理, 是否方便加工.	OK					
后模顶板	运水离产品胶位10mm~15mm.	OK					
	运水离胶大小, 冷却平衡性.	OK					
后模顶板	运水与孔壁的距离一定要在3MM以上.	OK					
	分模线是否方便加工.	OK					
结构部分	拆出的顶板是否合理, 是否方便加工.	OK					
	顶针的大小, 顶针的布局.	OK					
安全部分	清胶、铲高/斜顶结构是否合理, 强度是否足够, 运胶是否顺畅.	OK					
	确保清胶、斜顶行程足够, 斜顶角度不要超过15度.	OK					
成本核对	天侧清胶, 必须安装弹簧机构并加限位, 抽侧清胶必须加限位顶针, 当清胶较大时一定要安装弹簧机构.	OK					
	行位下者顶针时, 要确认行位机构.	OK					
安全部分	每套顶板要装复位开关.	OK					
	前模顶板要有锁紧块, 防止抽模时前模分开, 后模是否平衡.	OK					
成本核对	浇道重量	开模通知单	13	设计	通过	不通过	
	成型周期	开模通知单	72	设计	通过	不通过	
	顶板大小	报价	mm	设计	通过	不通过	
	机会吨位	开模通知单	260 T	设计	通过	不通过	

Mold Review Meeting Minutes

Review content



Product analysis
Analyze the product based on the product review form, including draft angles for appearance, insert positions, ribs, and other draft angle issues

Mold structure
Understand material details through DFM and mold flow analysis, assessing density, flowability, and mechanical properties to proactively avoid potential production issues

Mold material
Ensure mold meets production needs, confirm wall thickness, and address issues like shrinkage or air traps, notifying the client

Gate analysis
Discuss mold structure, assess core material, strength, stroke, and surface hardness requirements

Gate analysis
Choose suitable materials based on mold lifespan and surface requirements, and decide if steel needs hardening

Cooling system
Select gate position, type, size, and components like pins and pull rods. Discuss potential issues like deformation, shrinkage, air traps, and pressure

Cooling system
Select mold temperature based on material, discuss coolant layout, distance from product edge, size, and details, including sealing tests

Ejection analysis
Assess ejector pin layout, size, ejector plate position, stroke interference, material choice, and potential issues like pin height, deformation, and balance

Machining analysis
Core programming and machining staff attend to optimize structure, reduce machining time, lower costs, and ensure part interchangeability

Mold safety
Include A/B plate switches, ejector plate reset switches, stroke, inclined ejector, and hydraulic cylinder reset devices

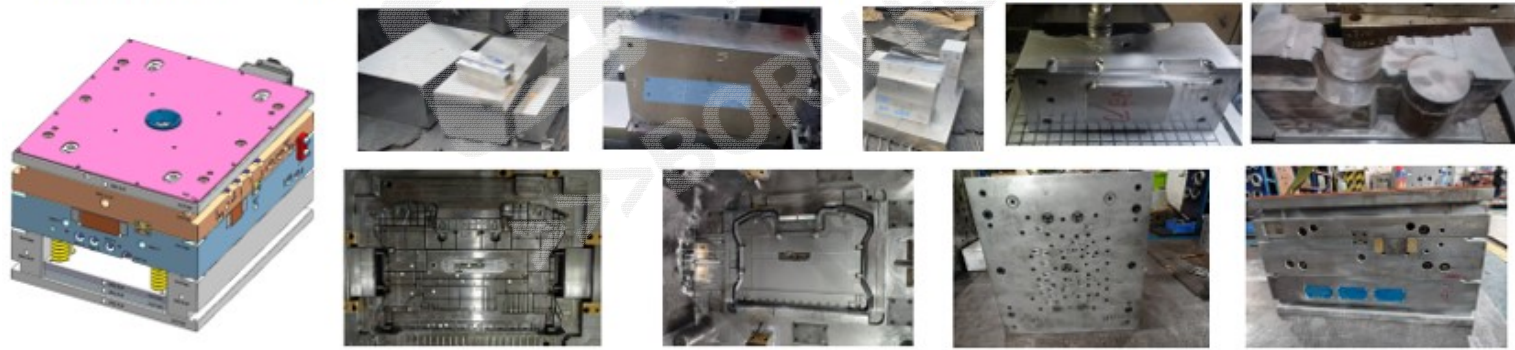
Machine matching
Confirm mold size matches machine requirements, including nozzle type, positioning ring specs, SR, ejector plate return, pin position, and thread size

Delivery assessment
Develop a machining plan based on customer requirements and internal scheduling, reserve equipment, confirm processing cycle, and submit a detailed progress schedule to the client

Must to be provide weekly schedule report to customer
check all processing every week

GREFEE >>>BORN FOR GREAT FEELINGS<<<		Tooling status report / 模具进度表	
Tool name / 模具名称		Report date / 报告日期	2022-12-20
Tool number / 模具编号	2398		
Month / 月份	11/2022	12/2022	Jan 2023
Day / 日期	24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31		
Week day / 星期	T F S S M T W T F S S M T W T F S S M T W T F S S M T W T F S S M T		
01 Tool design / 模具设计			
02 Material purchase / 模具采购			
03 Mold base purchase / 模架采购			
04 Order components / 模具配件			
05 Drilling&Tapping / 钻孔、攻牙			
06 CNC machining electrode / CNC 电极加工			
07 CNC Rough Machining / 粗加工			
08 CNC fine machining / CNC精磨			
09 Wire cutting / 线割加工			
10 EDM machining / EDM加工			
11 Tool polishing / 模具抛光			
12 Component fitting / 模具配模			
13 Assembly / 装配			
T1			
Shrink compensation 缩水	1.007		
Plastic raw material 胶料	PC2482		

 Actual
 Plan
 Finished
 Modify
 Trial



Pre-Molding Preparation

Material preparation	Confirm material code and type, check masterbatch code and ratio, and ensure the machine hopper is clean
Mold preparation	Confirm mold number, check alignment with machine components such as positioning ring, nozzle, terminal box, and SR. Inspect special mold features like manual inserts and core pulling mechanisms
Machine preparation	Ensure no interference between machine and mold, ejector pins match, clean hopper, and check supporting equipment
Others	Check drawings, samples, and inspection tools, and understand drawing requirements and critical dimensions

Trial Molding Steps

Mold setting	<ol style="list-style-type: none"> 1. Pre-installation Check - Check machine 5S, verify positioning ring, ejector pins, terminal box, and mold appearance. Only proceed with mold installation if everything is in order 2. Post-installation Testing-Test machine clamping force, adjust locking force, check cooling or heating systems, and preheat the mold
Structure test	<ol style="list-style-type: none"> 1. Mold Opening - Check for issues like mold compression on the parting line during normal mold opening 2. Ejector Test-Confirm ejector pin position, check ejector plate function during mold opening and closing, adjust ejector force and stroke, verify ejector cycles, and check for interference with other components 3. Structural Test-Confirm the action sequence of special structures like stroke and inclined ejector, and check for interference with the machine
Parameter setting	<ol style="list-style-type: none"> 1. Mold Setup-Complete mold parameter recording and ensure no air trap or other issues 2. Parameter Adjustment-Adjust injection speed, position, pressure, etc., based on product shape 3. Final Adjustment-Once product integrity is confirmed, adjust mold temperature, injection pressure, speed, cooling time, and find the holding pressure switch point. Verify product dimensions on-site 4. Automation Setup-Adjust robotic arm and other supporting equipment parameters to achieve automated production
Record Data saving	<ol style="list-style-type: none"> 1. Material Recording - Record trial material code, baking time, and material temperature 2. Injection Process Parameters-Fill out the injection molding process card and record core parameters of the injection equipment and supporting devices 3. Quality Control-QC inspects the product as required, saves samples for reinspection, and submits the report to the client for confirmation
Off mold and test	<ol style="list-style-type: none"> 1. Pre-removal Check-Inspect and photograph key areas such as the mold parting line, structure, and hot runner, ensuring no damage to internal and structural parts 2. Pre-removal Preparation-Drain cooling water from the mold and apply rust prevention treatment to moving parts 3. Machine and Equipment Cleanup-Clean the machine, wash the screw, sort waste materials, return supporting equipment like mold temperature controllers to designated areas, and move the mold to the designated holding area

Post-Testing Control Process

Certificate of Conformance

Part Number: 10-013990 Part Description:
 Revision: E Havis P.O. #:
 Supplier: GREFEE Sub. Date: 2022/12/28

REASON FOR SUBMISSION (Check if at least one) 提交原因 (至少选一项)

New design 新产品
 New material 新材料
 New process 新工艺
 New customer 新客户

TYPE OF SUBMISSION (Check if at least one) 提交类别 (至少选一项)

New product 新产品
 New material 新材料
 New process 新工艺
 New customer 新客户

REPORTS SUBMITTED (Check all that apply) 已提交报告 (勾选所有适用项)

Dimensional Report 尺寸报告 Material Test Report 材料测试报告 RoHS Certificate 环保证书 Other 其他

DECLARATION - REQUIRED FOR FINAL APPROVAL SUBMISSIONS

I hereby certify that the samples represented by this Certificate of Conformance are representative of our parts, which were produced using the same production process that will be used on future production runs and that meets all Havis Inc. requirements. I also certify that all reports or material, assembly components, secondary processes, test data, and request certifications will be kept on file at our facility and available for reviewer submitted to Havis immediately upon request.

Organization Authorized Signature 签名: _____ Date 日期: _____
 Print Name 姓名: _____ Phone No. 电话: _____ FAX No. 传真: _____
 Title 职位: _____ Email 邮箱: _____

RoHS CERTIFICATE OF COMPLIANCE

Part Number: 10-013990 Part Description:
 Revision: E Havis P.O. #:
 Supplier: GREFEE Submission Date: 2022/12/28

As Supplied by:
 SHENZHEN GREFEE MOULD CO., LTD.
 Address: _____

SHENZHEN GREFEE MOULD CO., LTD. hereby certifies that Havis part number listed above, as supplied now, or at the time in the future, to Havis, by or on behalf of SHENZHEN GREFEE MOULD CO., LTD. complies and conforms with each and every requirements of the European Union Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) - EU Directive 2011/65/EU and all of its amendments. SHENZHEN GREFEE MOULD CO., LTD. acknowledges that Havis Inc. in relying on SHENZHEN GREFEE MOULD CO., LTD. representation stated immediately above and that SHENZHEN GREFEE MOULD CO., LTD. has an affirmative duty to immediately notify Havis Inc. in writing if at any time such part does not comply or conform to the RoHS Directive.

SHENZHEN GREFEE MOULD CO., LTD. further certifies that all materials, finishes and operations used in its processes for manufacture and/or assembly of Havis Inc. part number listed above also comply and conform with EU Directive 2011/65/EU and that SHENZHEN GREFEE MOULD CO., LTD. will continue to maintain such compliance and notify Havis Inc. prior to any changes in the material and manufacturing processes(s).

SHENZHEN GREFEE MOULD CO., LTD. represents that it has on file, and will continue to indefinitely maintain, RoHS Certificate of Compliance from SHENZHEN GREFEE MOULD CO., LTD.'s Supplier of materials, finishes and parts used in the assembly and manufacture of the above Havis Inc. part number. SHENZHEN GREFEE MOULD CO., LTD. agrees that it shall promptly make all such Certificate of Compliance available to Havis Inc. upon request.

NO RoHS EXEMPTIONS (e.g. Annex III) ARE PERMITTED, unless written authorization from Havis is provided. 除非提供 Havis 的书面授权, 否则不允许 RoHS 豁免 (例如附件 III)。

Signature 签名: _____ Date 日期: _____
 Name 姓名: _____ Title 职位: _____

Inspection Verification

Part Number: 10-013990 Part Description:
 Revision: E Havis P.O. #:
 Supplier: GREFEE Sub. Date: 2022/12/28

Item	Dim.	+Tol	-Tol	U.S.L.	L.S.L.	Actual	O.T	Comments/Remarks
1	0.000	0.000	0.000	0.000				
2	0.000	0.000	0.000	0.000				
3	0.000	0.000	0.000	0.000				
4	0.000	0.000	0.000	0.000				
5	0.000	0.000	0.000	0.000				
6	0.000	0.000	0.000	0.000				
7	0.000	0.000	0.000	0.000				
8	0.000	0.000	0.000	0.000				
9	0.000	0.000	0.000	0.000				
10	0.000	0.000	0.000	0.000				
11	0.000	0.000	0.000	0.000				
12	0.000	0.000	0.000	0.000				
13	0.000	0.000	0.000	0.000				
14	0.000	0.000	0.000	0.000				
15	0.000	0.000	0.000	0.000				

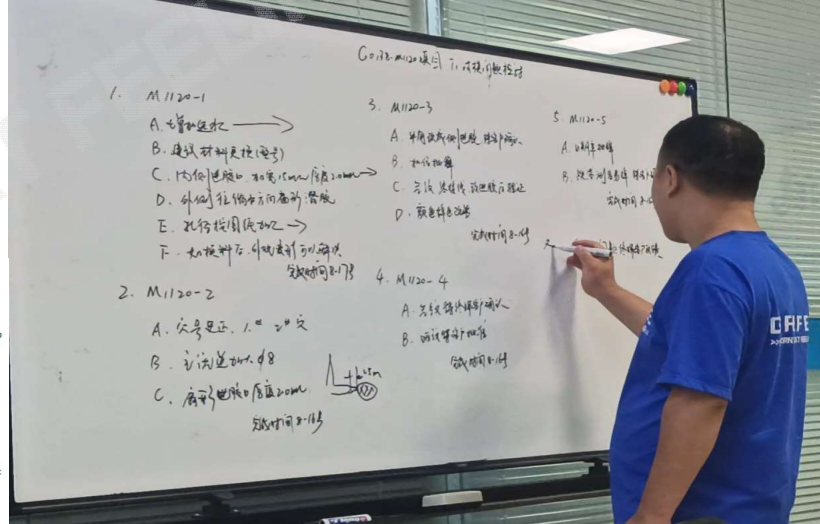
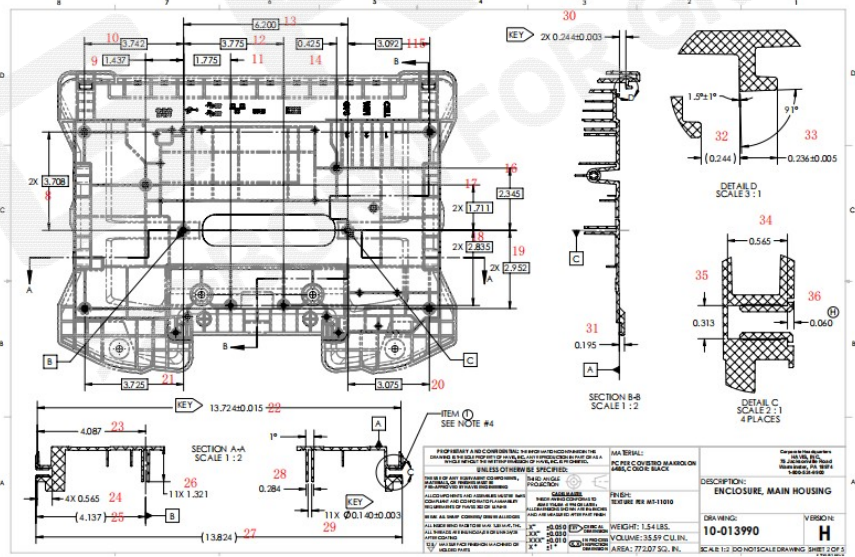
Disposition: Accepted Rejected Conditionally Accepted

Inspector Signature: _____ Date: _____
 Print Name: _____

Organize and compile relevant documents, including Certificate of Conformance, Dimensional Report, and RoHS Compliance. Submit to the client, and proceed with mold processing only after document confirmation

Part Number: 10-013990	Part Description: 0	Supplier: GREFEE
Drawing ID: /	Material: PC PER COVESTRO MAKROLON 6485, COLOR: BLACK	Inspector: HuangHuiQi
Revision: REVH	Work Order / PO: /	Date: 2022/12/28

Item	Dimension	+Tol	-Tol	U.S.L.	L.S.L.	Sample ID: 1		2		3		AVE	
						Actual	O.O.T	Actual	O.O.T	Actual	O.O.T	Average	O.O.T.
1	15.040	0.010	0.010	15.050	15.030	15.051	0.001						
2	11.407	0.010	0.010	11.417	11.397	11.415							
3	2.521	0.010	0.010	2.531	2.511	2.523							
4	0.850	0.010	0.010	0.860	0.840	0.851							
5	0.140	0.010	0.010	0.150	0.130	0.141							
6	6.200	0.010	0.010	6.210	6.190	6.210							
7	0.140	0.010	0.010	0.150	0.130	0.139							
8-1	3.708	0.010	0.010	3.718	3.698	3.708							
8-2	3.708	0.010	0.010	3.718	3.698	3.708							
9	1.437	0.010	0.010	1.447	1.427	1.436							
10	3.742	0.010	0.010	3.752	3.732	3.743							
11	1.775	0.010	0.010	1.785	1.765	1.778							
12	3.775	0.010	0.010	3.785	3.765	3.782							
13	6.200	0.010	0.010	6.210	6.190	6.210							
14	0.425	0.010	0.010	0.435	0.415	0.425							
15	3.092	0.010	0.010	3.102	3.082	3.099							
16	2.345	0.010	0.010	2.355	2.335	2.344							
17-1	1.711	0.010	0.010	1.721	1.701	1.719							
17-2	1.711	0.010	0.010	1.721	1.701	1.719							
18-1	2.835	0.010	0.010	2.845	2.825	2.839							
18-2	2.835	0.010	0.010	2.845	2.825	2.846							
19-1	2.952	0.010	0.010	2.962	2.942	2.960							
19-2	2.952	0.010	0.010	2.962	2.942	2.950							
20	3.075	0.010	0.010	3.085	3.065	3.079							
21	3.725	0.010	0.010	3.735	3.715	3.726							
22	13.724	0.015	0.015	13.739	13.709	13.734							
23	4.087	0.010	0.010	4.097	4.077	4.087							
24-1	0.565	0.010	0.010	0.575	0.555	0.567							
24-2	0.565	0.010	0.010	0.575	0.555	0.572							
24-3	0.565	0.010	0.010	0.575	0.555	0.560							



Hold a meeting to discuss molds that don't meet expectations, summarize mold and product issues, confirm modification plans and timelines. Submit the issues and modification plans to the client for approval, and confirm mold repair and trial dates

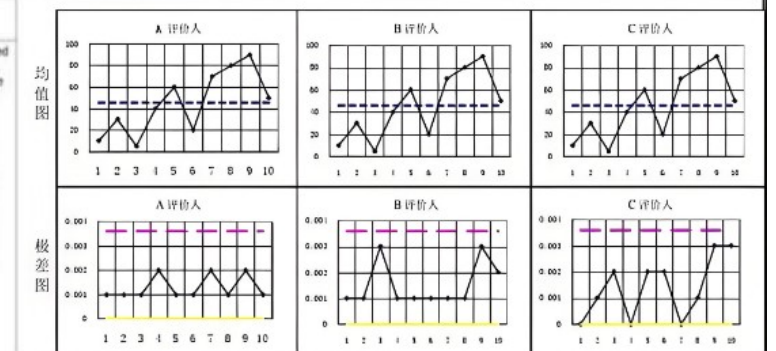
Mold pre- shipping process

We need to make sure everything is going well in customer side, so after customer confirm samples, we will make 4 hours dry run to test mold running status and open mold to check all components after finished. We have a good packing for mold and parts for shipping, clean and safe

Upon receiving client confirmation that the mold meets production expectations and acceptance standards, and before moving to production, take photos of the core mold areas for documentation. Perform final cleaning and maintenance to ensure the mold remains in optimal condition during transport and production

No.	Check Points	OK/NI/NA	Remark
1	Ejection seized?	OK	
2	Guiding components worn or scratched?	OK	
3	Ejectors worn or scratched?		
4	Slide and lifter worn or scratched?		
5	Hydraulic leaks?		
6	Parting Line inspection?		
7	Limit Switches and Oil verification?		
8	Part inspection of all		

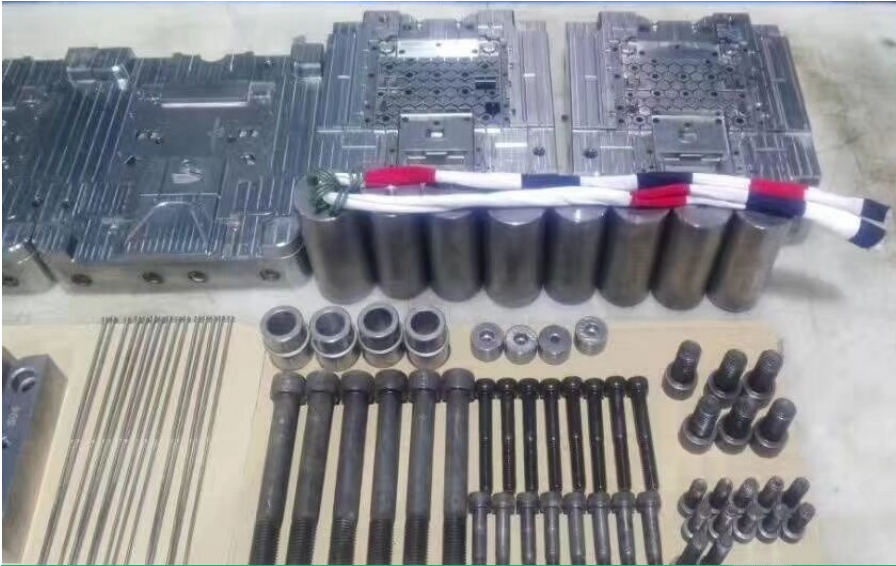
模具名称: 三次元		基准件名称: 126-0020-0381.J		开模日期: 2016/10/12											
模具编号: 72121312		测量参数: 67±0.05		测量人员: A:唐俊泉 B:方春燕 C:刘金龙											
模具规格: 500*700*500		参数规格: 67±0.05		工程规范:											
<input type="checkbox"/> 定期 <input type="checkbox"/> 修复后 <input type="checkbox"/> 量具更换 <input type="checkbox"/> 新控制计划 <input checked="" type="checkbox"/> PPAP															
评价人数	试验次数	零件编号									平均值				
		1	2	3	4	5	6	7	8	9		10			
1.	A	1	10.000	30.000	5.008	10.005	60.004	20.006	70.007	80.005	90.006	50.005	15.5016		
2.		2	10.001	30.000	5.007	10.001	60.005	20.005	70.005	80.005	90.007	50.005	15.5011		
3.		3	10.001	30.001	5.008	10.003	60.004	20.005	70.005	80.004	90.008	50.004	15.5013		
4.	均值		10.001	30.000	5.008	10.004	60.004	20.005	70.006	80.005	90.007	50.005	$\bar{X}_A = 15.5011$		
5.	极差		0.001	0.001	0.001	0.002	0.001	0.001	0.002	0.001	0.002	0.001	$R_A = 0.0013$		
6.	B	1	10.005	30.002	4.995	10.005	60.005	20.005	70.005	80.005	90.011	50.005	15.5010		
7.		2	10.005	30.002	4.996	10.005	60.005	20.005	70.005	80.006	90.011	50.005	15.5010		
8.		3	10.006	30.001	4.998	10.001	60.004	20.004	70.004	80.005	90.011	50.003	15.5031		
9.	均值		10.005	30.002	4.996	10.005	60.005	20.005	70.005	80.005	90.008	50.004	$\bar{X}_B = 15.5038$		
10.	极差		0.001	0.001	0.003	0.001	0.001	0.001	0.001	0.001	0.003	0.002	$R_B = 0.0015$		
11.	C	1	10.002	30.001	5.008	10.005	60.005	20.005	70.001	80.001	90.011	50.005	15.5015		
12.		2	10.002	30.001	5.008	10.005	60.004	20.006	70.001	80.005	90.011	50.004	15.5011		
13.		3	10.002	30.002	5.008	10.005	60.005	20.001	70.001	80.005	90.011	50.002	15.5011		
14.	均值		10.002	30.001	5.007	10.005	60.005	20.005	70.001	80.005	90.005	50.004	$\bar{X}_C = 15.5011$		
15.	极差		0.000	0.001	0.002	0.000	0.002	0.002	0.000	0.001	0.003	0.003	$R_C = 0.0014$		
零件均值 \bar{X}_p			10.003	30.001	5.004	10.005	60.005	20.005	70.005	80.005	90.007	50.004	$\bar{X}_p = 15.5012$		
极差均值 R_p			$R_p = (\bar{R}_A + \bar{R}_B + \bar{R}_C) / \text{评价人数} = 0.0011$									试验次数	2	3	
最大均值差 $X_{DIFF} = \text{Max}\bar{X} - \text{Min}\bar{X} = 0.0006$												D1	3.27	2.57	
均值上限 $UCL_x = \bar{X} + A_2 R = 15.5017$												极差上限 $UCL_R = D_4 \bar{R} = 0.0036$	D3	0	0
均值下限 $UCL_x = \bar{X} - A_2 R = 15.5005$												极差下限 $LCL_R = D_3 \bar{R} = 0$	A2	1.88	1.02



Post-4-Hour Test-Take photos of the core areas and submit them to the client for confirmation

Cavity & Core CMM Inspection Report

Clean all parts, check for potential damage risks, and replace any defective components. Ensure backups are available for critical parts such as nozzles, springs, seals, special ejector pins, seals, and extended nozzles



Part Cleaning, Rust Removal, and Replacement



Pressure Test After Replacing Water Transport Components



Install Nameplate and Junction Box



Install Lifting Tool



Vacuum Packaging



Boxing