Mold flow analysis service

Mold flow analysis description

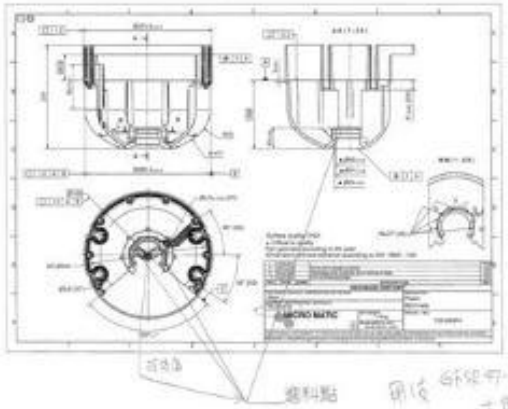
Up to customer's requirement, we provide the custom mold flow analysis service.
Before making the mold design, through the mold flow analysis, customer can optimize their parts
design by checking the material filling, deformation, shrinkage, welding line, temperature, shear stress, hot runner layout…etc to de-bug the parts design mistake, to simplify the manufacturing process and to raise up the positive productivity rate.

The following are some examples…of our mold flow analysis service contents.

Mold flow analysis – data of parts :

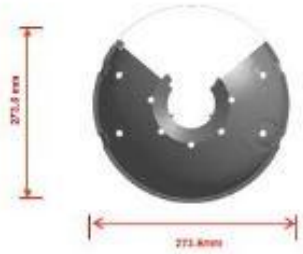
Customer requirements

	Product 3D	Gate location
New project	122-090P4-3D(150506)	母模1點開放式熱嘴GFSR57配合冷流道2處側進膠。(參考圖：090P4-1.jpg)
Design change		

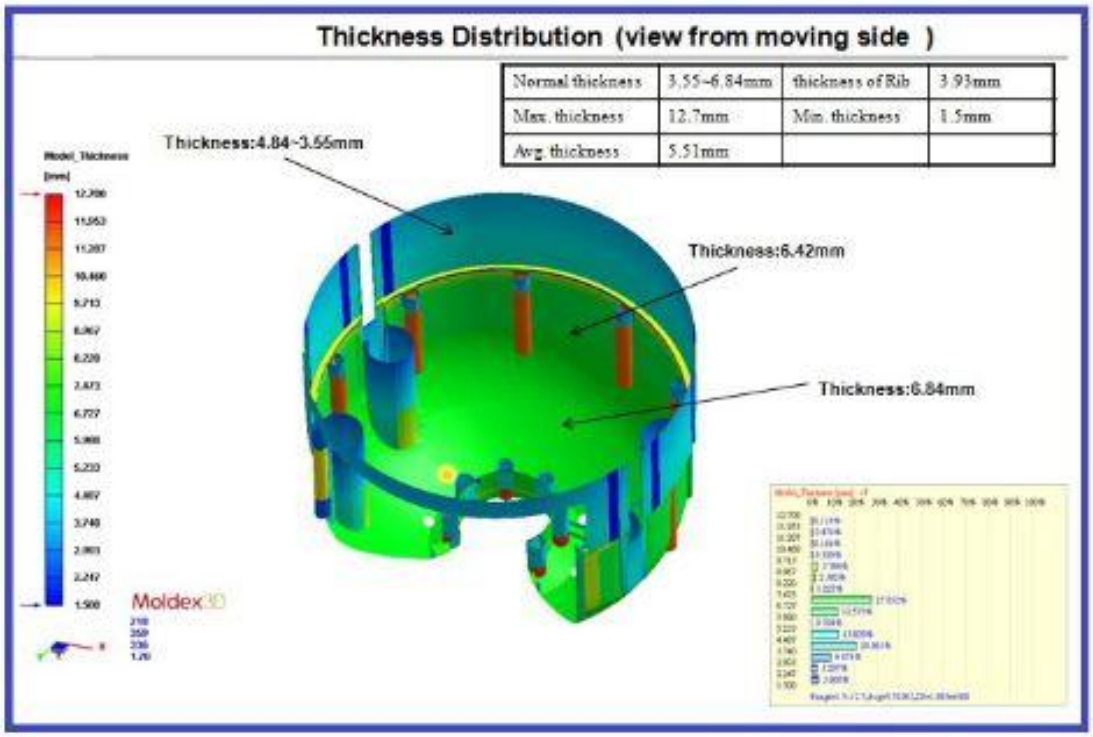


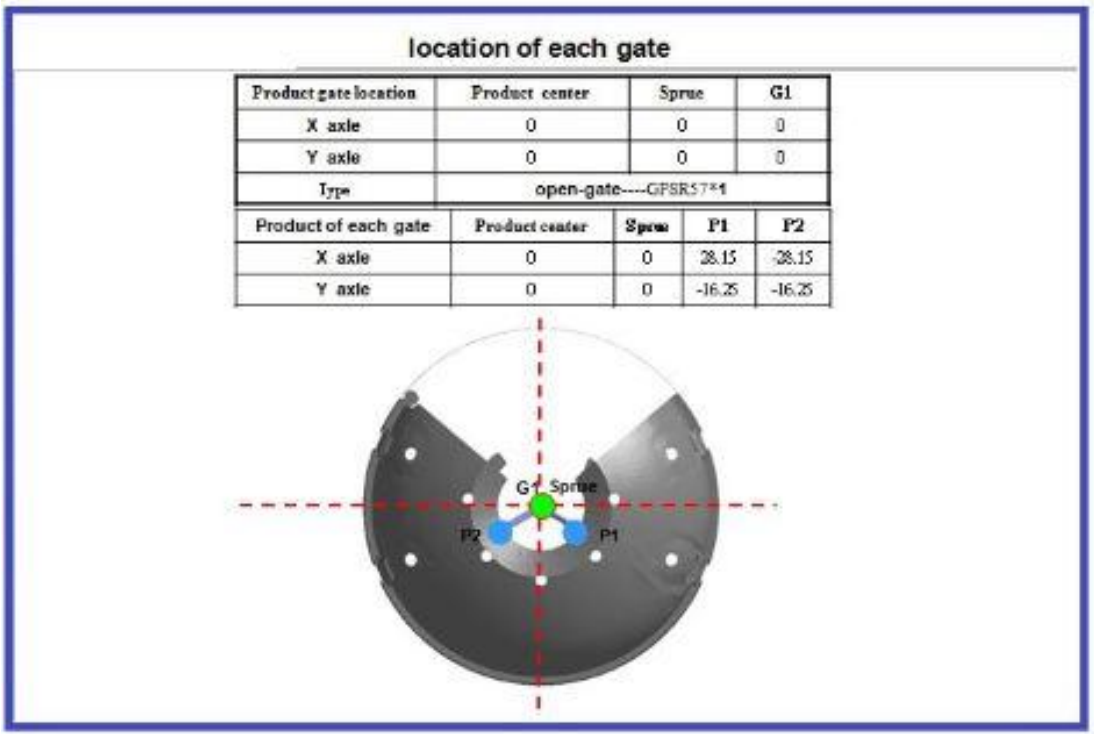
data of parts

Information			
SiZe（mm）：	Length：273.5	Width：273.5	Height：219
Material：	PA66+GF30		
Alternative materials：	PA66_UltramidA3HG6HR		
Qty of cave：	1cavity / Mold		
Product Vol.(cc)	1102.29/Cavity		

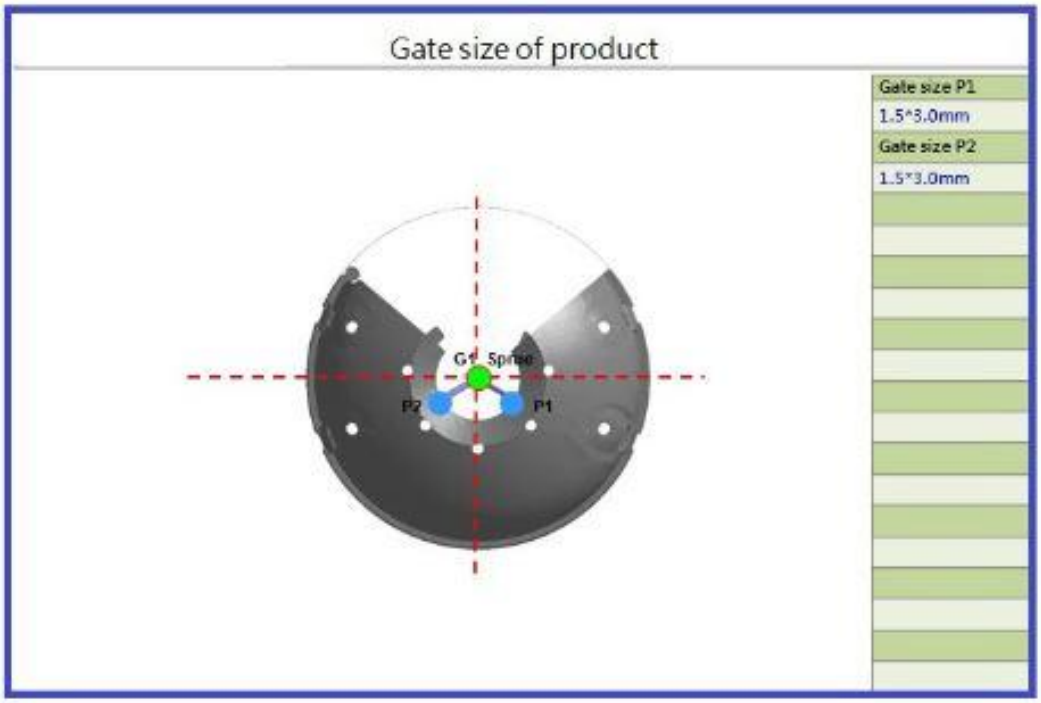


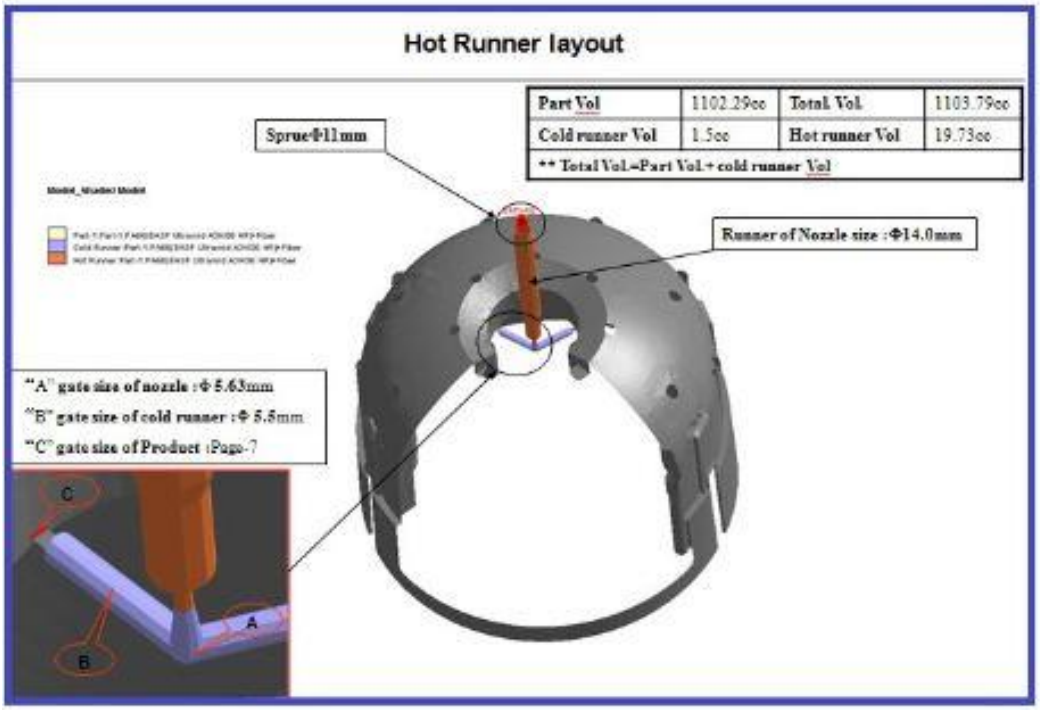
Mold flow analysis – thickness distribution & gate location :





Mold flow analysis – gate size & hot runner layout :

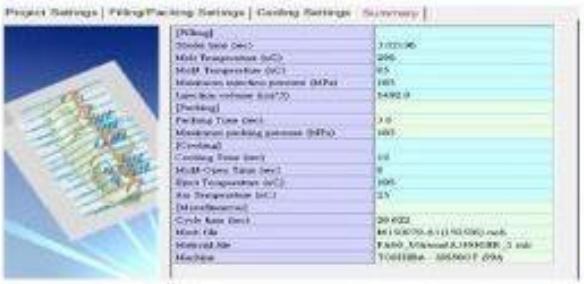


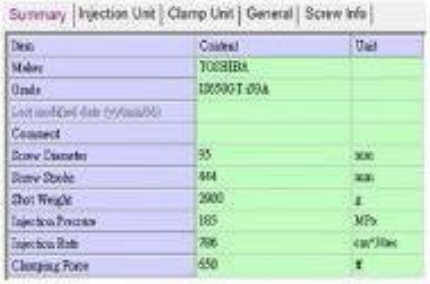


Mold flow analysis – condition of injection machine & melt front analysis :

Condition of injection machine
(open/close)

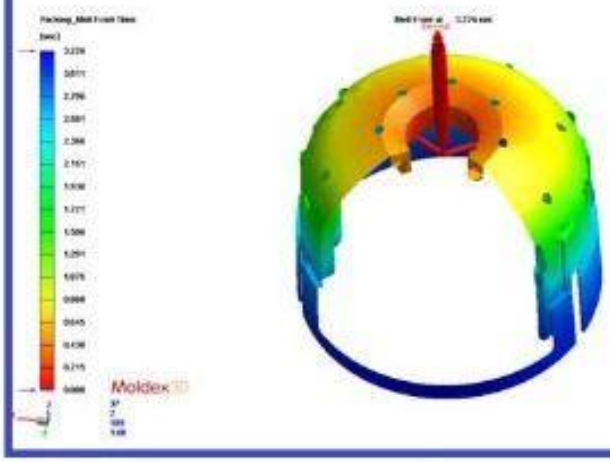
Machine (Ton)	Injection Pressure(MPa)	Screw Diameter (mm)	Ram Position(mm)	Injection Velocity(%)
650	185	95	211-180-30-0	25-50-50-25
Melt TemPerature(℃)	Mold TemPerature (℃)	Cooling Channel(℃)	V/P switch-over (By volume(%) filled)	
290	85		98%	
Filling Time(sec)	Filling Pressure(MPa)	Packing Time(sec)	Packing Pressure(MPa)	Cooling Time(sec)
3.02	129.5	3.6	25.42	12



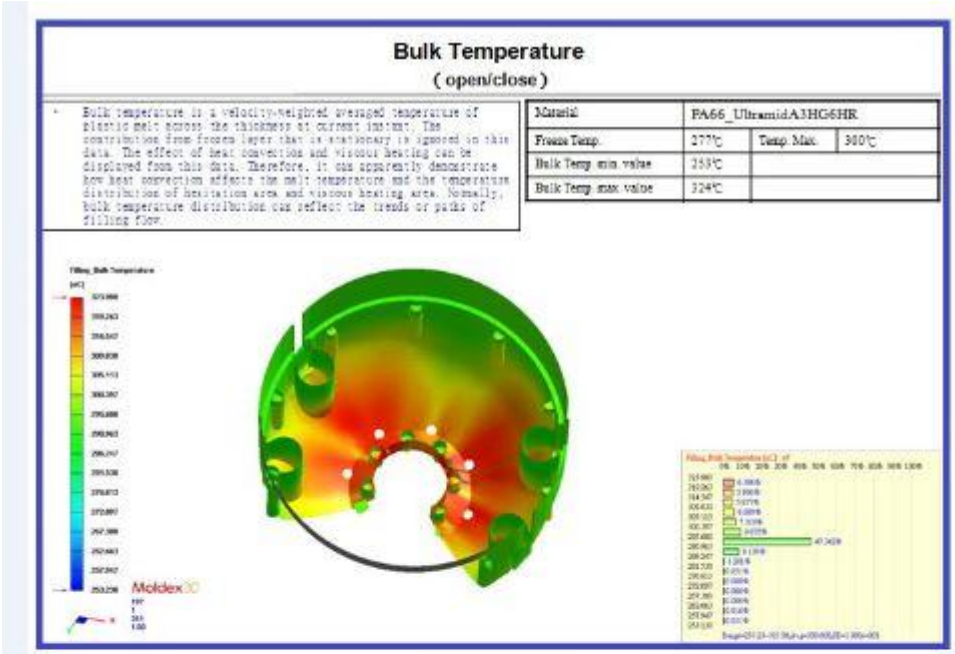


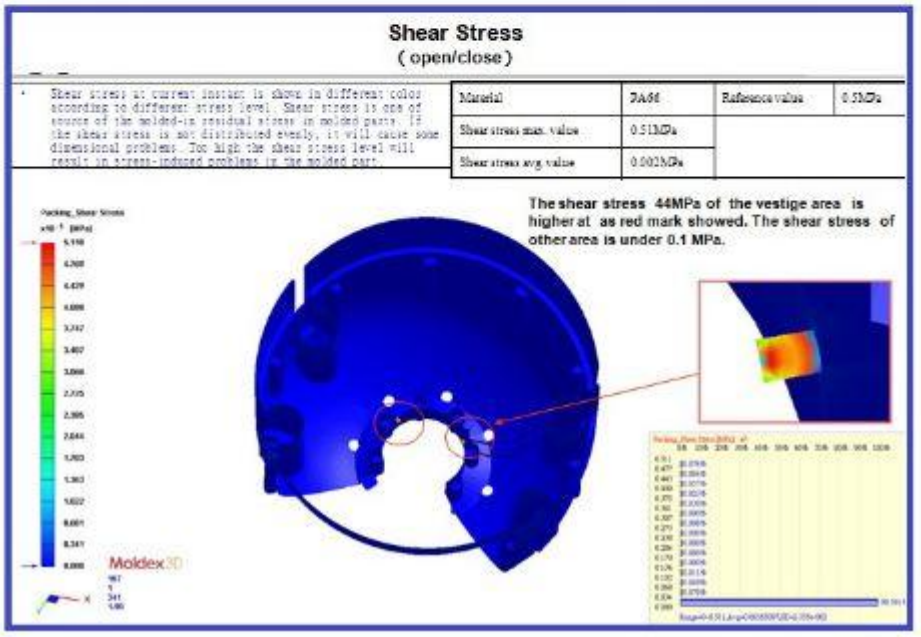
Melt front analysis 1 (animation)
(open/close)

- Melt front advancement is a position indicator as melt front boundary movement in different time duration in the filling process. From the melt front advancement one can:
- -Examine the filling pattern of the molding
- -Check potential incomplete filling (short shot) problem
- -Identify weld line locations
- -Identify air trap locations
- -Check gate contribution for runner balance
- -Check proper gate location to balance flow and eliminate weldline.

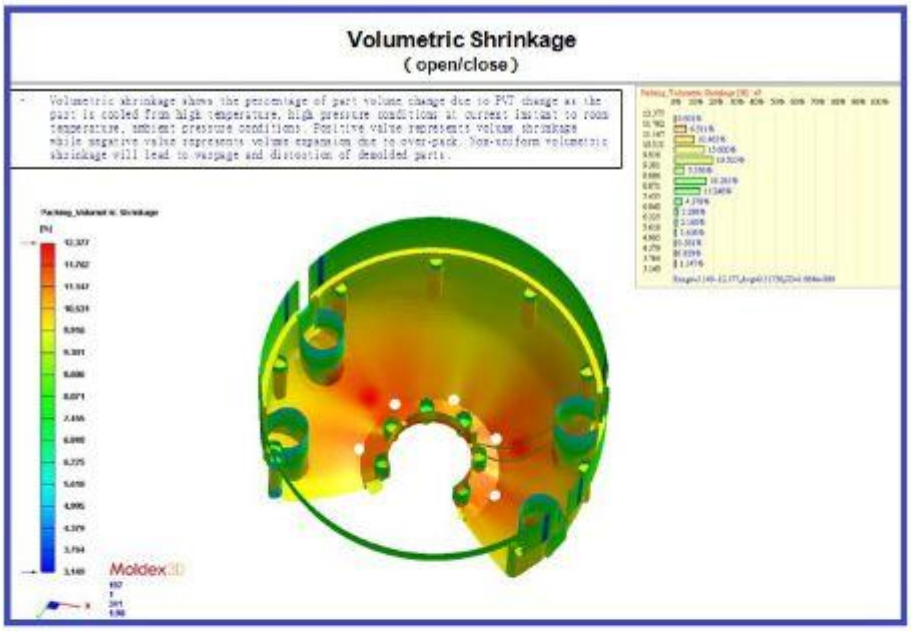


Mold flow analysis – temperature & shear stress :





Mold flow analysis – Shrinkage :



Conclusion
(open/close)

Item	material	Situation	Note
Point type and quantity	GFSR57*1	Pass	
Gate size	Φ5.63mm	Pass	
Gate flow	360cc/sec	Pass	
Bulk Temperature	324℃	Pass	
Shear Rate	798441 (1/sec)	the value is higher at some area	the value is higher at vestige area
Shear Stress	0.51MPa	the value is higher at some area	the value is higher at vestige area
Volumetric Shrinkage	3.15-12.38%	the value is higher	
Injection pressure	36.32MPa	Pass	
Pressure Loss	63.33%	NG	the pressure loss is higher and it should be controlled under 30%.
Welding Line		NG	
Air Trap		Pass	

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