Continuous Casting Consortium

Effect of Oscillation Marks on Billet Casting

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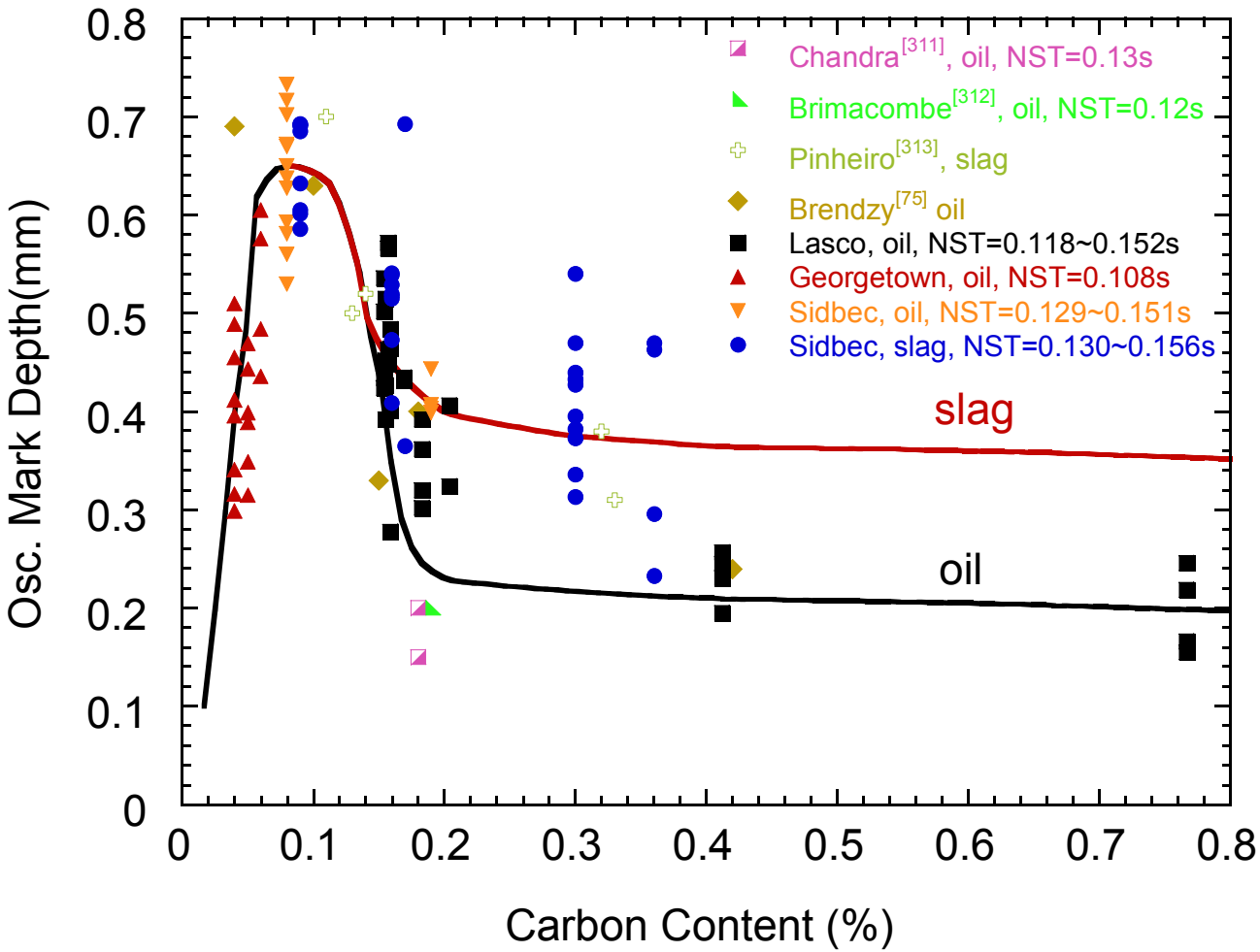
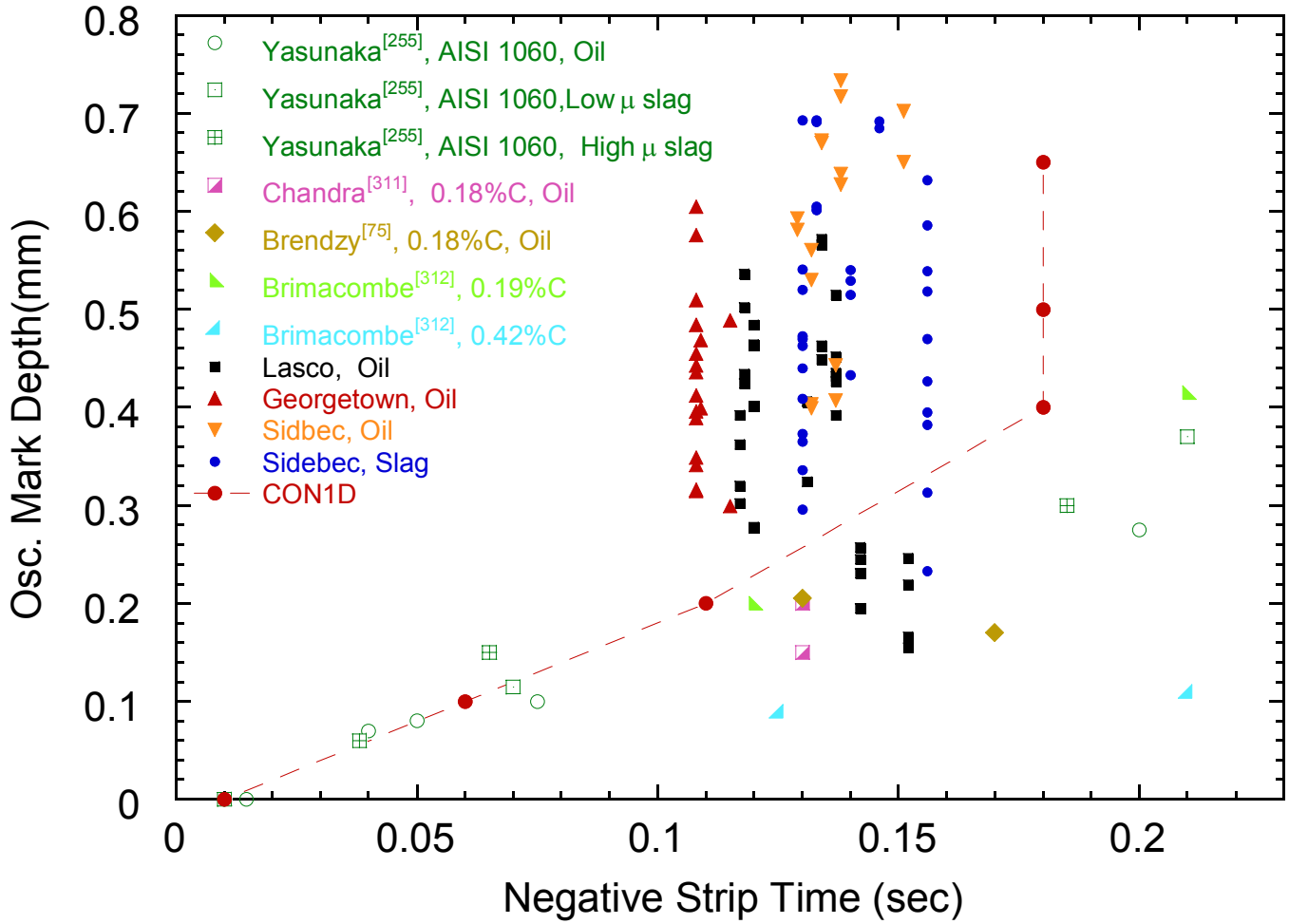
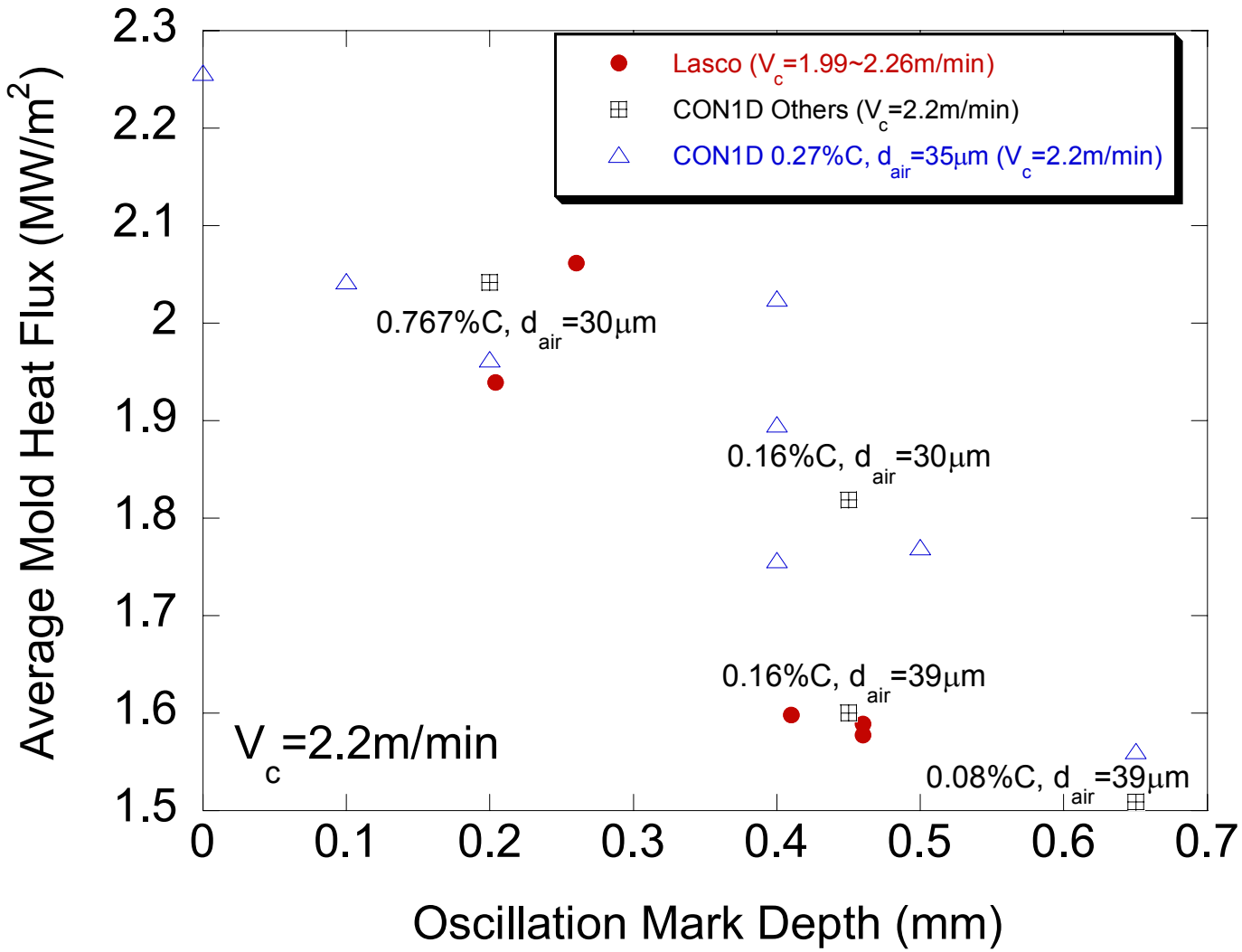
Effect of Carbon Content on Oscillation Mark Depth



Effect of Negative Strip Time on Oscillation Mark Depth



Effect of Oscillation Mark Depth on Average Mold Heat Flux



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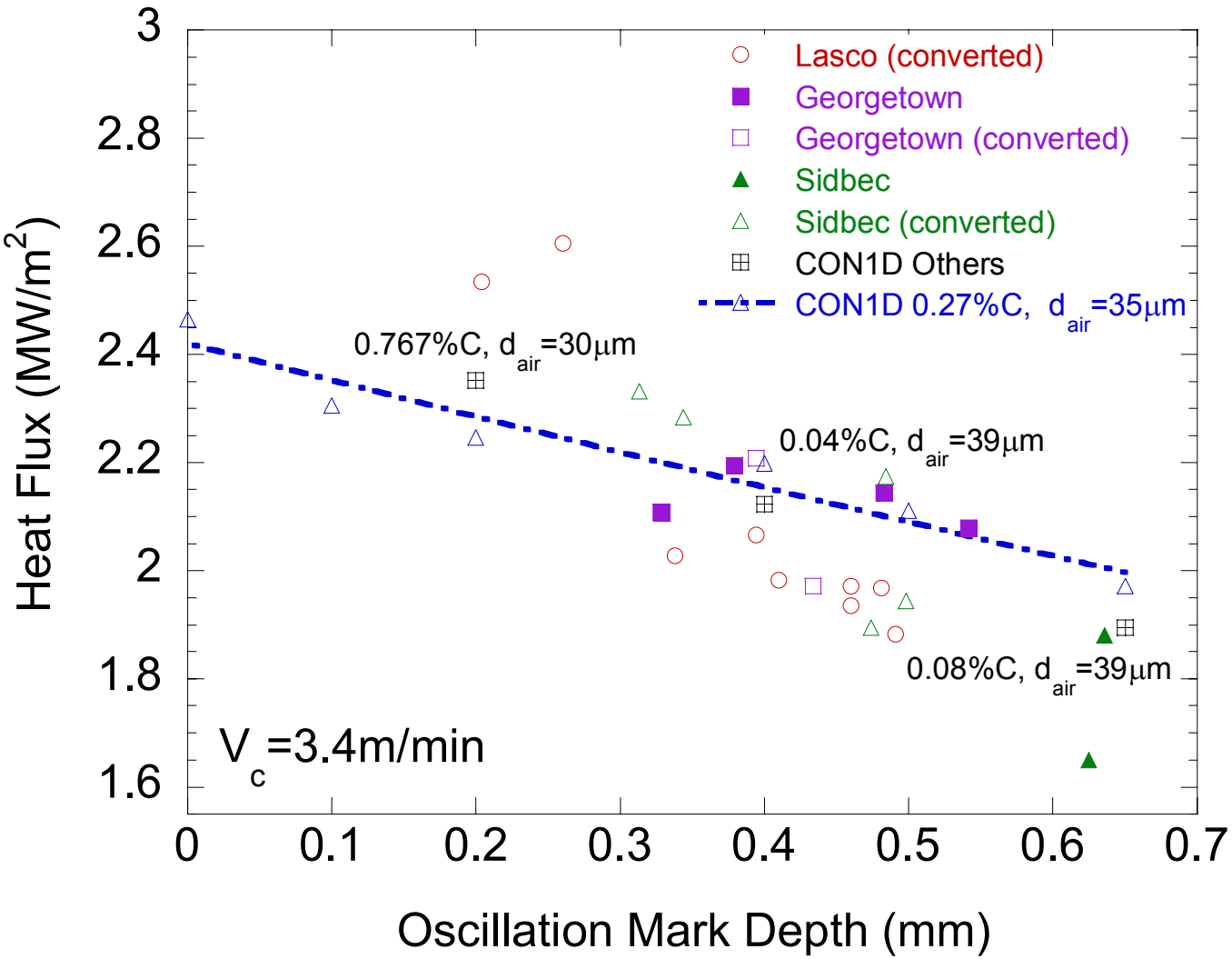
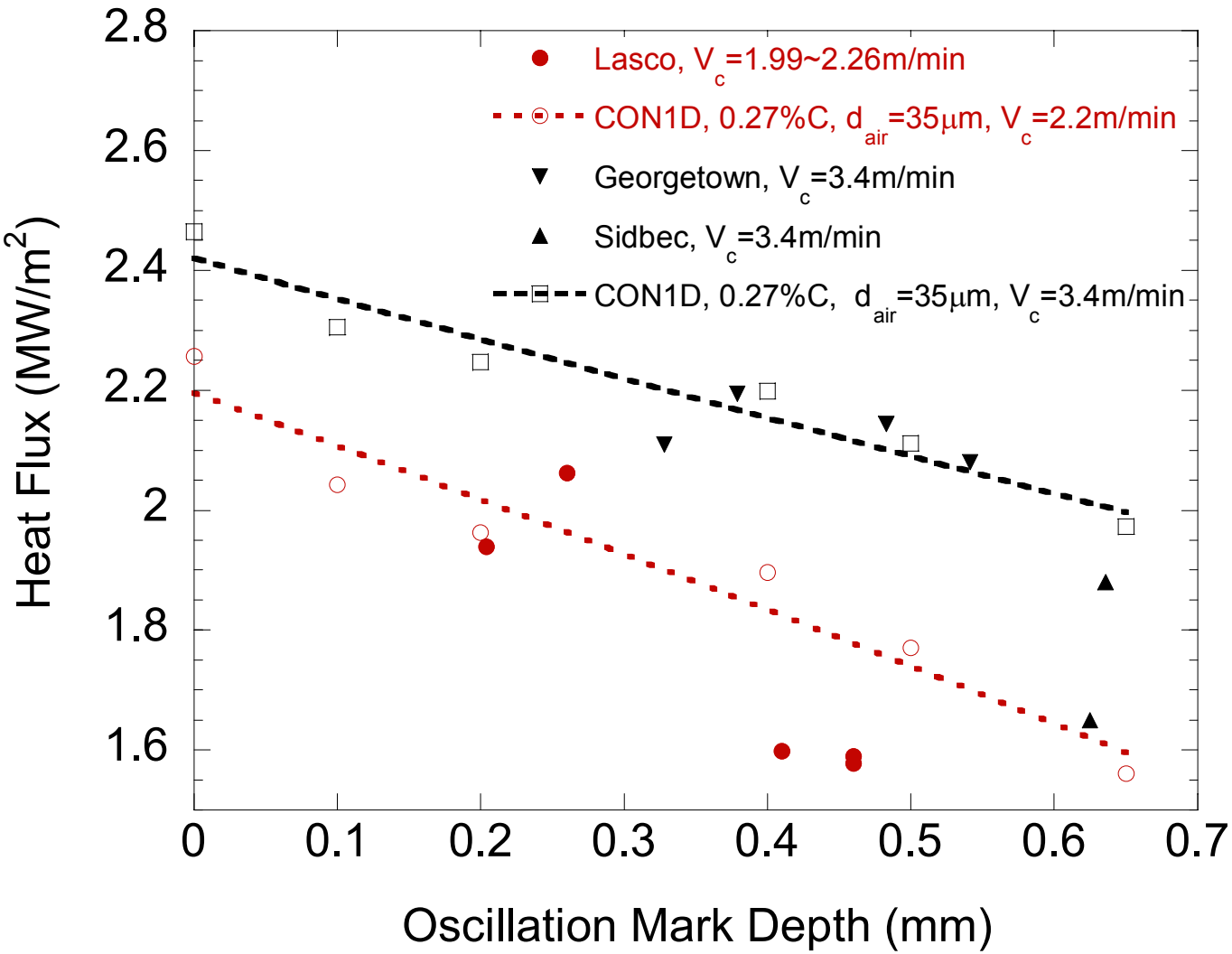
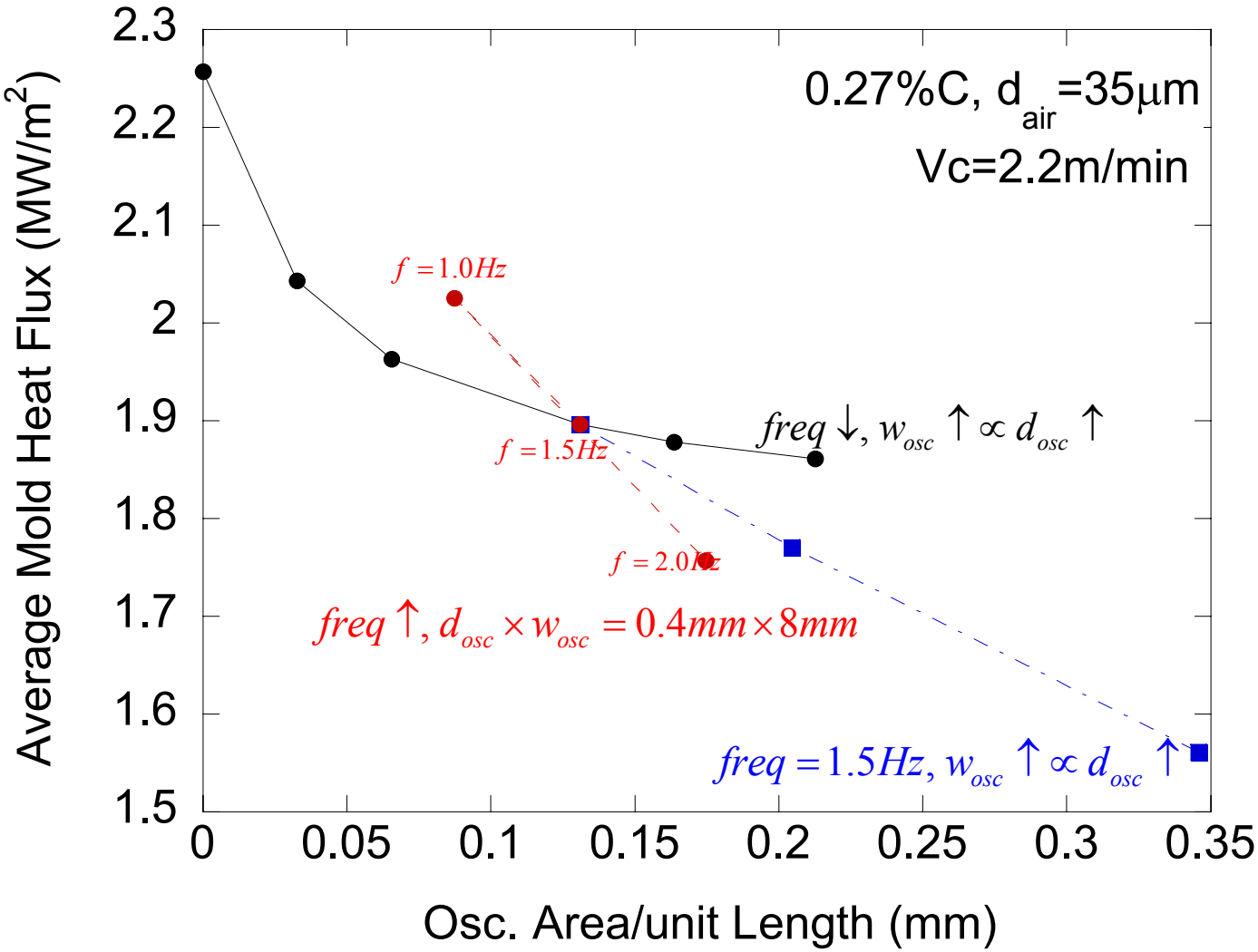


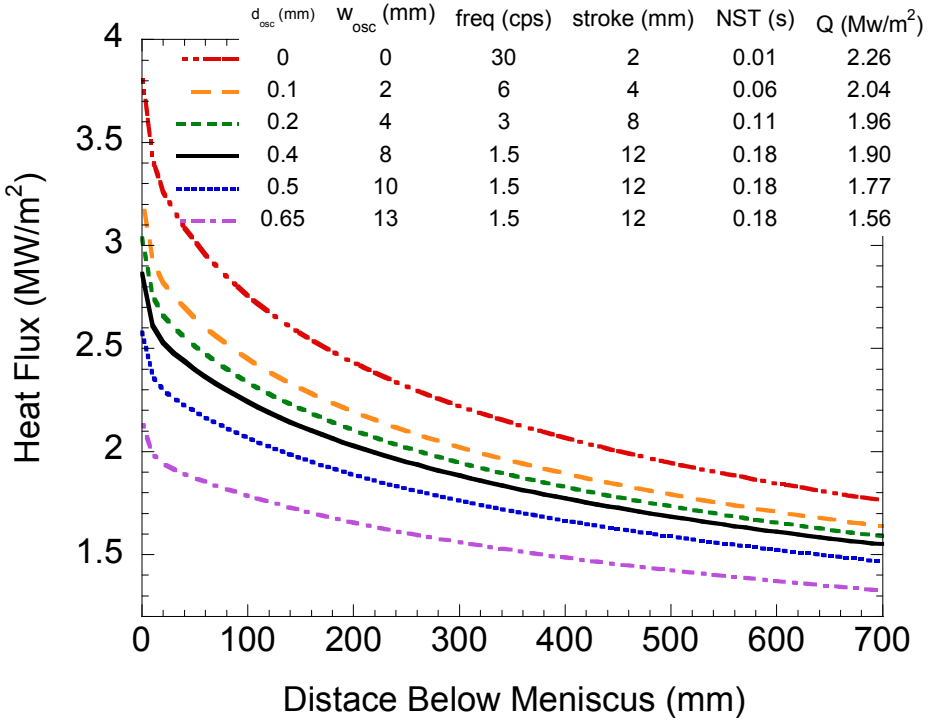
Effect of Oscillation Mark Depth on Average Mold Heat Flux

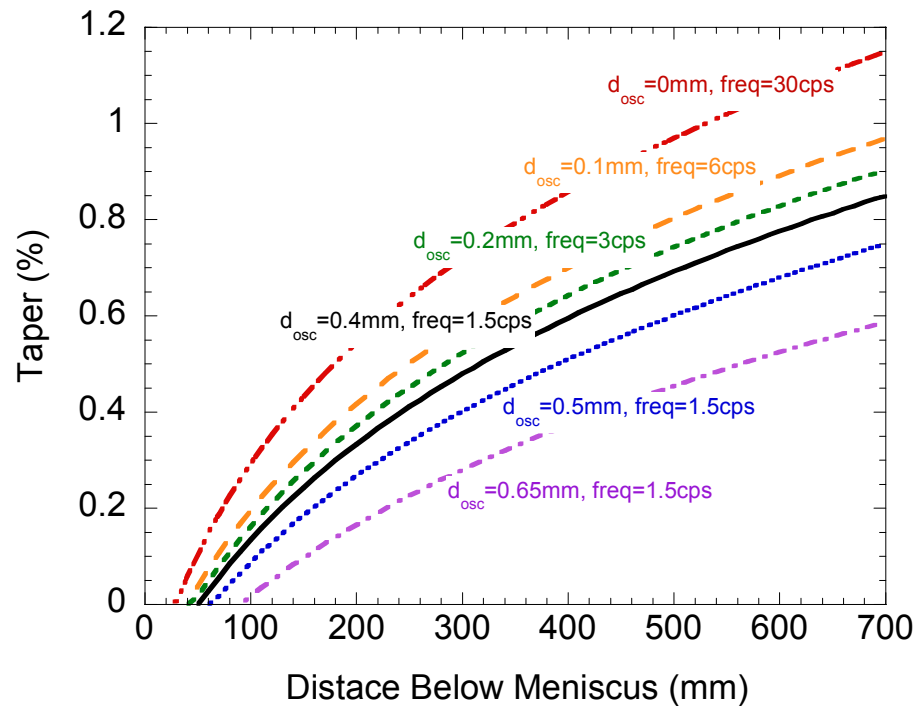


Effect of Oscillation Mark Area/Unit Length on Average Mold Heat Flux



Effect of Oscillation Mark Size/Frequency on Mold Heat Flux and Taper





$$0.27C\%, V_c = 2.2m/min, 120mm \times 120mm\ Billet$$

$$Working\ Mold\ Length: 700mm,$$

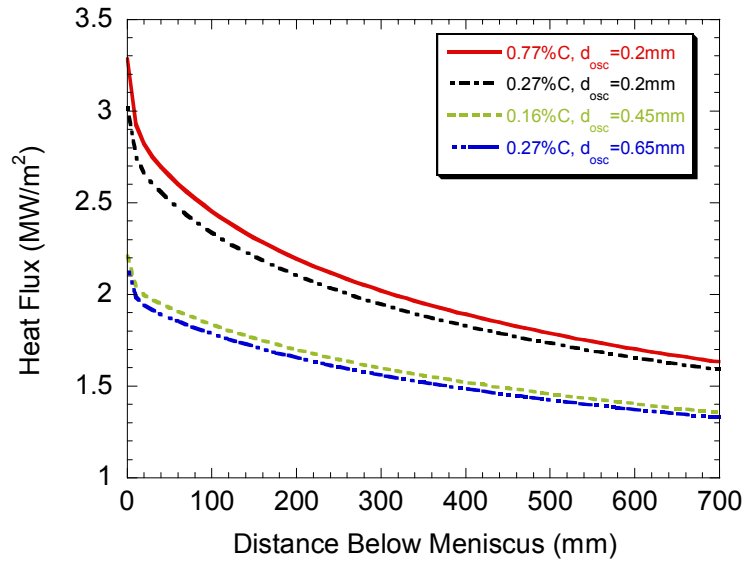
$$d_{air} = 35\mu m, \Delta T_{sup} = 50^o C$$

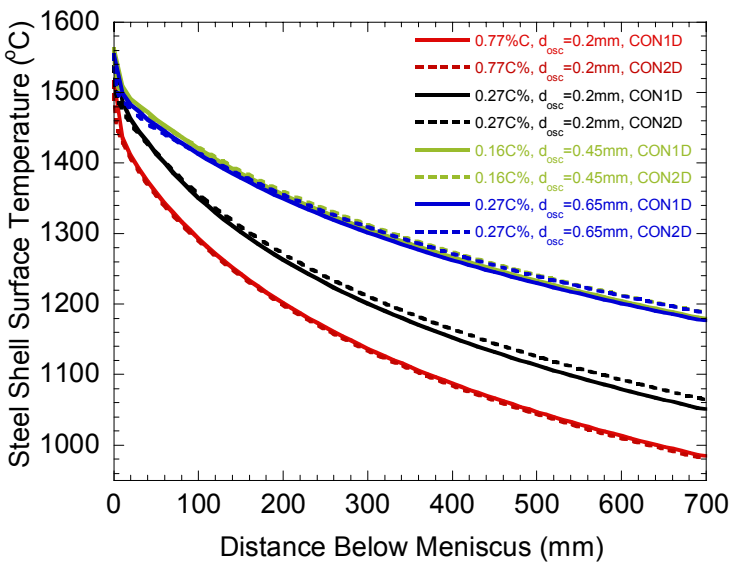
Comparison of CON1D and CON2D Results

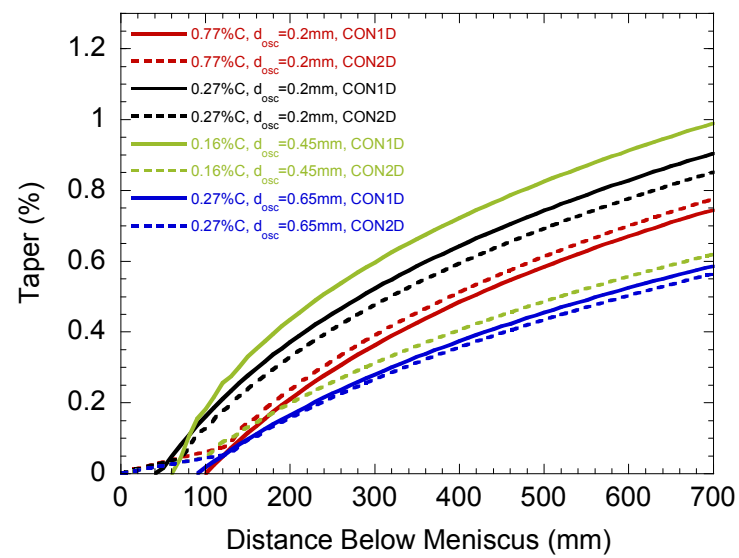
$$V_c = 2.2 m/min, \Delta T_{sup} = 50^o C,$$

$$120mm \times 120mm \ Billet$$

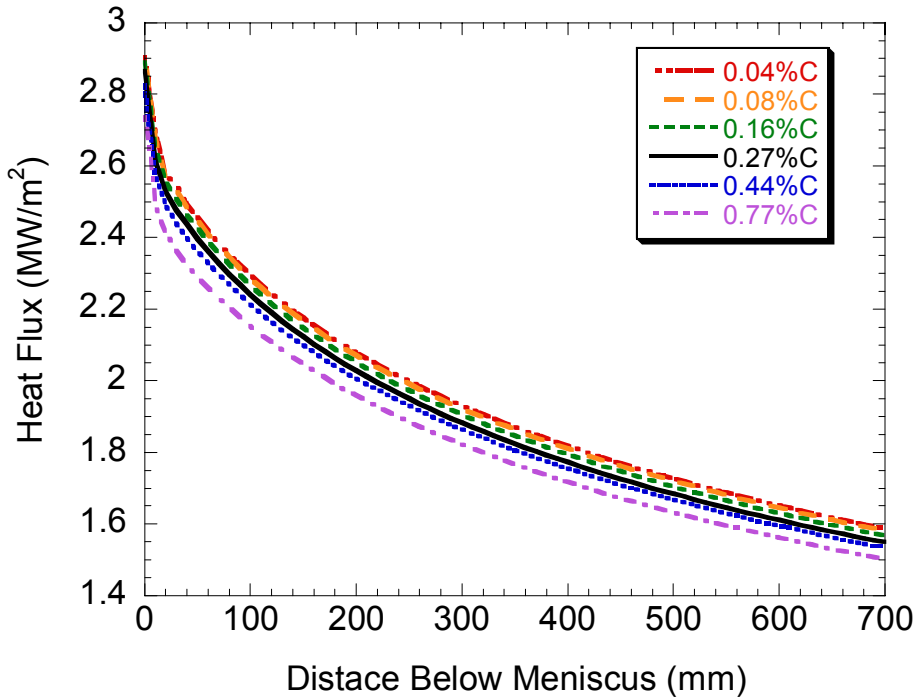
$$Working \ Mold \ Length : 700mm$$

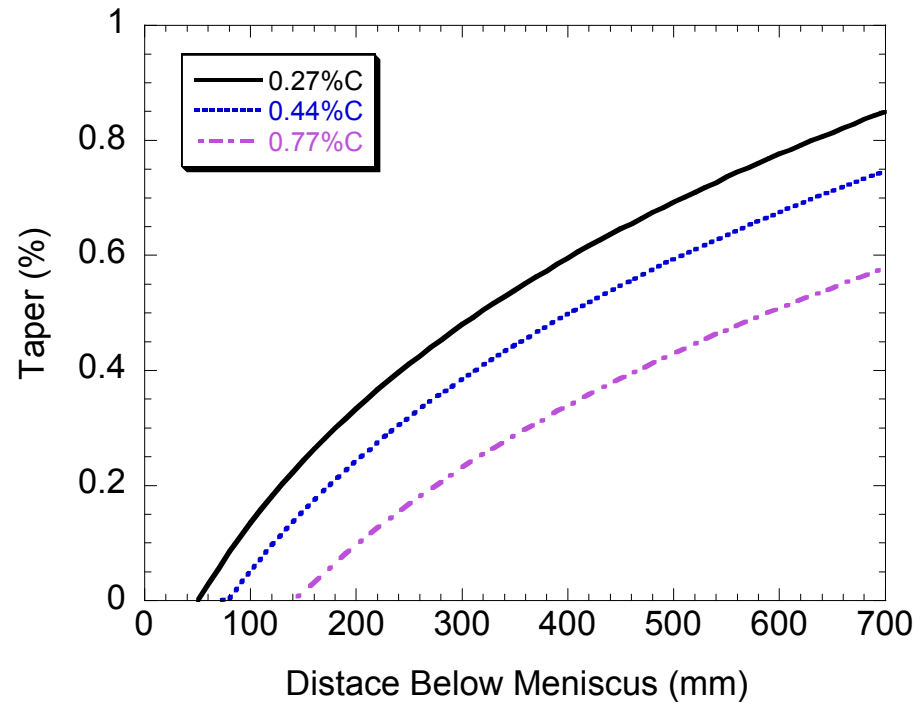






Effect of Steel Grade on Mold Heat Flux and Taper

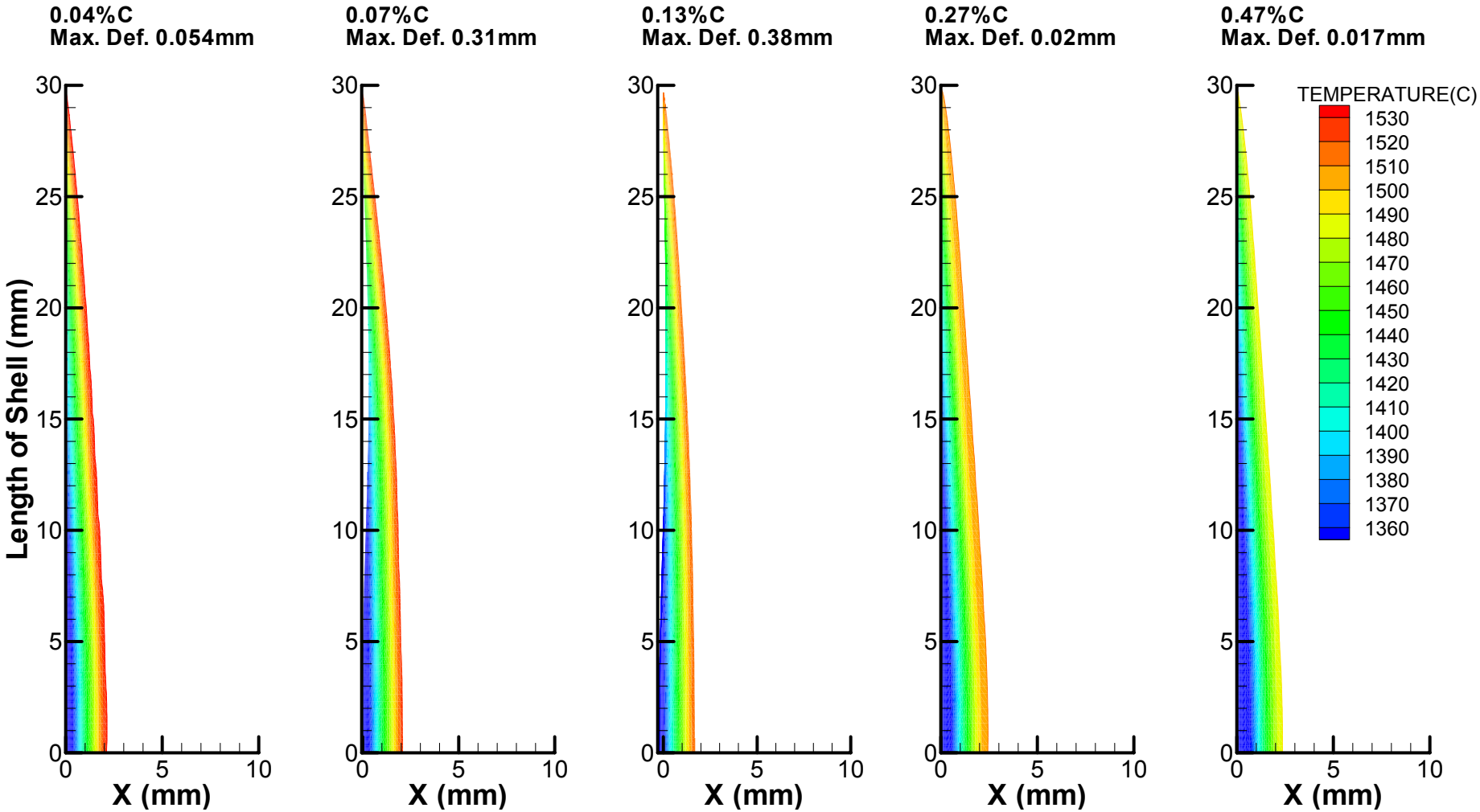




$$V_c = 2.2 m/min, \Delta T_{sup} = 50^o C, 120mm \times 120mm\ Billet$$

$$Working\ Mold\ Length: 700mm,$$

$$d_{osc} \times w_{osc} = 0.4mm \times 8mm, d_{air} = 35\mu m$$



Casting speed: 1.2m/min; time: 1.5sec

Carbon content	0.04	0.07	0.13	0.27	0.47
Other components	0.04%C, 1.52%Mn, 0.34%Si, 0.012%P, 0.015%S				
Segregation model	No				
Ferrostatic pressure	Yes				
Mold Oscillation (mm)	d = (6*cos(1.66667*time*3.141593)				
Stroke (mm)	12	12	12	12	12
Frequency (cpm)	50	50	50	50	50
Superheat (C)	30	30	30	30	30
T liquidus (C)	1533	1530	1526	1515	1444
T solidus (C)	1518	1504	1495	1478	1499
Heat flux below meniscus	Qflux = 4000*(250-t(n1))				
Heat flux above meniscus	Qflux = 0.0				
Temperature of the mold	250 C				
Mesh size	30 mm x 3 mm				
Number of nodes	91 x 31				
Mesh grading ratio along the shell	1.1				
Time step	0.001 s				
Simulation time	1.5 s				
Constitutive law	Kozlowski Model III and Power Delta law				
Mold taper	Linear, 0.75 %/m				
Mold friction	No				
Mold slag	No (Billet, oil)				
Max. displacement					
At 0.9 s	0.023	0.023	0.035	0.004	0.003
At 1.2 s	0.047	0.17	0.24	0.01	0.007
At 1.5 s	0.054	0.31	0.38	0.02	0.017