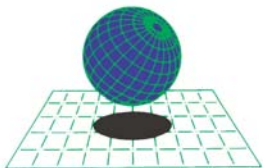
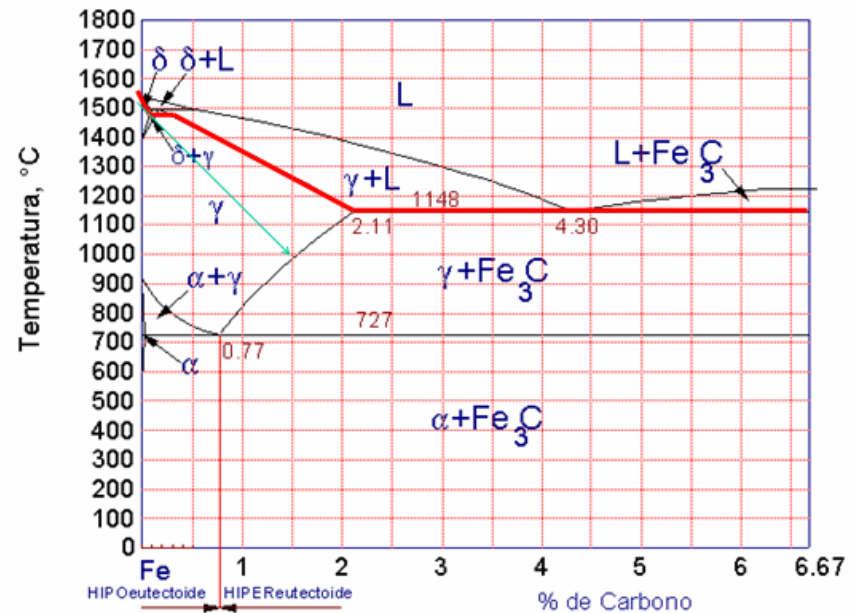
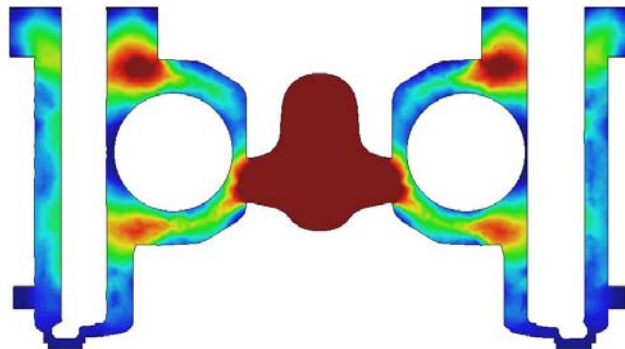


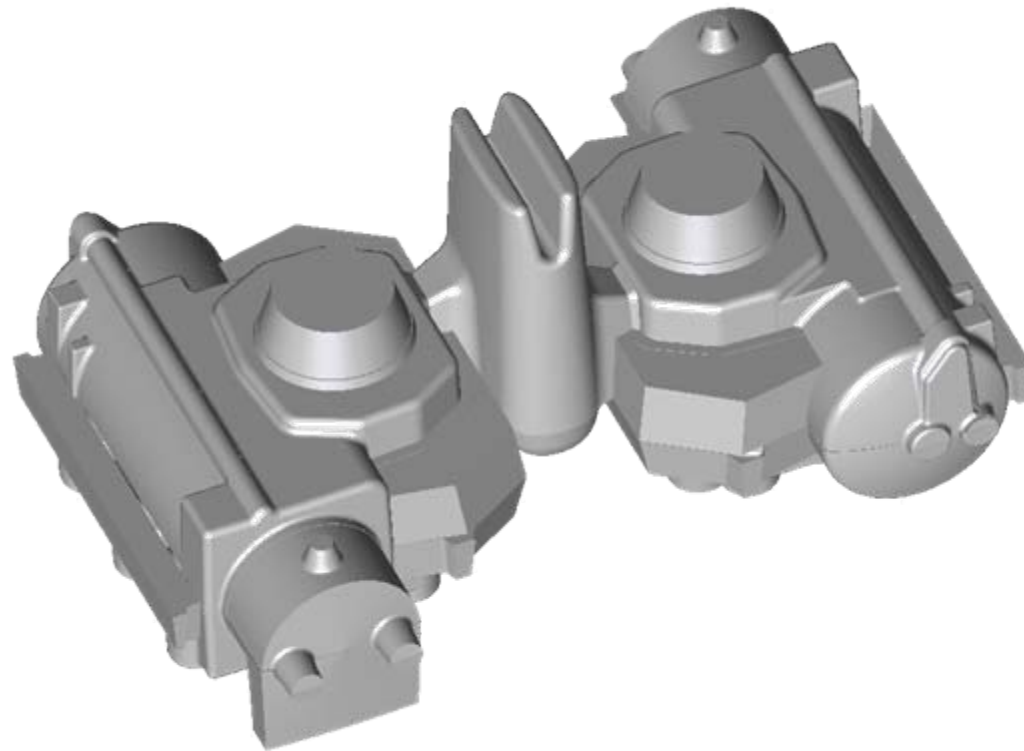
Objectives:

Development and innovate iron casting processes.



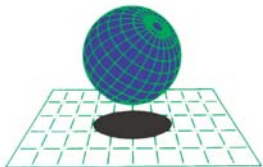
Work performed:

49002258 Casting



Motivation:

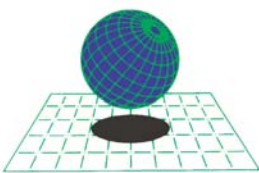
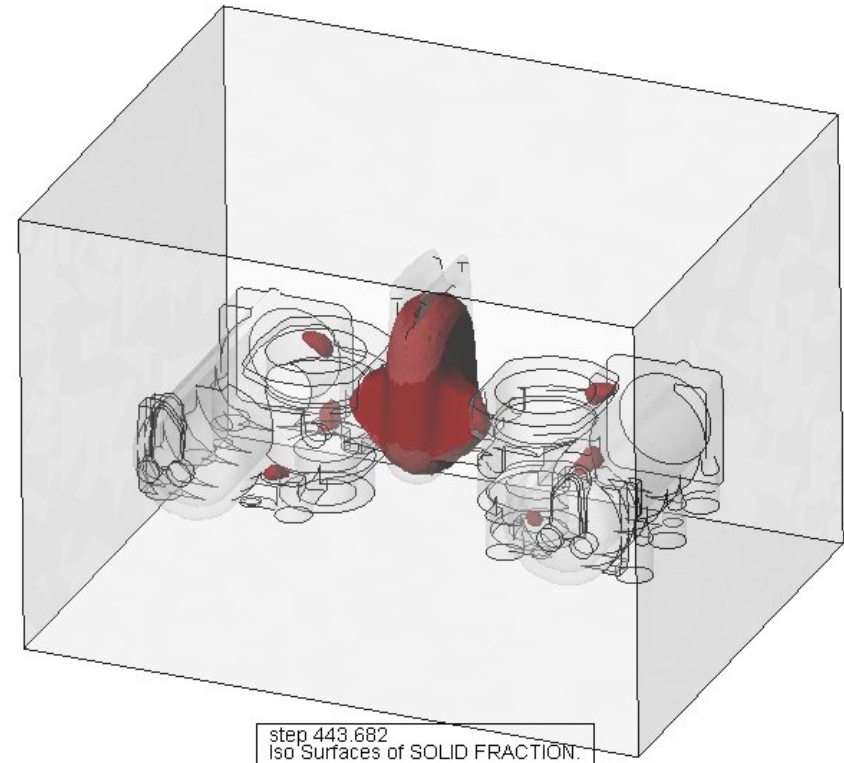
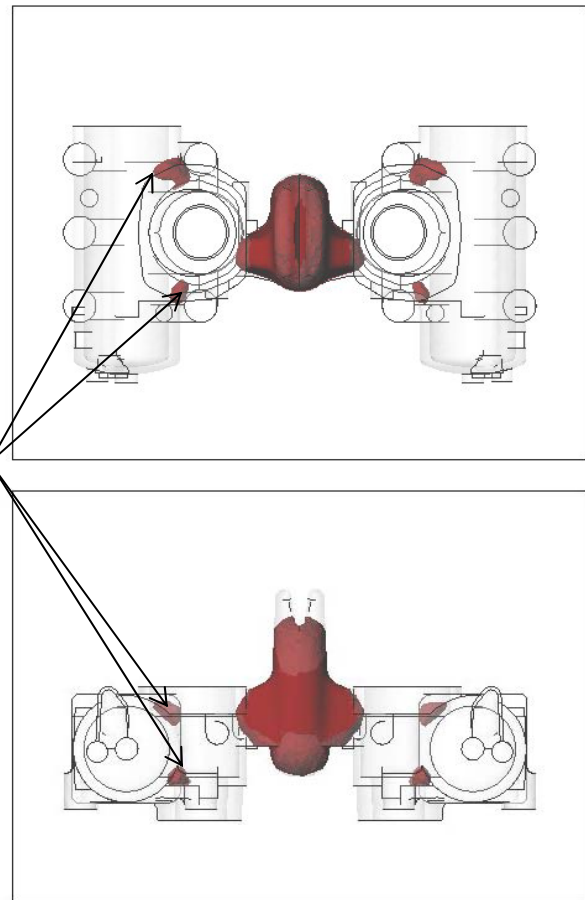
The aim of this analysis is to verify the final quality of the 49002258 Component by performing a simulation in the same conditions of the real process.



Work performed:

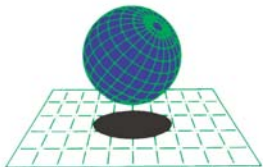
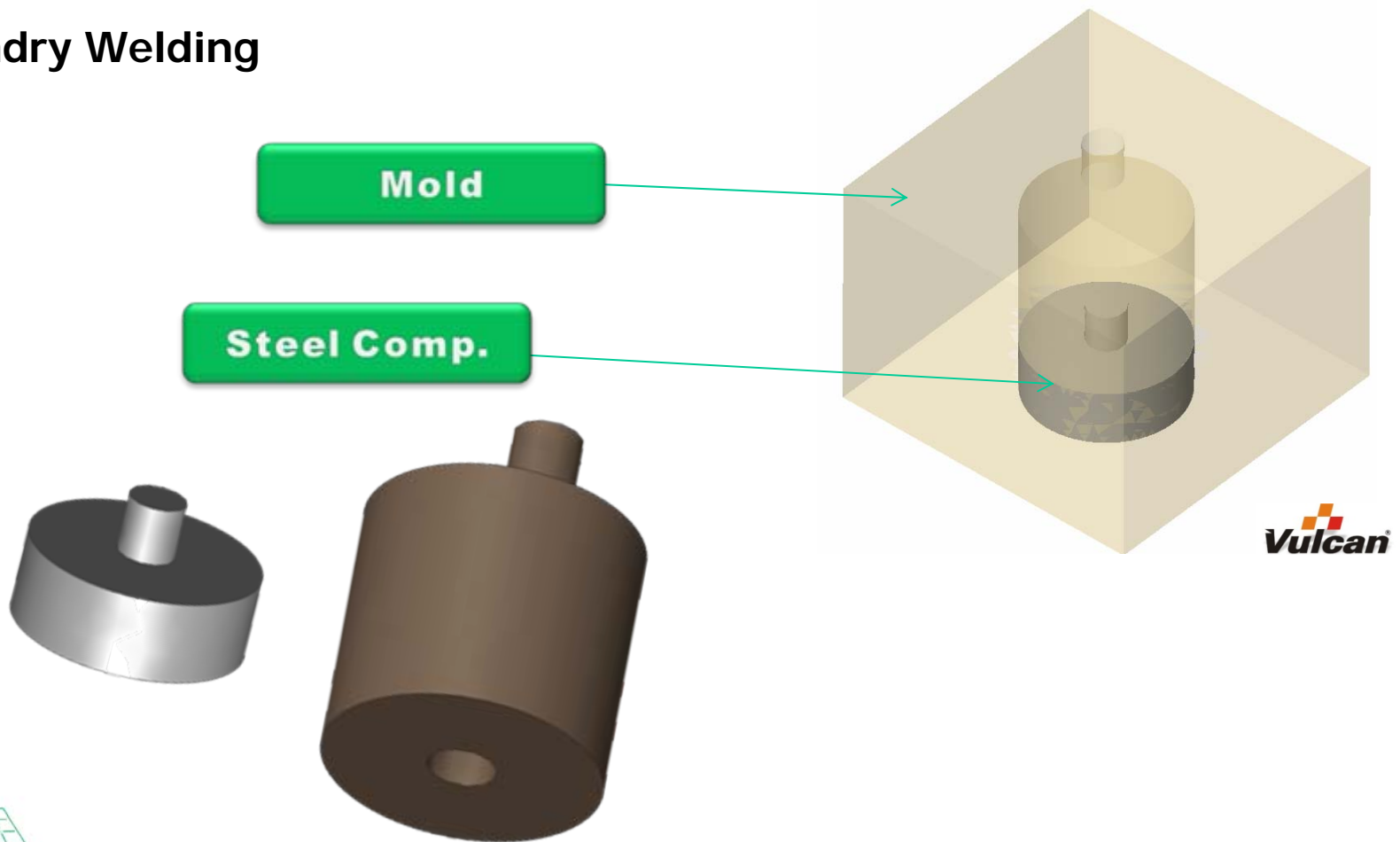
Solidification Evolution

Zone with the highest probability of shrinkage porosity

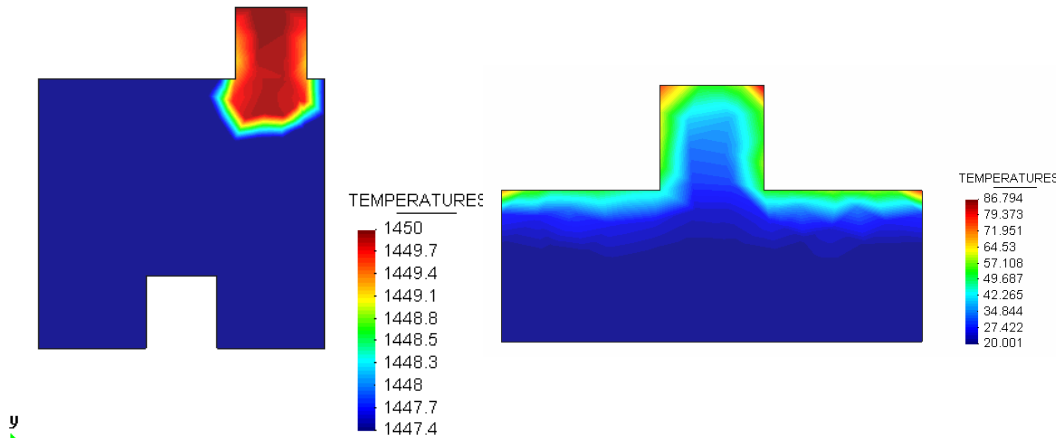


Work performed:

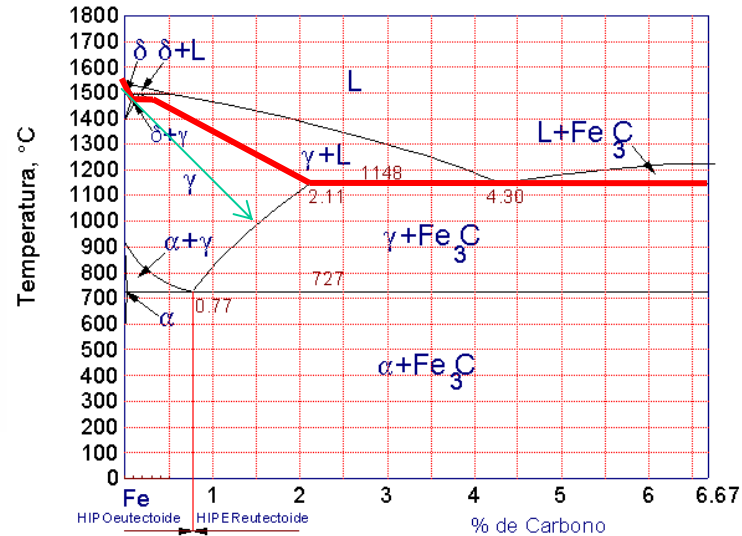
Foundry Welding



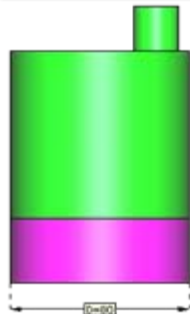
Work performed:



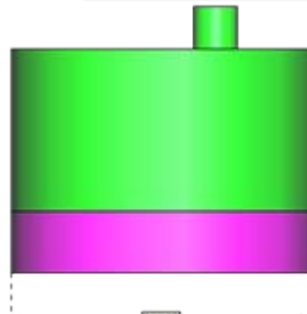
step 0.0101055
Contour Fill of TEMPERATURES.



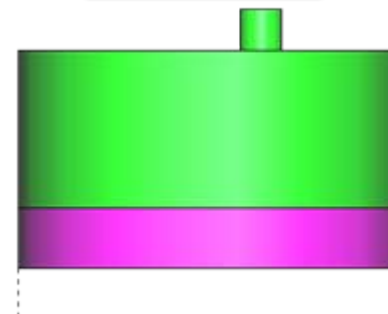
Case 1



Case 2



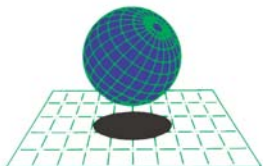
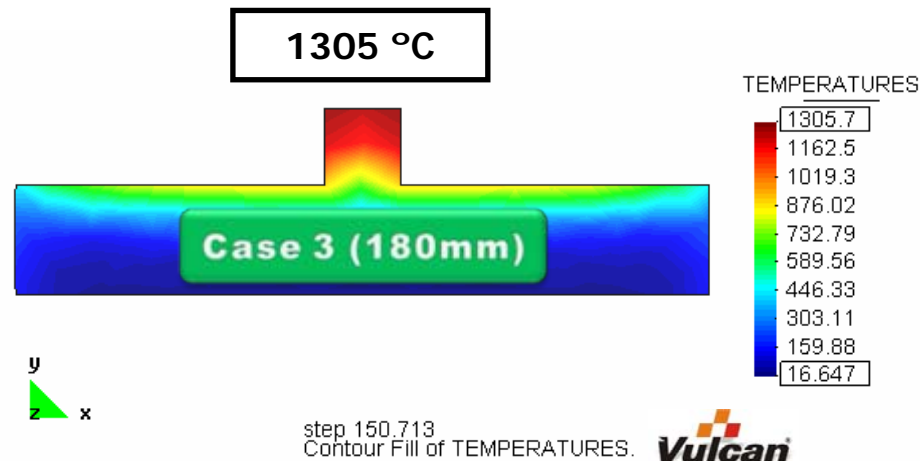
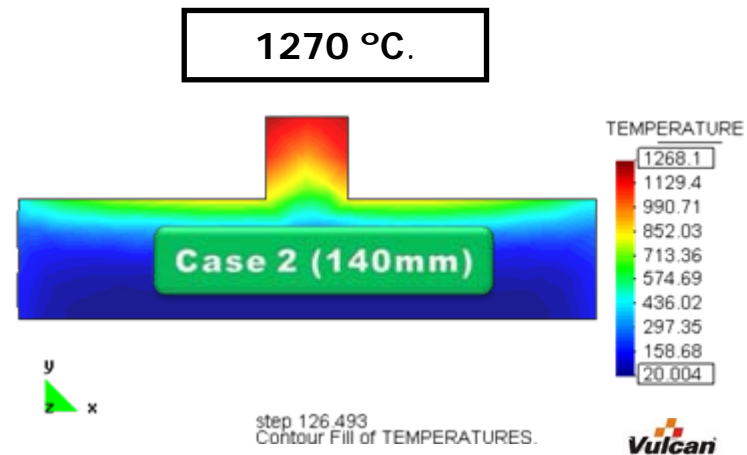
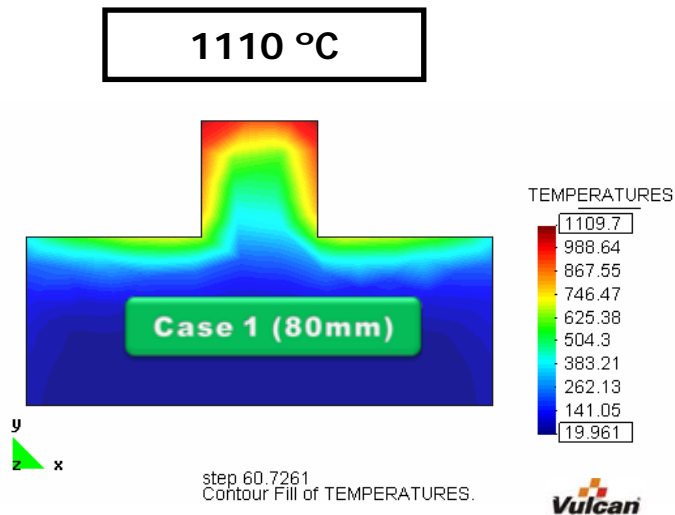
Case 3



Depending on the steel type (FeC) the "mushy-zone" is in a range of 1300 - 1500 °C.

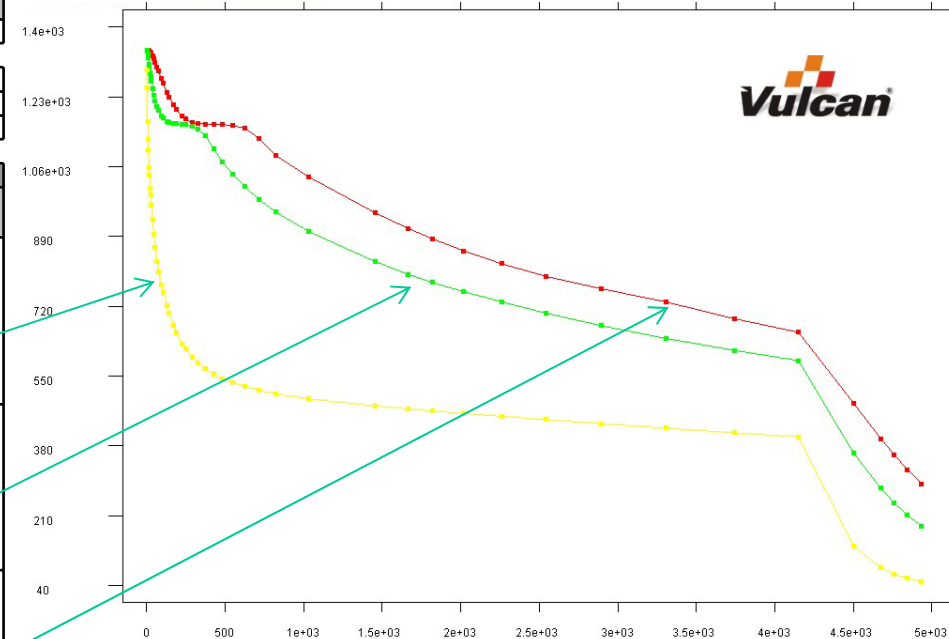
Work performed:

Filling temperature = 1450°C



Work performed:

Microstructure analysis

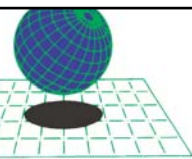
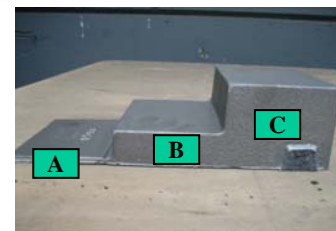


FOUNDRY DATA					
CHEMICAL COMPOSITION (%)					
C	Si	CE	Mn	Mg	P
3,165	2,18	3,9	0,69	0	0,01
S	Cu	Cr	Ni	Mo	Al
0,01	1,21	0,049	0,05	0	0
INOCULATION (%)					
MEDIUM FUSION T (°C)					
1423					
COOLING TIME					
SLOW					

INOCULATION (%)	
MEDIUM FUSION T (°C)	
1423	
COOLING TIME	
SLOW	

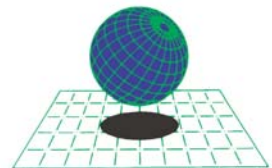
RESULTS

POINT TO STUDY	GRAPHITE (By standard UNE-EN ISO 945)	MATRIX (% ferrite) (By standard UNE 78001:2002)	MICROSTRUCTURE (Ligh microscopyx162-chemical attack %Nital)
A	Shape: Distribution: Measure:		
B	Shape: VI Distribution: ---- Measure: 4/5	5	
C	Shape: VI Distribution: ---- Measure: 3/5	5	



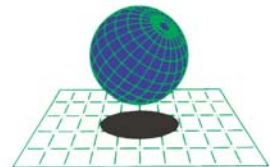
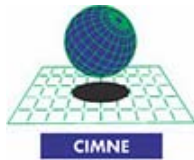
PROHIPPP WP3 CAST IRON SUMMARY

WP 3



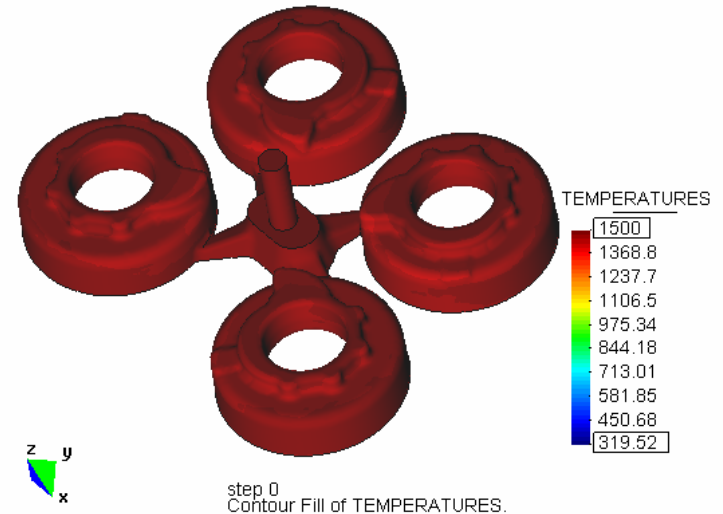
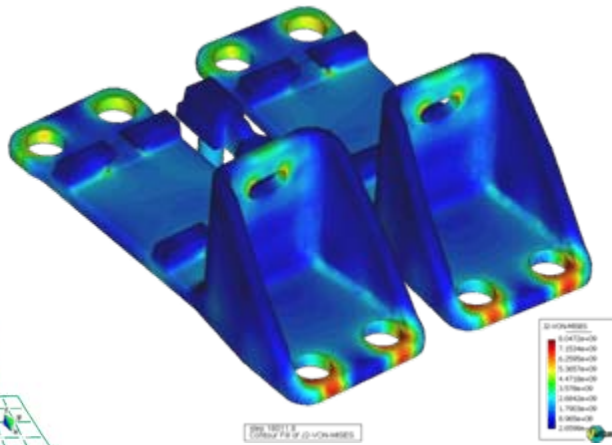
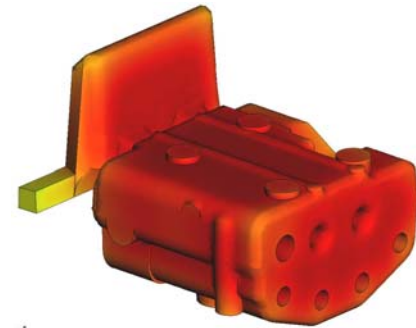
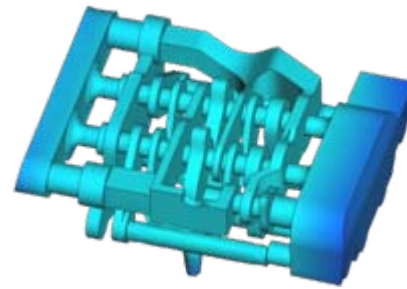
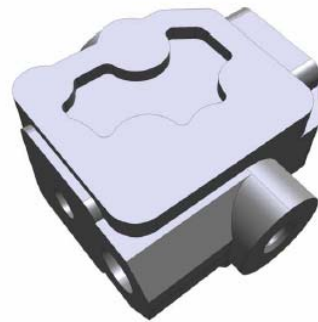
Objectives:

Cast of thin wall cylinders with minimum defects due to micropores.
 New casting procedures.



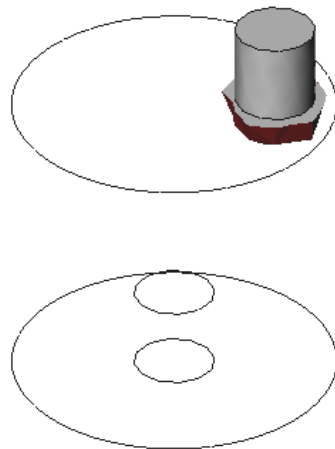
Work performed:

More than 15 cast iron thermo mechanical simulations.

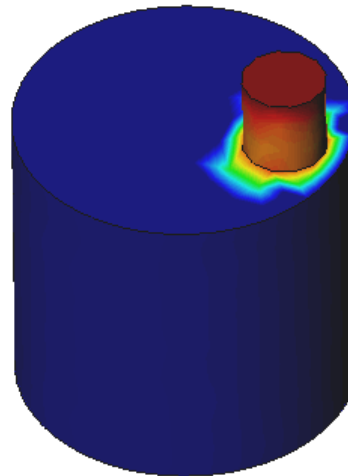


Work performed:

New cast iron technology developed and tested.

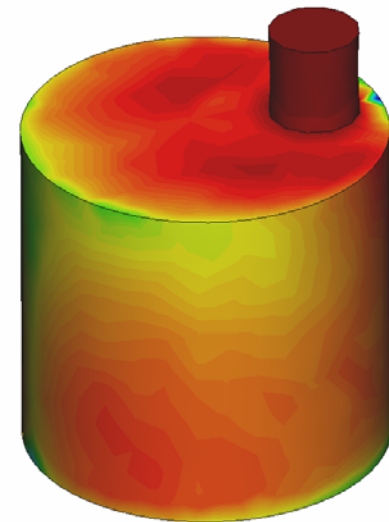
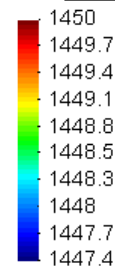


step 0.0101055
Iso Surfaces of MATERIAL.

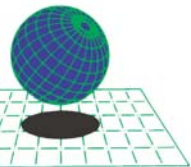


step 0.0101055
Contour Fill of TEMPERATURES.

TEMPERATURES

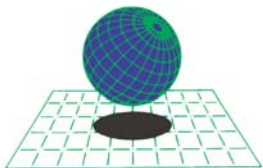
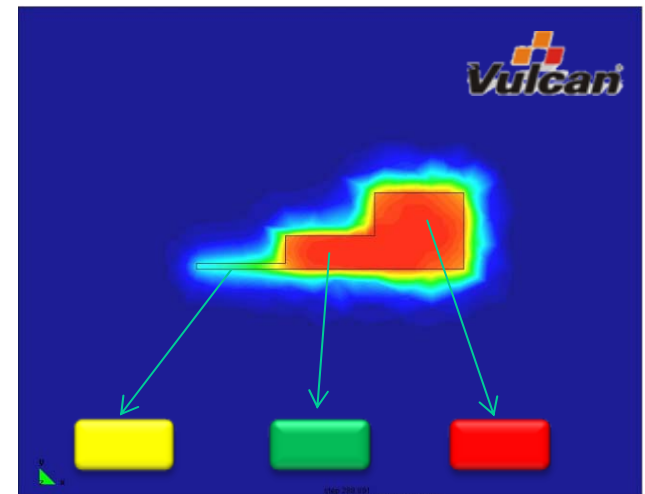
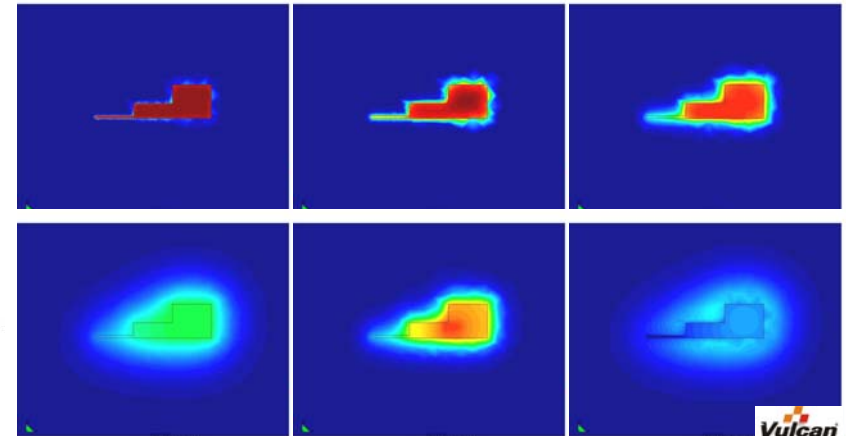
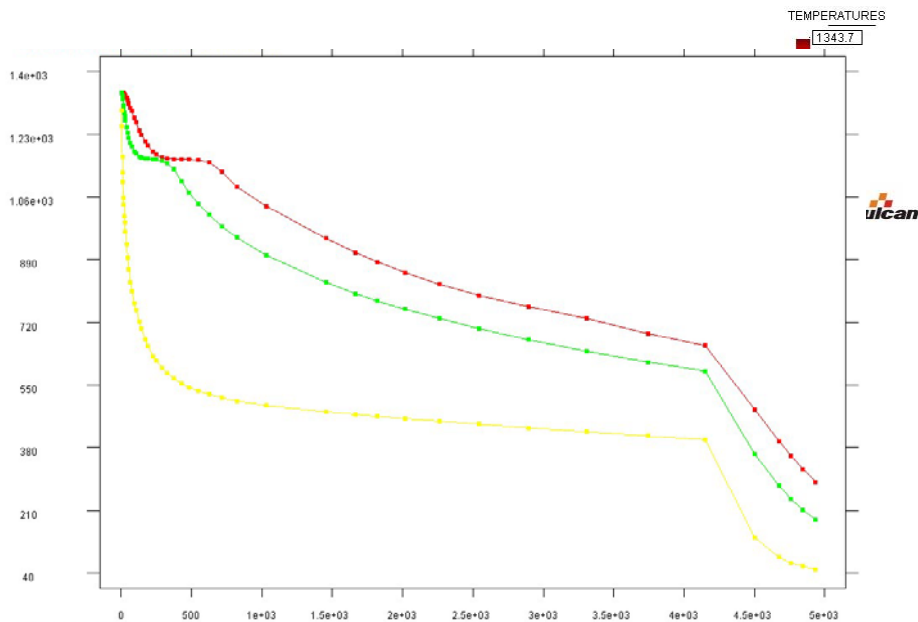


Final temperature after filling



Work performed:

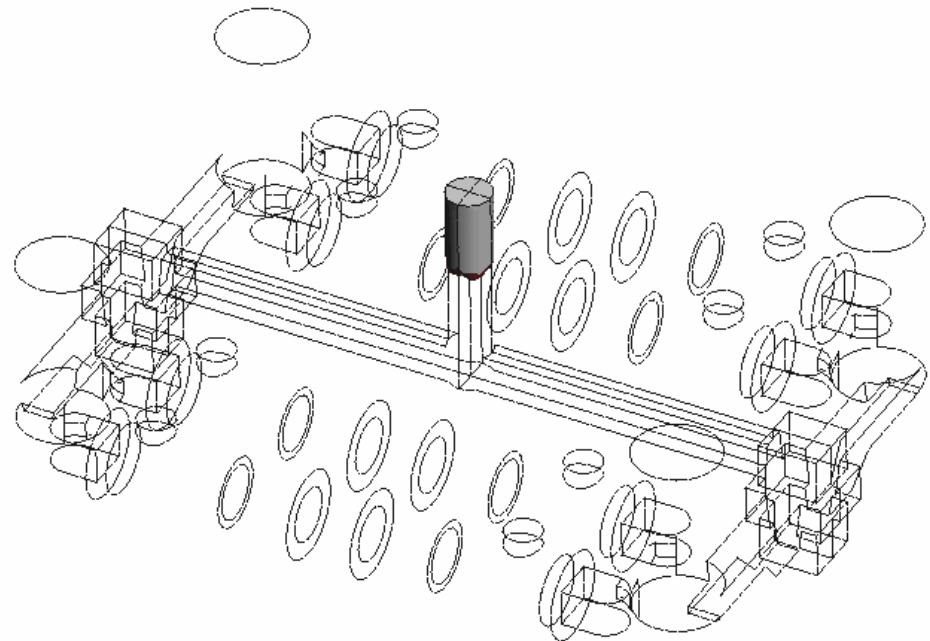
New micro structure prediction.



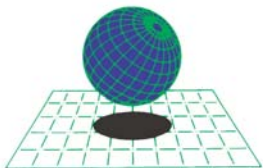
Exploitable results:

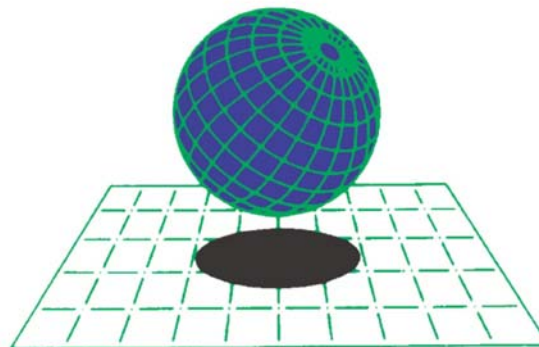
One validated casting and thermo mechanical program:

- Training Material
- Program documentation
- Validation benchmarks
- Publications



step 0.0795353
Iso Surfaces of MATERIAL.





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