



coolingView

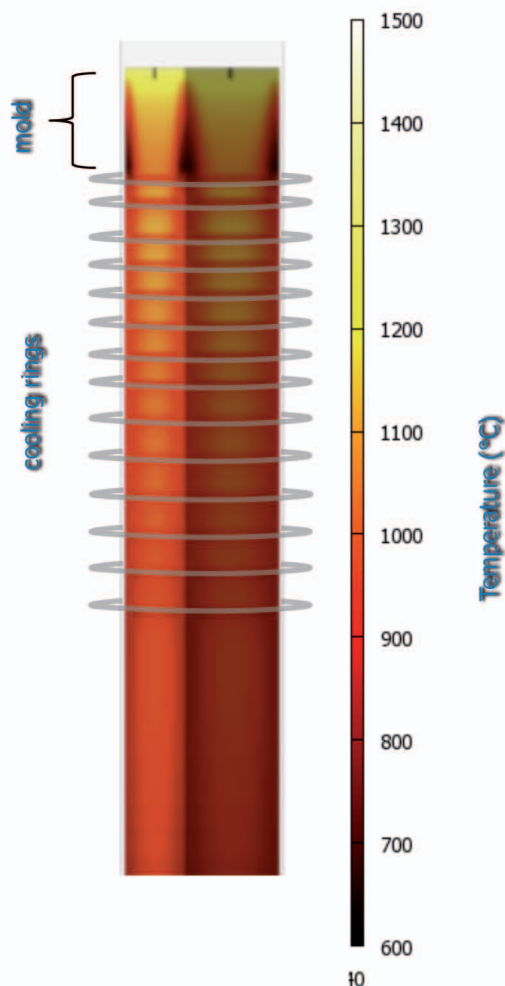
Problem:

- thermal un-uniformities of the surface thermal profiles both along the strand and along the transverse section perimeter
- assessing the maximum allowable casting speed as a function of the steel composition
- internal and surface cracks

Solutions:

Finite element modeling is used to perform the thermo-mechanical analysis of the solidifying shell along the strand, giving as input heat transfer conditions representing the single action of each spray nozzle.

Calculated surface and subsurface (hot tearing) indexes are used for designing optimised cooling systems.



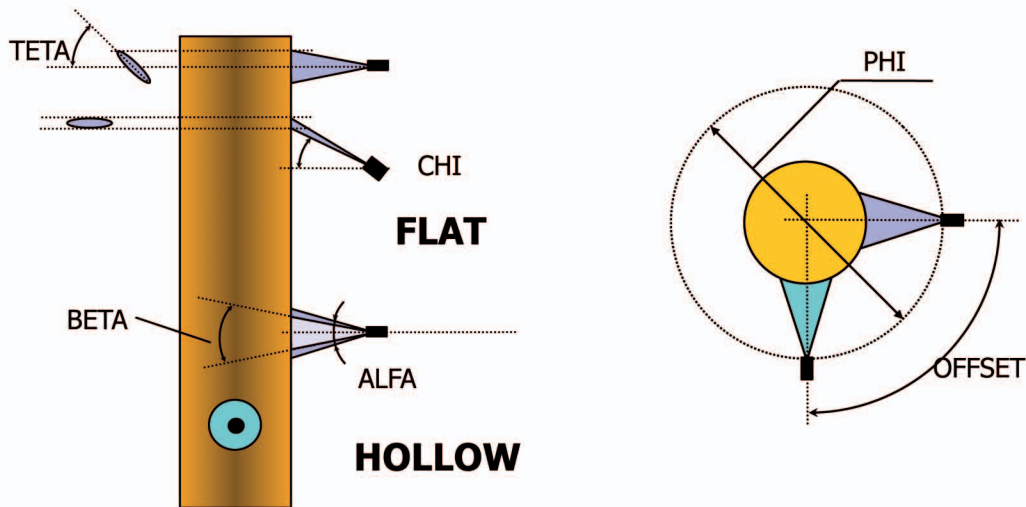
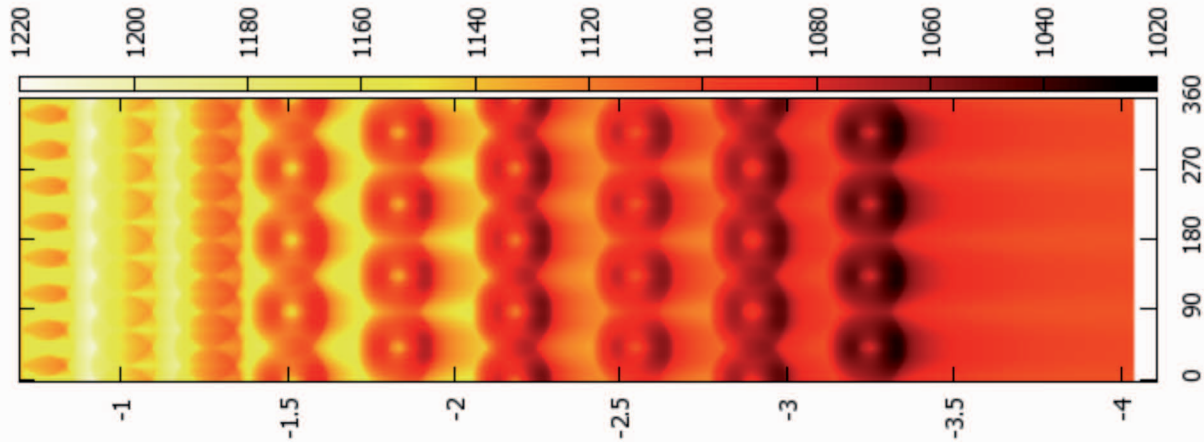
Benefits:

- Optimised secondary cooling design
- Optimised operative practices for each steel grade
- Specific pattern design (flow rate and nozzle type) for wide and narrow faces
 - Specific pattern design for different steel grades
 - Specific different zones pattern design
- Quality improvement
 - Reduction of grinded and scraped billet/slabs

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Model details:

2D finite element model
transient thermo-mechanical analysis
creep analysis
Hot tearing modeling
Surface crack modeling (ductility trough)



Parameters needed to secondary cooling nozzle
characterization for blooms

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