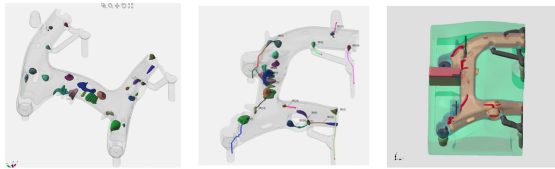
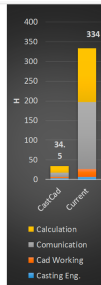


Simulation- Feeder Design

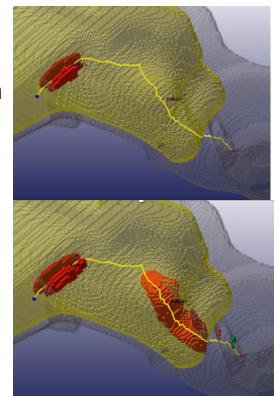
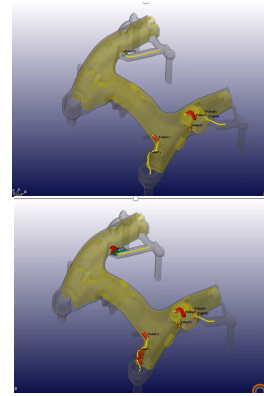


CastCAD- Automatic Feeder Design
 Preparation time:30min
 Calculation time : 2h
 Normally second optimization loop is necessary
 for fine tuning and capture the missed hotspots
 + verification loop: 4h 45 min
 +Editing time and reporting: 1:15
Total Time: 11 Hours
 CAD implementation time:3Hours

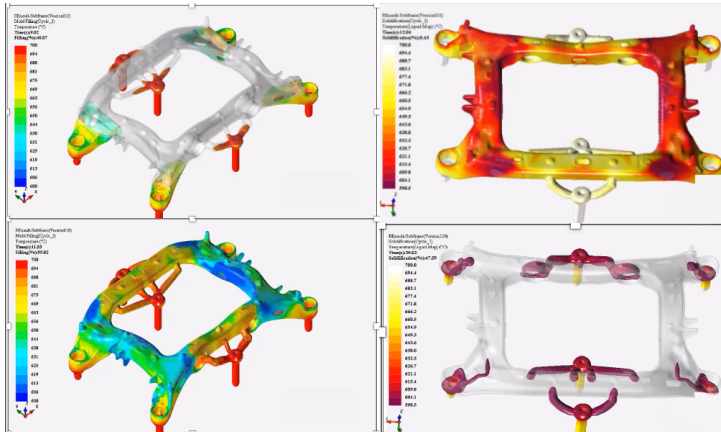
Current- Feeder Design
 Preparation time:30min/loop
 Calculation time : 10-15 hours
 In best case we need at least 10 loops of simulation
Total Simulation Time: 120 Hours
 + CAD working time/loop :1Hours
 + Communication time/loop



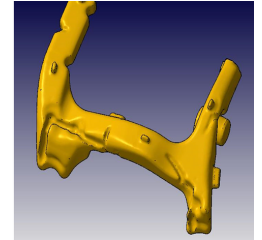
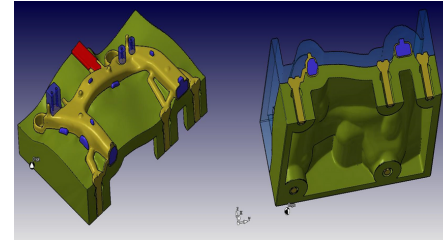
Automated Feeder Implementation



Verification



Simulation out-CAD



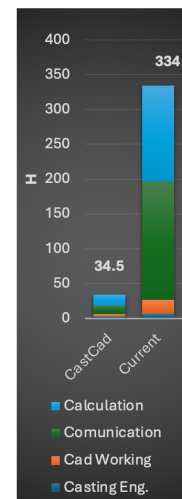
3D Model- STL format (upper mold, lower mold, Sliders, Inserts, chillers, gating, sandcore,...)
 Accurate gating weight
 Accurate internal feeders
 No of fill tubes
 No of SAW cuts



Design . Simulate . Optimize . Faster

Summery

	Casting engineer time (Hours)	CAD engineer time (Hours)	Calculation time (Hours)	Waiting time (Hours)	Total development time (Days)	Others
CASTCAD	3.5	3	16	12	2	- Internal feeder /gating weights are normally 20% less than manual method - possibility to check different ideas in less than a day(new gating system, chilling system, inserts, process parameters and... - Simulation engine is 4 times faster (GPU solver) - simulation Hardware cost is 1/3 of ordinary simulation hardware's
Current Method	7	20	137	170	21(3 weeks)	

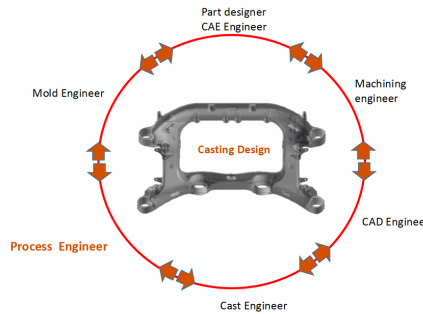


"Traditional simulation tools can take days, creating bottlenecks in design and production. CastCAD's powerful solver delivers accurate results in a fraction of the time, allowing for rapid iteration and faster time-to-market."



Speedy Result with CastCAD

- Reduce Time-to-Market
- Iterate Designs Rapidly
- Lower Development Costs
- Improve Part Quality & Yield



Main Ideas:

- Develop a software for Casting engineers/Process engineers
- Optimize the development cycle and reduce the communication time
- Customize the software for specific process
- Reduce lead time
- minimize the scrap
 - part design related scraps
 - mold design related scraps
- Reduce energy foot -print
- Reduce development Cost

CastCAD Speedy Result Case Study

LPB01 Name: Sub frame
Weight: 3.2 Kg
Material: Al356



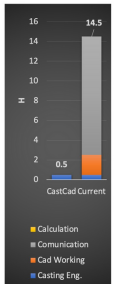
Machined part-customer model



simulation model
As Cast part

CastCAD-Preparation time
Start from Machined cast part:30 min/ case
No CAD Working
No communication time

current-Preparation time
Start from Machined cast part:30 min/ case
CAD Working
Communication time



Natural solidification



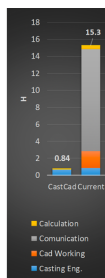
Simulation model



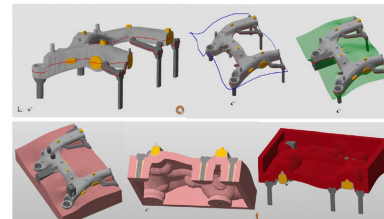
Natural solidification

CASTCAD-Preparation and running time
(start from As Cast part) :20 min
No communication time

Current method -Preparation and running time
(start from As Cast part) :50 min

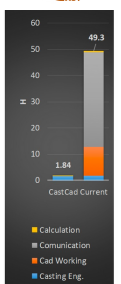


Create parting surface , splitting the mold, creating shell mold

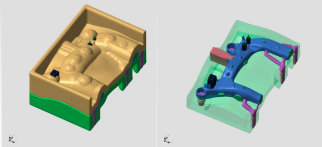


CastCAD- Create parting Surface, splitting the mold,
Create the shell mold
Preparation time:15-30 min
No CAD Working
No communication time

Current method – Normally this stage will be skipped
Preparation time:
+ CAD working Time: Estimated time 6-8h
+ communication time

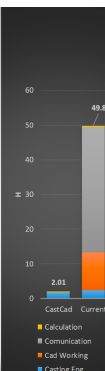


Casting simulation- with gating , shell mold concept, inserts, chillers, fill tube...

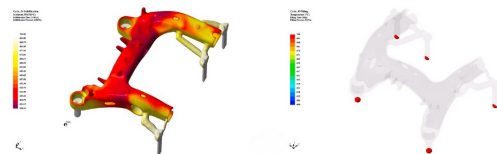


CastCAD- casting simulation
Preparation time:10 min

Current method – Casting simulation
Preparation time: estimated time 30 min

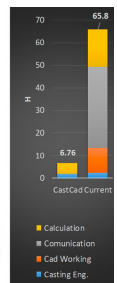


Simulation- 5 cycles filling and solidification



CastCAD- casting simulation
Calculation time :4h, 45 min
(5 cycles filling and solidification
27.6 million mesh)

Current- casting simulation
Calculation time :16H(estimated)
(5 cycles filling and solidification
27.6 million mesh)



From Model to Result in Hours



CastCAD New Tool for Casting Process Simulation