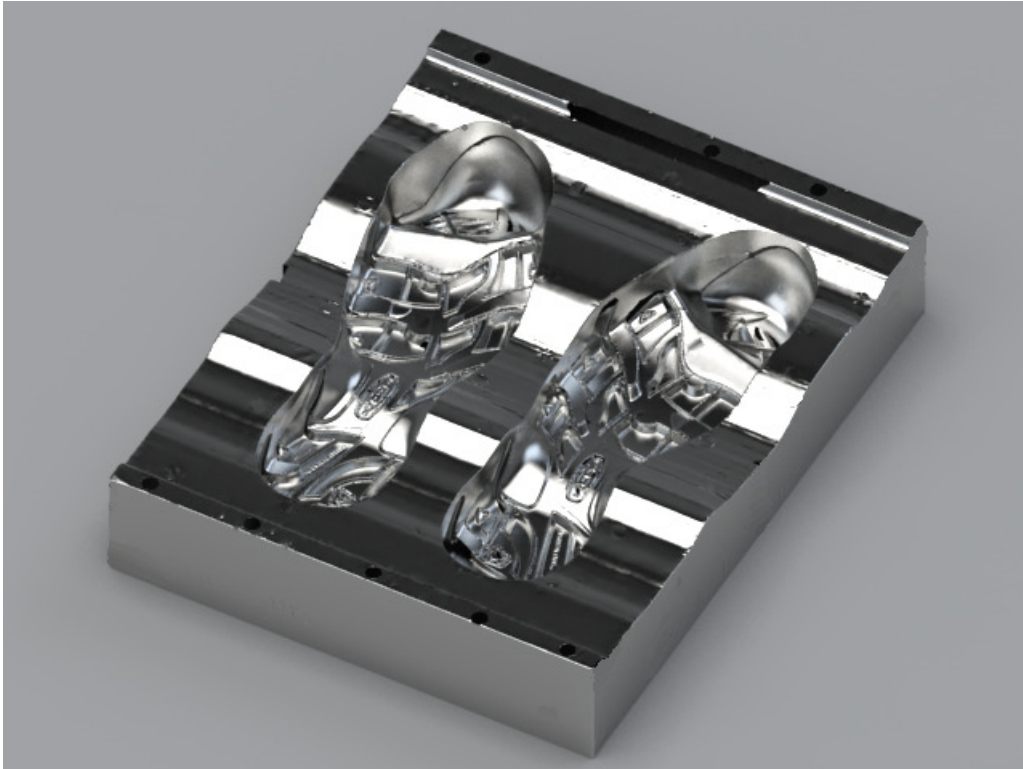


CastingElf



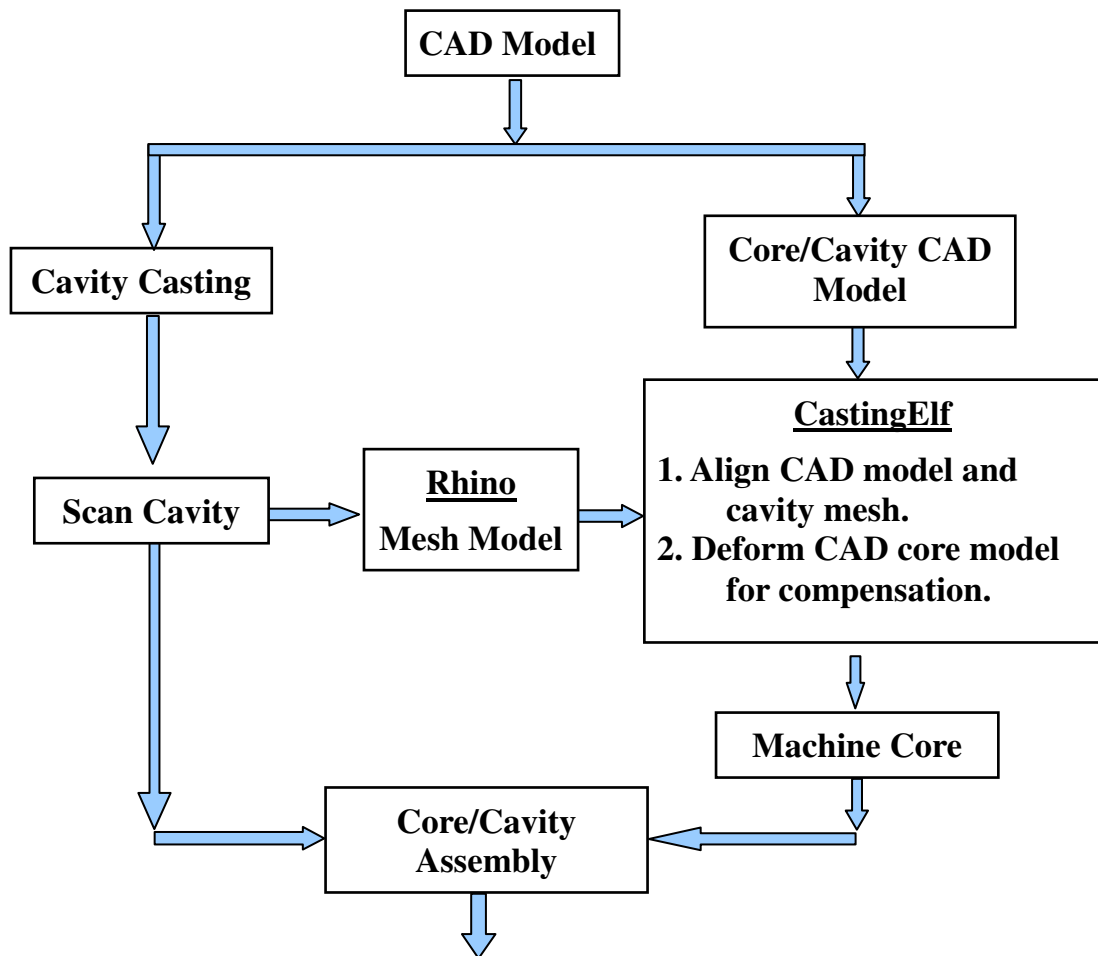
Purpose

Due to the complex shape of sole part on sport shoes, the cavity of sole mold usually manufactured by casting process and the core of mold was manufactured by CNC machine.

However there are deformation on cavity mold after casting, if not repair this problem then it will affect the assembly of core and cavity, and the final part (sole) can't keep same thickness with original design.

The purpose of CastingElf is to repair this problem(deformation on cavity) by the special functions of software, instead of huge manpower and time consumption. CastingElf deform the CAD model of core part according to the scanned casting cavity, to make sure all thickness fit to original design and have good assembly.

Flow chart

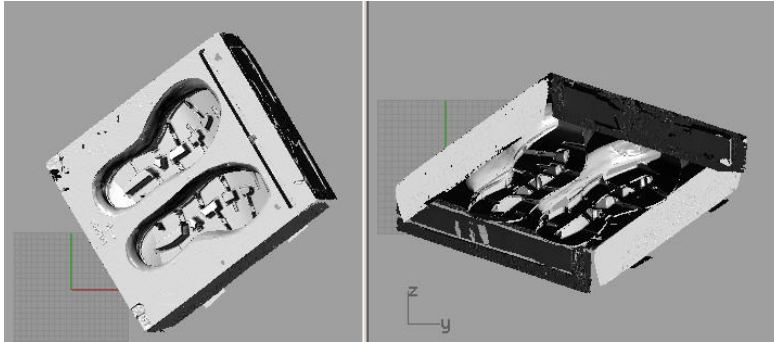


Benefit

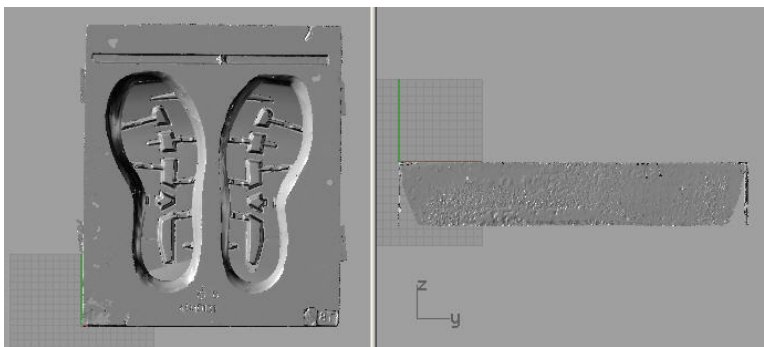
1. Make sure sole thickness fit to original design, increase quality, satisfy to customer.
2. Save manpower and time consumption.
3. Improve the drawback of current CAD + Reverse + Deformation procedure.
 - Multiple system, need high skill people, take long time
 - Bottleneck of sole mold production.
4. Easy to learning, integrated in Rhino environment.
5. Fast process, break through the bottleneck of sole mole production.

System Functions

1. Align cavity block

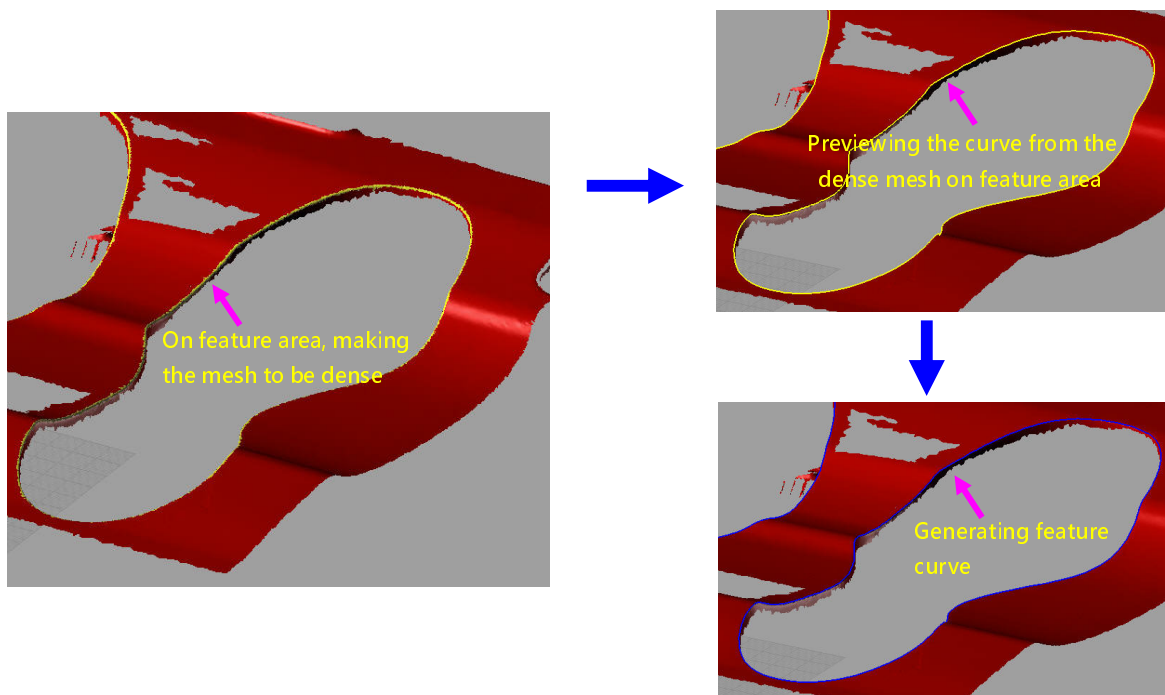


Before Alignment

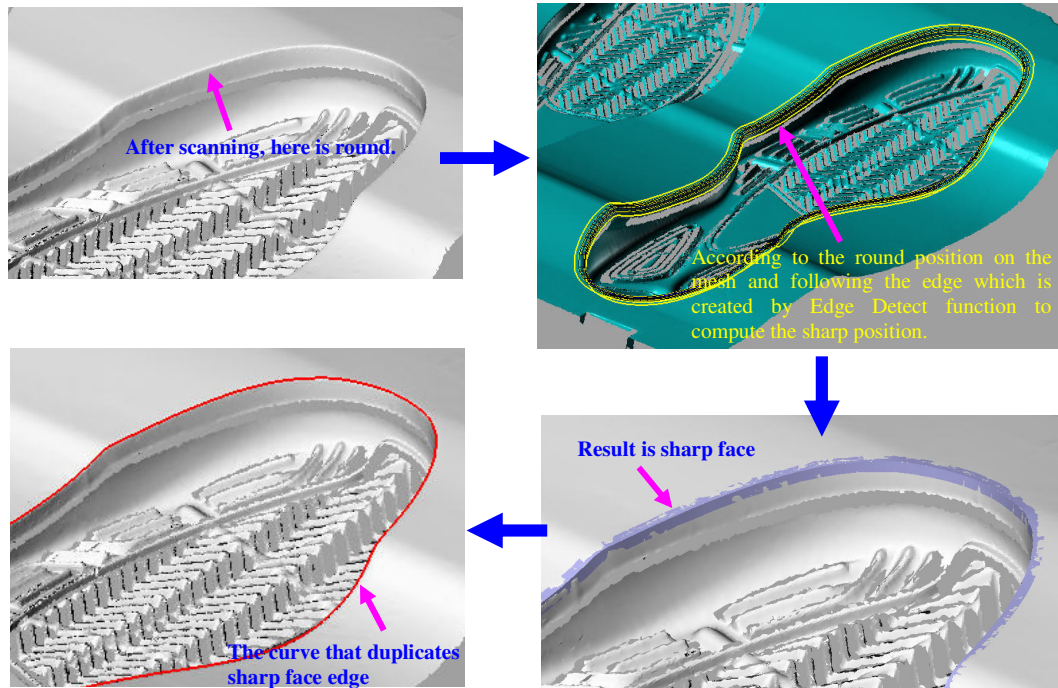


After Alignment

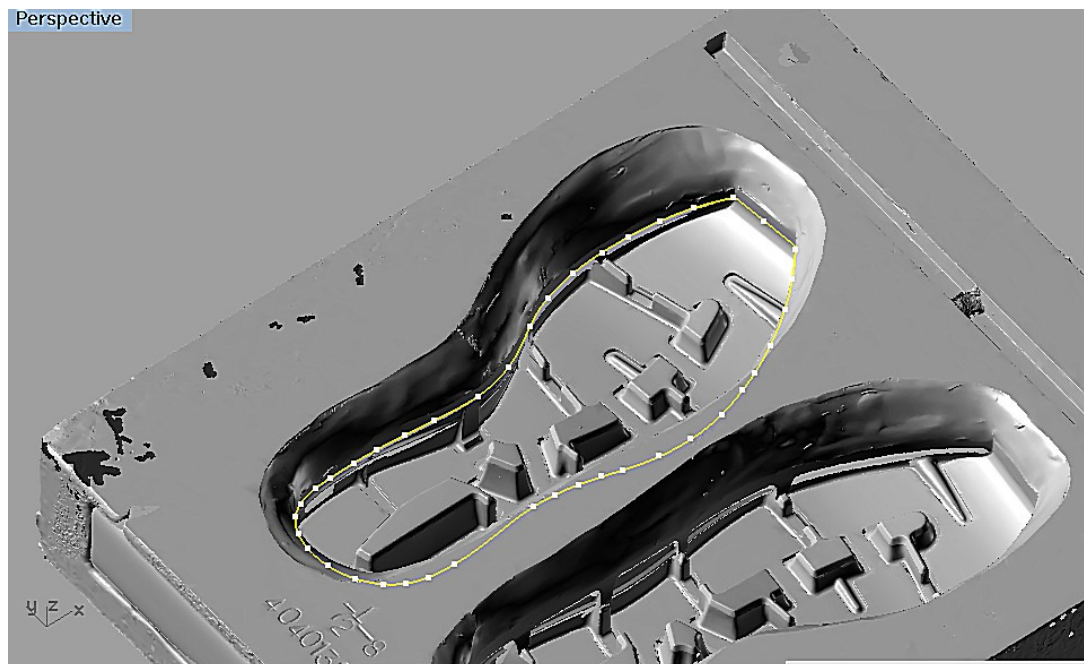
2. Detect edge on scanning mesh automatically



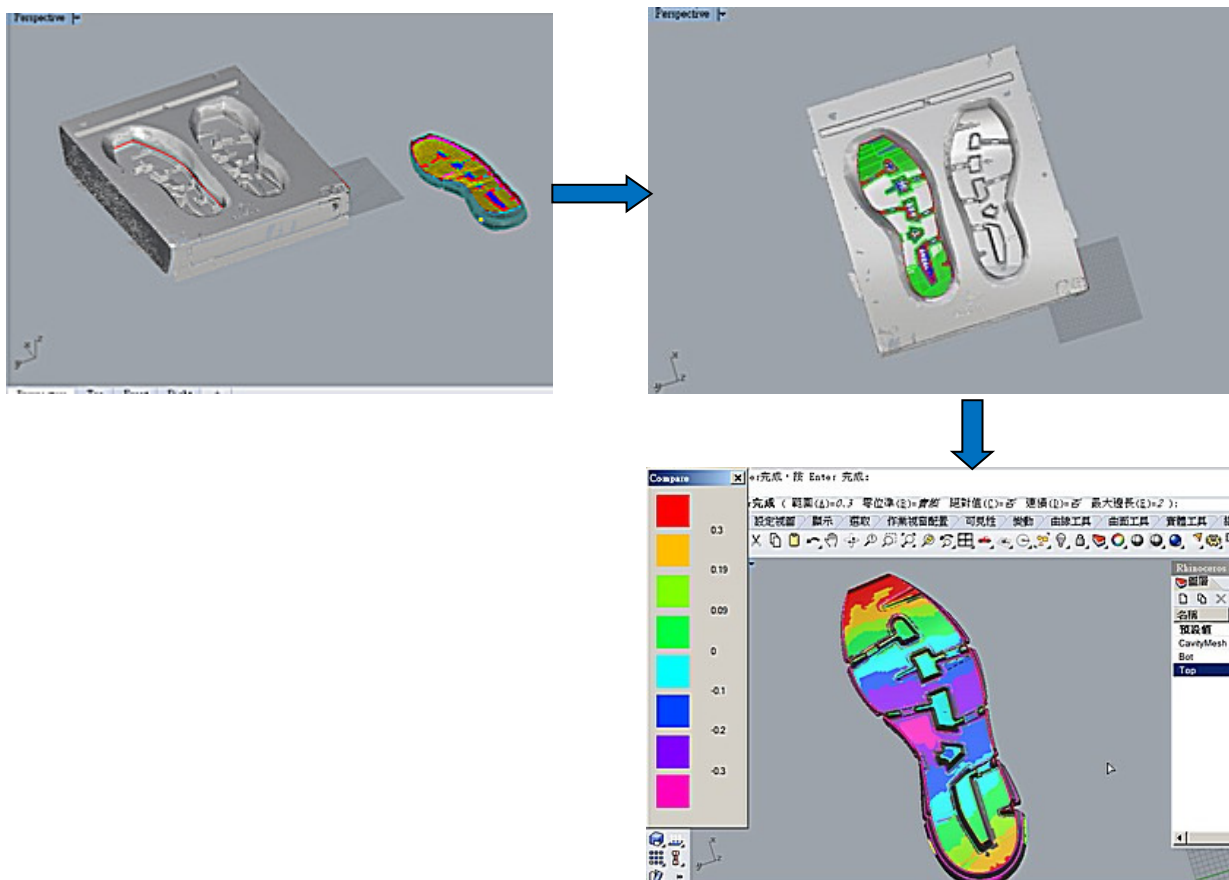
3. Generating sharp edge curve



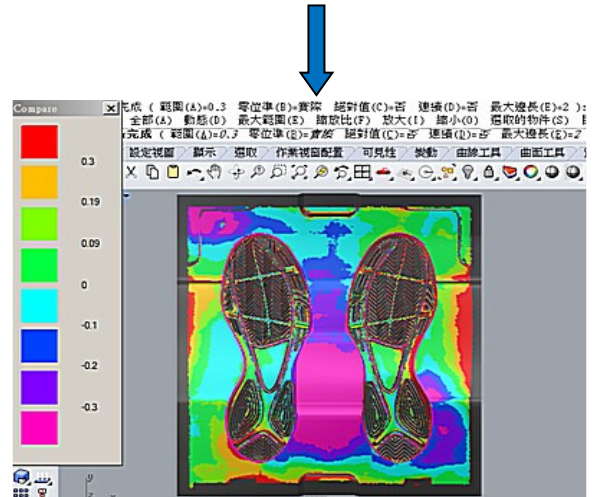
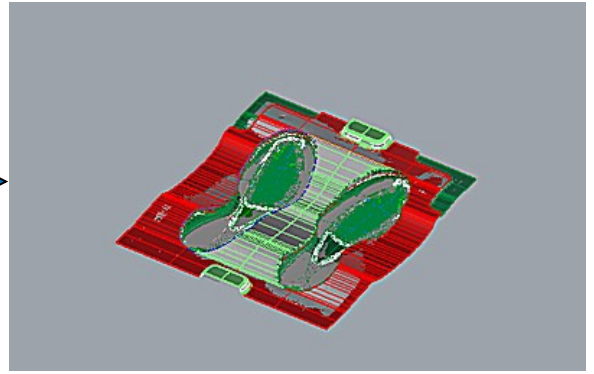
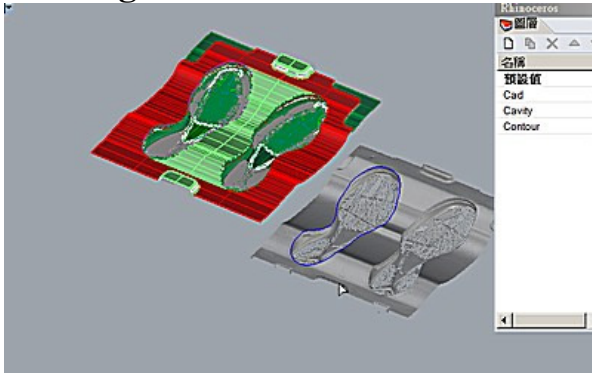
4. Adapt top gauge from CAD model to scanned cavity, get new top gauge.



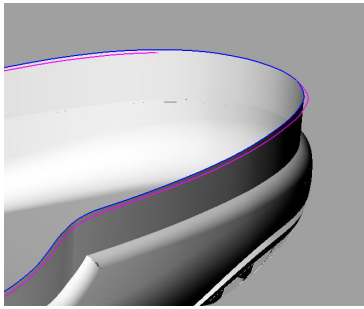
5. Auto align CAD model and scanned cavity.



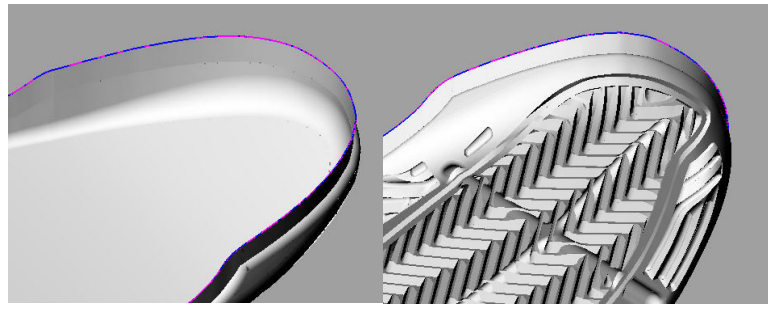
Auto align CAD model and scanned cavity.



6. Change Topgauge (3D/2D)

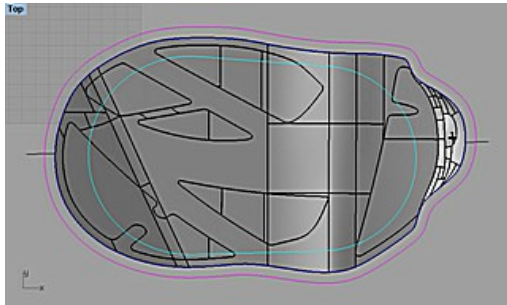


Before change

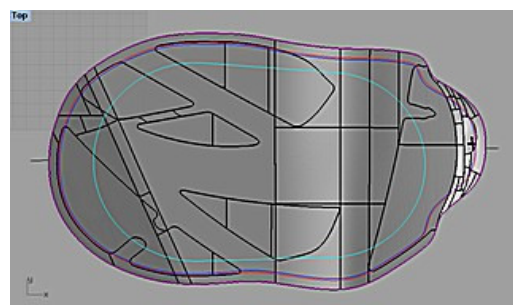


After change

7. Sketch contour on cavity mesh, morph core model to fit to contour on xy plane.



(1) Before morph

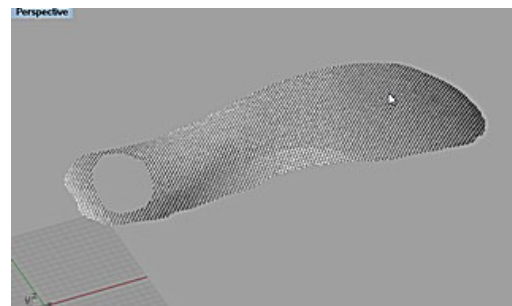


(2) After morph

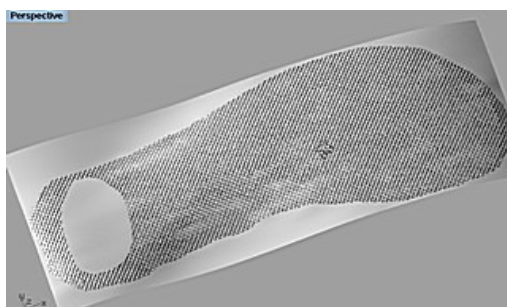
8. Generate mean surface for outsole which have lot of wave/pattern...



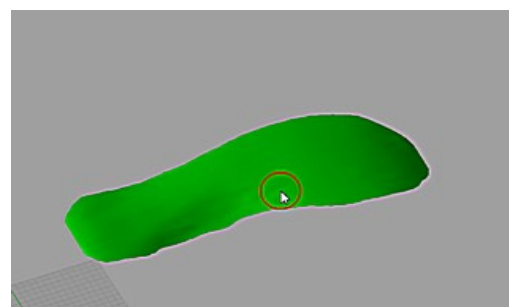
(1) A lot of pattern on outsole



(2) Extract mesh

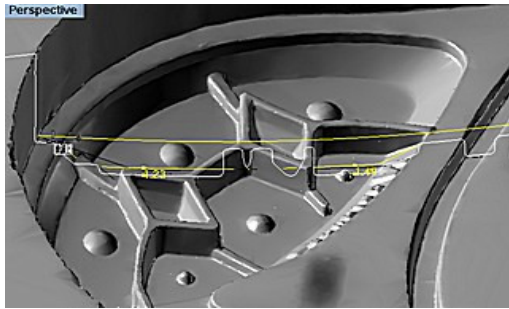


(3) Generate mean surface from mesh

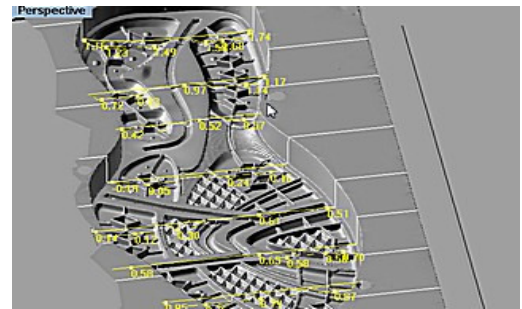


(4) Trim

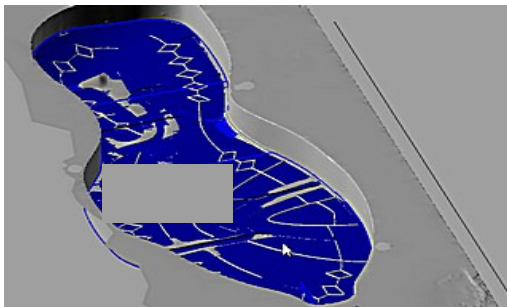
9. Compare sections on scanned mesh and CAD model, deform(compensation) core mold to keep thickness as same as original design.



(1) Define section, compare deviation between cavity mesh and CAD

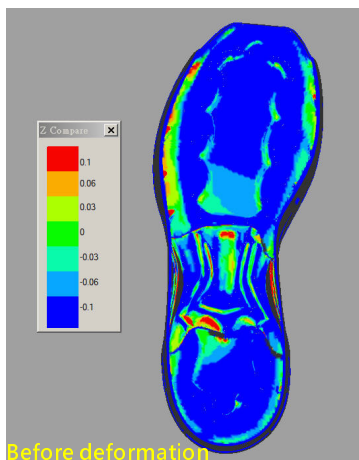


(2) Compare deviation on all sections.

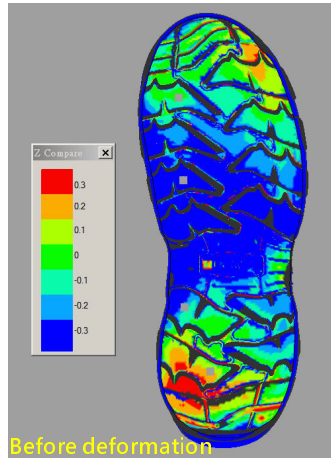


(3) Morph CAD model.

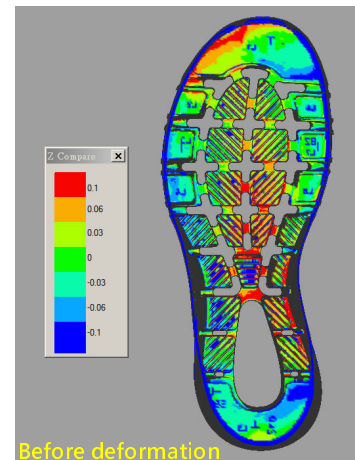
10. Z Compare to analyze deformation accuracy



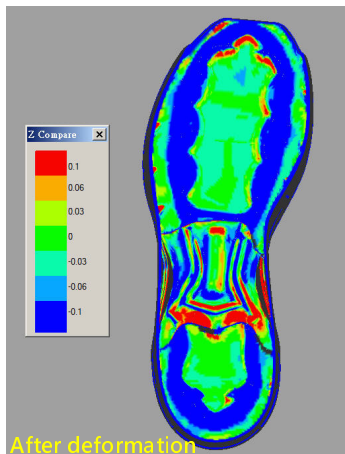
Before deformation



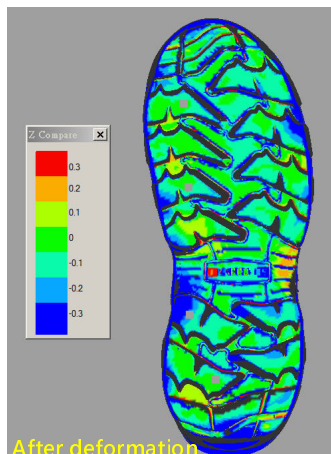
Before deformation



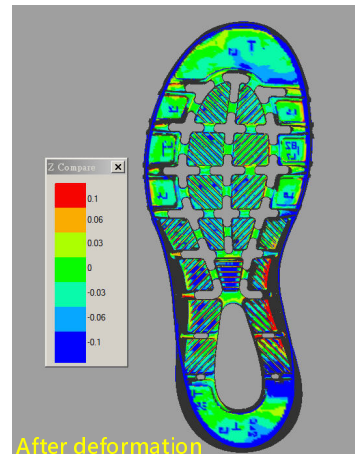
Before deformation



After deformation

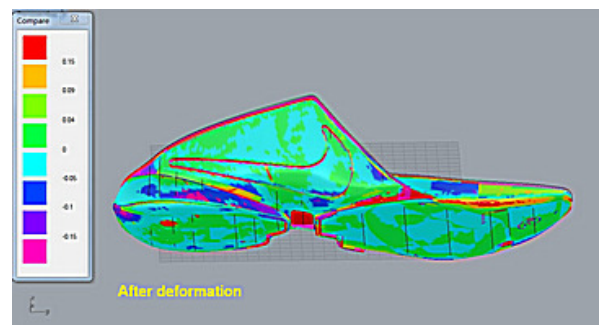
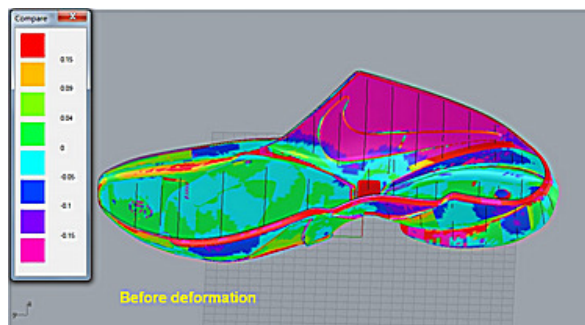


After deformation

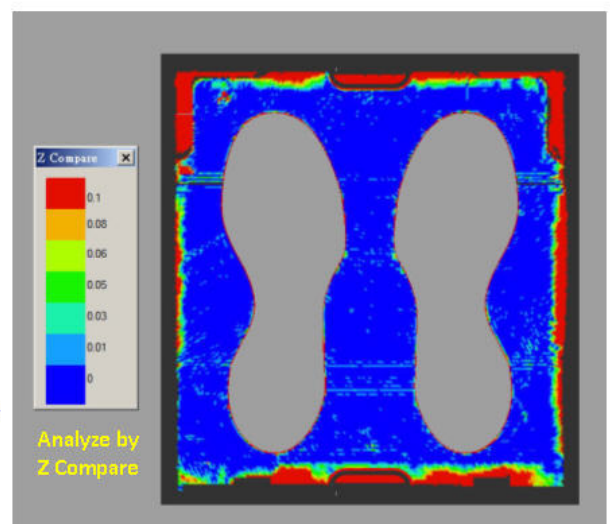
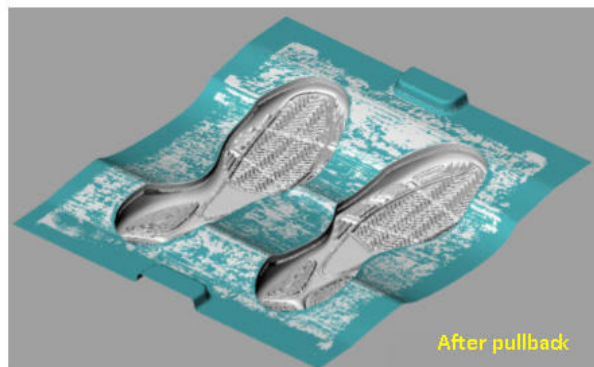
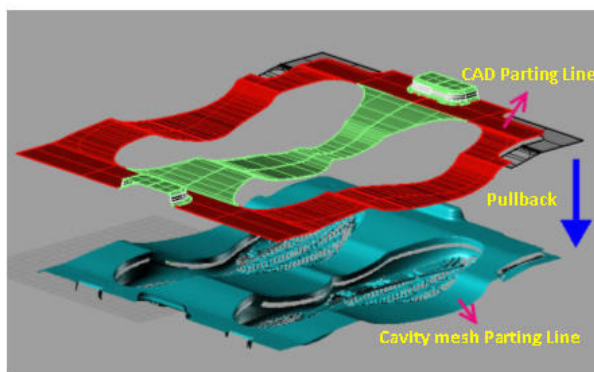


After deformation

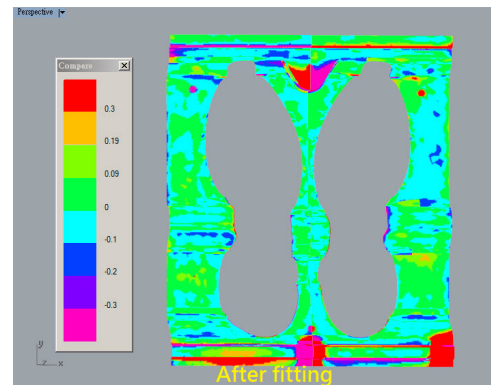
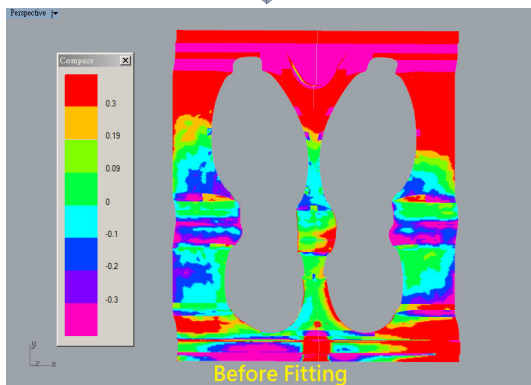
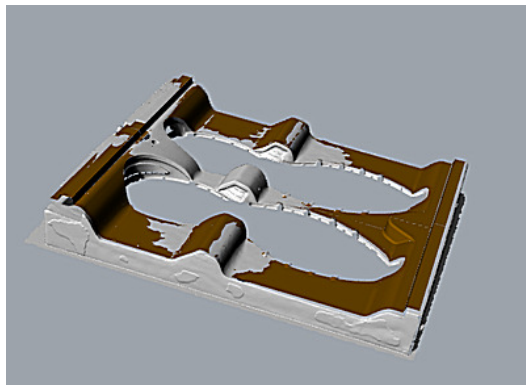
11. Side wall thickness control



12. Pullback parting surface from CAD to Cavity mesh



13. Fitting CAD parting surface to scanned cavity



14. Upper deformation and Compare (Optional module)

