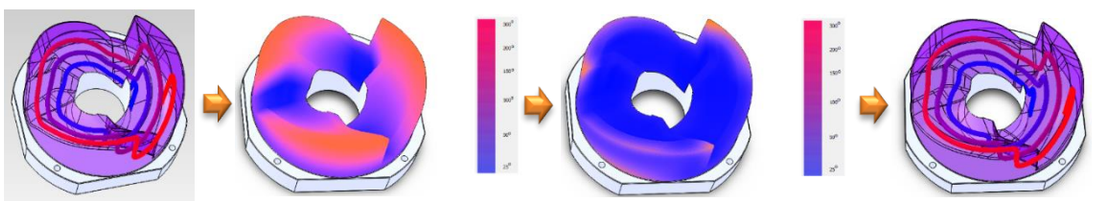
Automated Conformal Cooling Design and Optimization

Capabilities:

Automated generation of optimized conformal cooling channel network for moulding inserts:

- Automated approaches in generating conformal cooling channel;
- Dynamic thermal analysis and assessment of conformal cooling;
- Automatic optimization of conformal cooling channel with the results of dynamic thermal analysis and assessment;
- Incorporated dynamic thermal assessment into conformal cooling channel optimization in a single system.



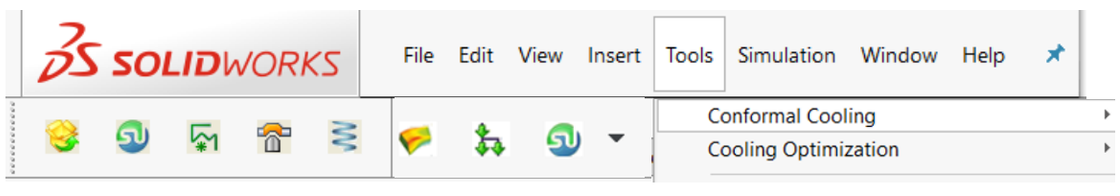
Initial design | Thermal assessment | Dynamic optimization | Final channel

Benefits:

- Automated generation of optimized conformal cooling channel network for moulding inserts;
- Automatic optimization of conformal cooling with in-built dynamic thermal analyser;
- Enhance manufacturing productivity by improving part quality, reducing design lead time and tooling verification time;
- Minimize the dependence on human knowledge capital;
- Solve the manpower intensive process in developing rapid tooling with conformal cooling.

Platform:

An embedded SolidWorks Add-in application



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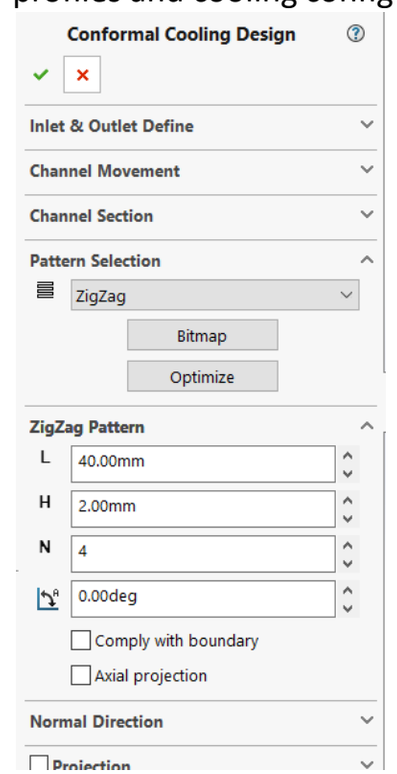
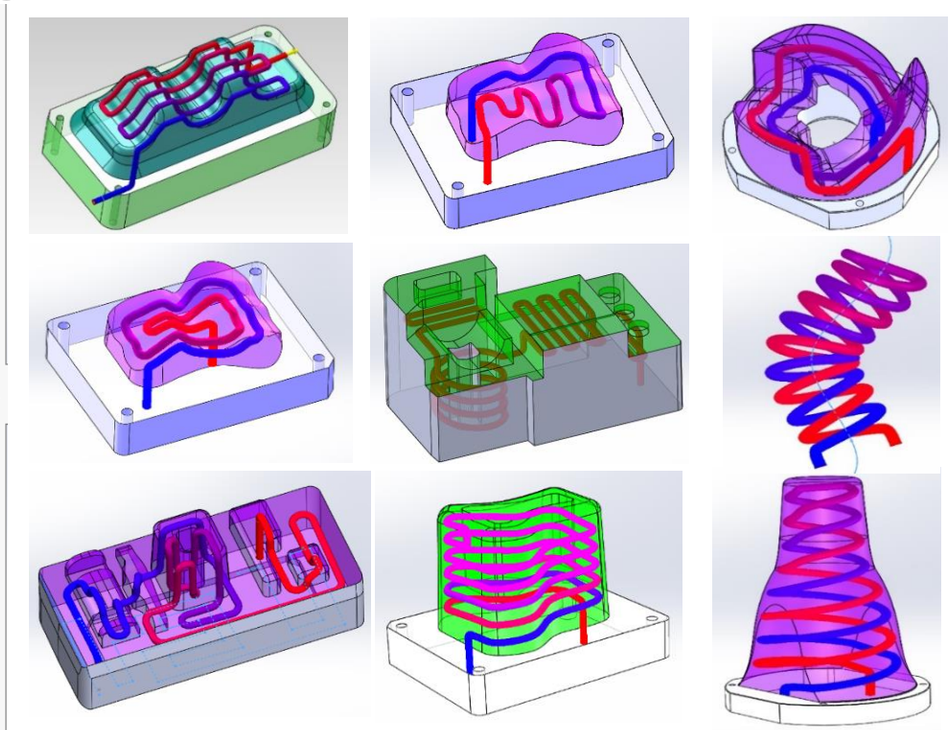
Automated Conformal cooling design module:

Provide with 10 design patterns and 2 projection methods to deal with diverse moulding profiles and cooling configurations.





Thermal analysis and design optimization module:

Provide with dynamic thermal analysis and design optimization methods with features:

- Conduct static and transit thermal analysis for part and assembly;
- Compute the thermal distribution over the moulding profiles and identify hot spots;
- 4 optimization methods based on the dynamic thermal results;
- A fuzzy method to optimize conformal cooling design with multi-factors.