



## CALIN Technology Eliminated Weld Lines on a Projector Lens Using Moldex3D



Customer: [CALIN Technology](#)

Country: Taiwan

Industry: [Optics](#)

Solution: [Moldex3D Advanced](#) & [Optics Module](#)



Image Courtesy of CALIN Technology

Incorporated in 2002, CALIN's high-ranking executives possess years of work experience and expertise. They provide all types of optical lenses and all customized development services. The main products of the company include automotive camera, security camera lens, projector lens, digital camera lens, DSLR, industrial lenses, and medical endoscopy lens. CALIN has continuously oriented the high quality in optical lens and enhanced the core technologies to meet all the needs of customers. (Source: <http://www.calin.com.tw/eng/index.php>)

### Executive Summary

CALIN Technology applied Moldex3D to predict the hesitation and weld lines on their projector lens product. Through the simulation analysis, CALIN Technology was able to adjust and optimize the process parameters prior to real manufacturing to solve the weld line problem and improve product shrinkage.

## Challenges

- Obvious weld lines
- To reduce cycle time
- Uniform residual stress

## Solutions

Utilizing [Moldex3D Advanced](#) to obtain optimum process settings in order to successfully resolve the product's problem

## Benefits

- Eliminated weld lines
- Achieved 98% yield rate
- Reduced mold trials and costs

## Case Study

The objective of this case is to solve the weld line issue and reduce the cycle time of a projector lens product (Fig. 1). CALIN Technology decided to create overflow region and conformal cooling channels in order to achieve the goal. Although there are various methods to design the overflow zone and conformal channels, most of them would cost substantial mold production fees and time. Therefore, CALIN Technology utilized Moldex3D to simulate the molding scenario of the original design, overflow design, and conformal cooling channel design before an actual molding in hopes of achieving the most ideal design without excessive production cost.



Fig. 1 The projector lens product in this case

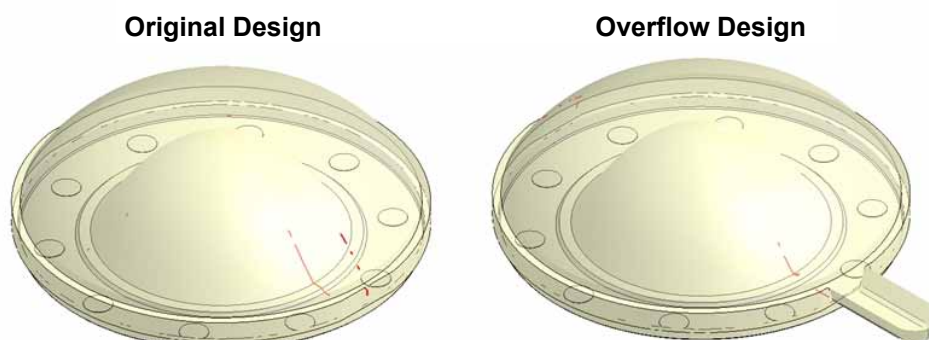


Fig. 2 The weld line issue in the revised design with an overflow region has been improved

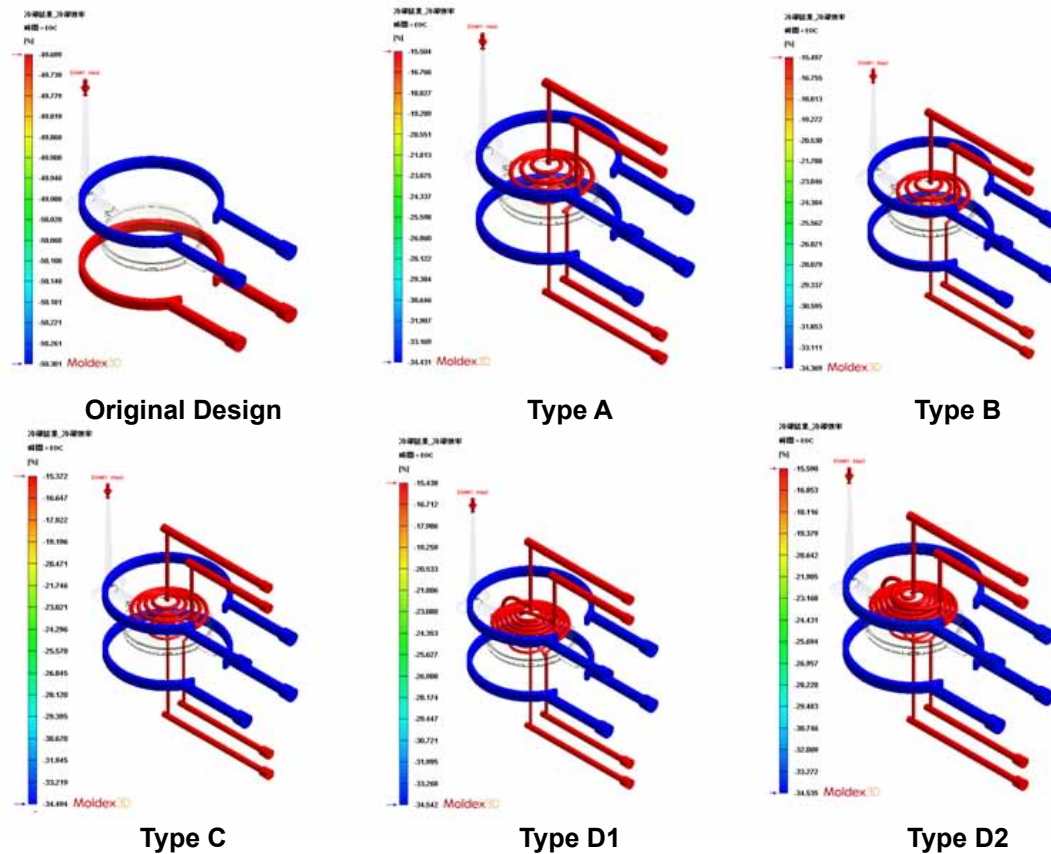


Fig. 3 CALIN Technology proposed using conformal cooling channel designs to reduce the cycle time

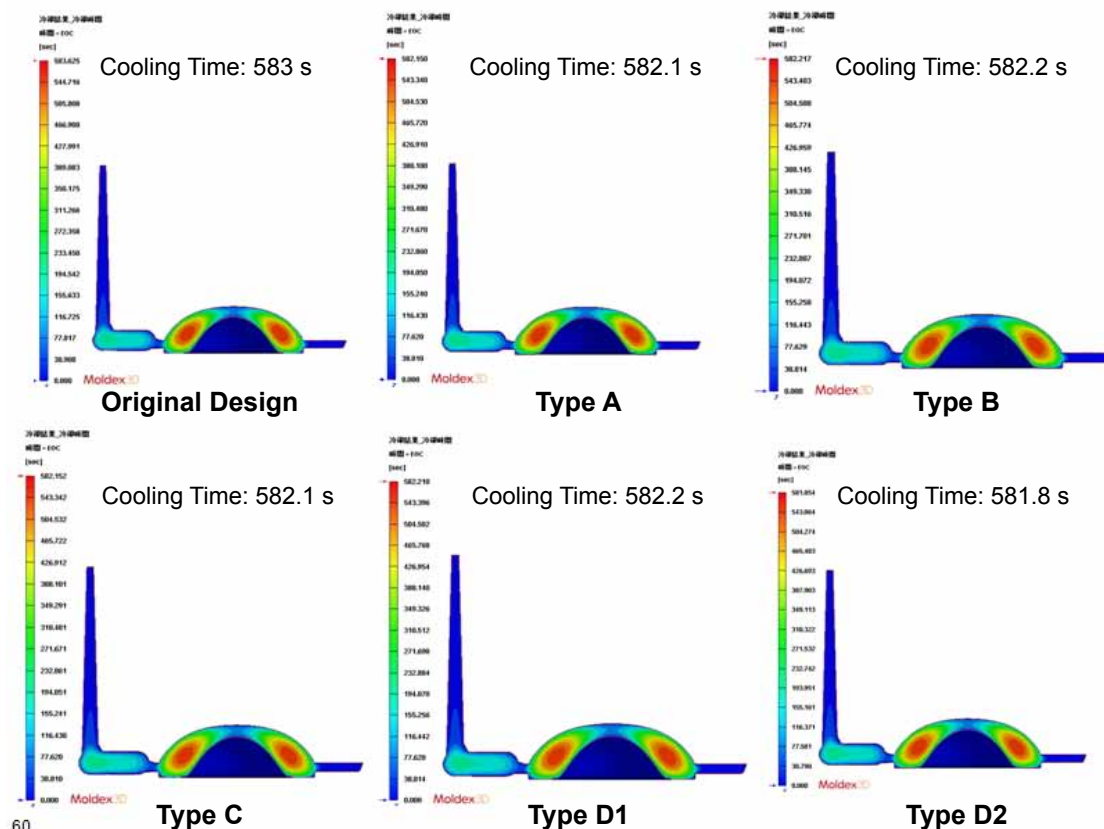
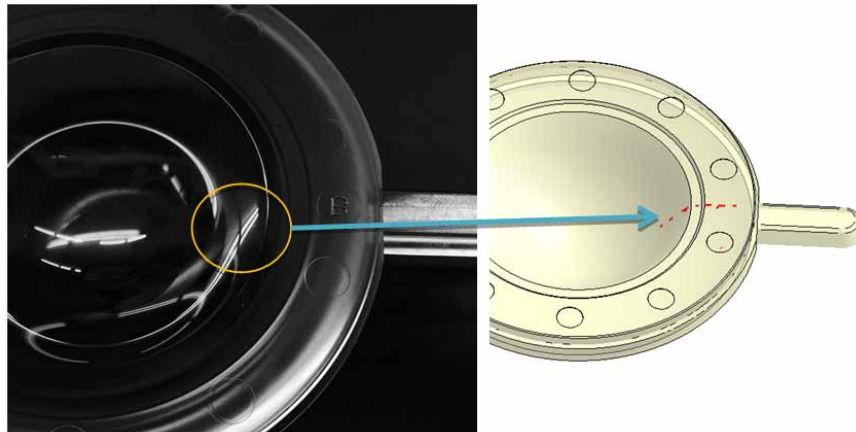


Fig. 4 The cycle time of revised designs does not show a significant improvement compared with the original design

## Results

Through Moldex3D analyses, CALIN Technology could clearly understand the filling behaviors and predict weld line locations before an actual production. The accuracy of Moldex3D simulation analyses were also validated by the actual mold-trial results (Fig. 5). In the end, CALIN Technology was able to successfully solve the manufacturing issues and optimize their product and mold designs.



**Fig. 5 Moldex3D's simulation results (right) of the weld line location on the original design is validated by the actual molding results (left)**

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