To: Chris Temme, Peter Anthony

From: Team Honeywell

Re: Flow Analysis

Date: 02/20/2020

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Below are the figures for the updated flow profiles. We have reduced the overall depth of the OCDH to reduce the weight. The average velocities across the housing are also included. The entrance and exit diameters of the flow were made to be 0.391 inches. This was used to match the size of the fitting to more closely mirror the flow.
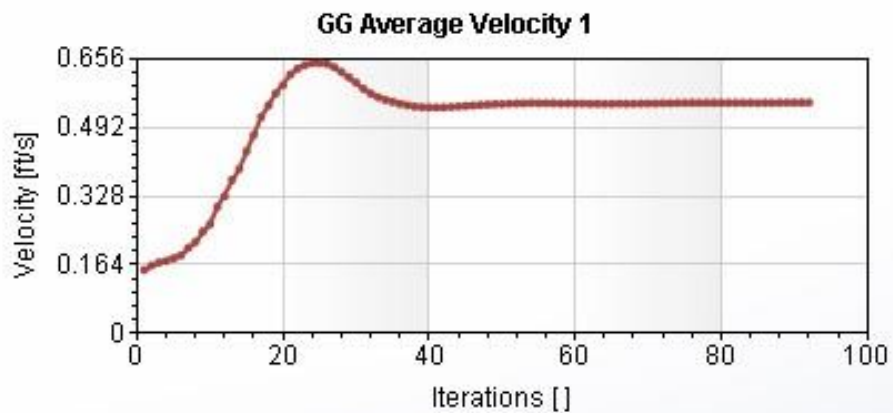

Figure 1. Average Velocities

Figure 1. shows the average velocities across the OCDH. This includes the inlet and outlet velocities of 4 feet per second. Figure 2 is the cut-out plot on the front side of the OCDH showing the flow in streamlines.
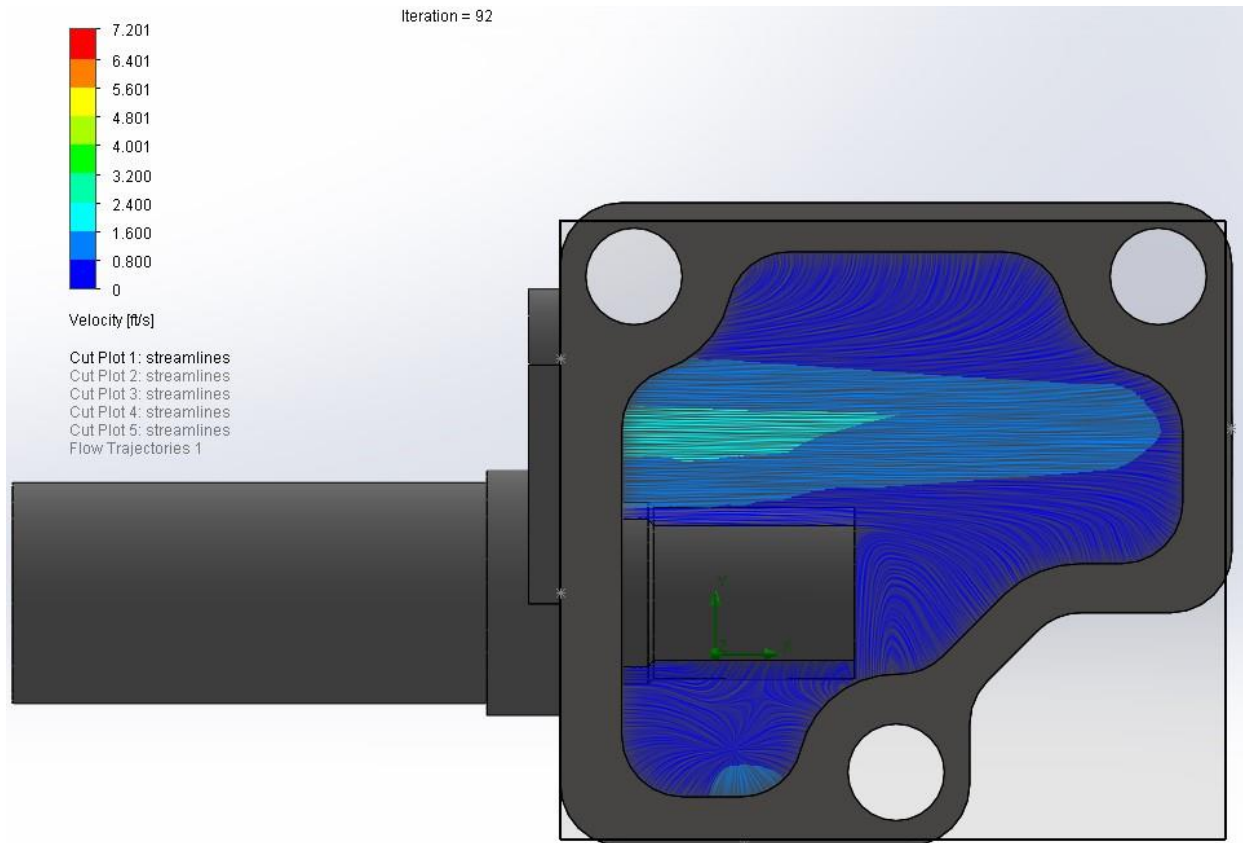
Figure 2. Cut-Out 1

Figure 3. is the cut-out section on the center section of the sensor. The streamlines are present, and the velocity color bar is included.
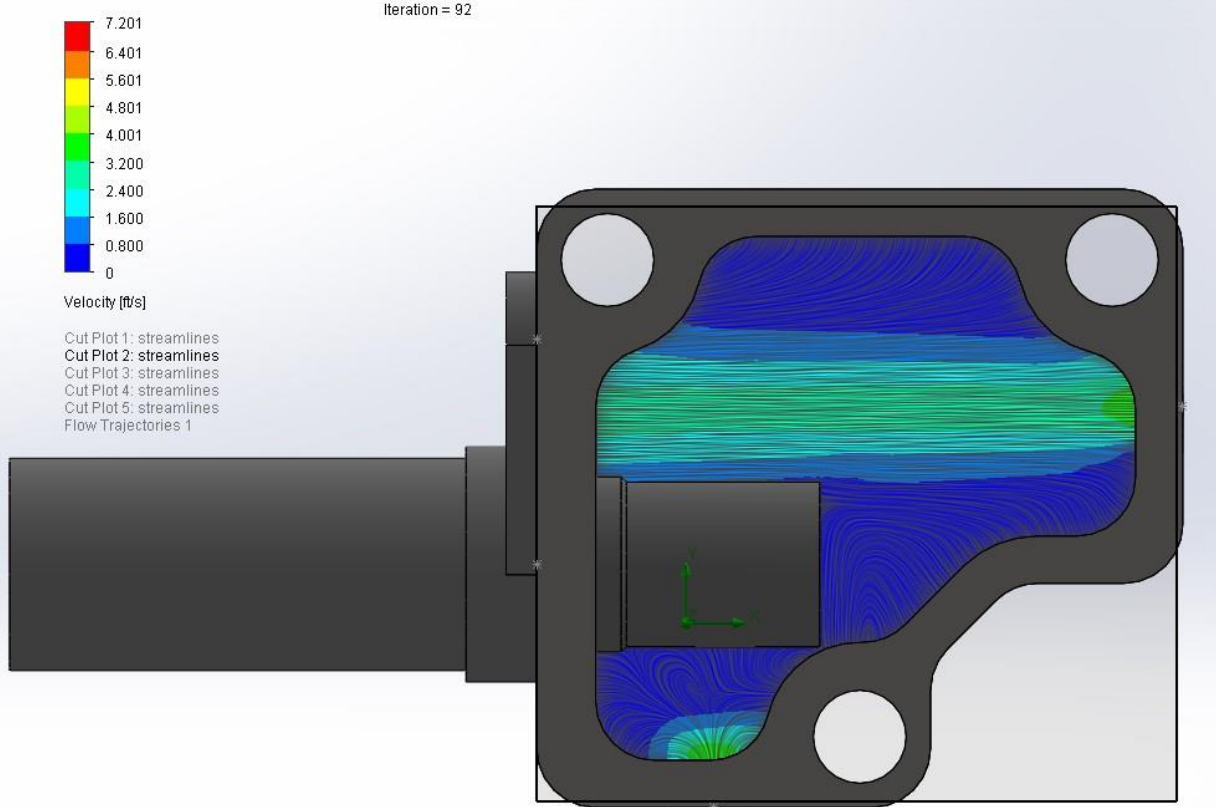
Figure 3. Cut-Out 2

Figure 4. is the cut-out section on the far side of the front view. The streamlines and color bar for the velocity are included.
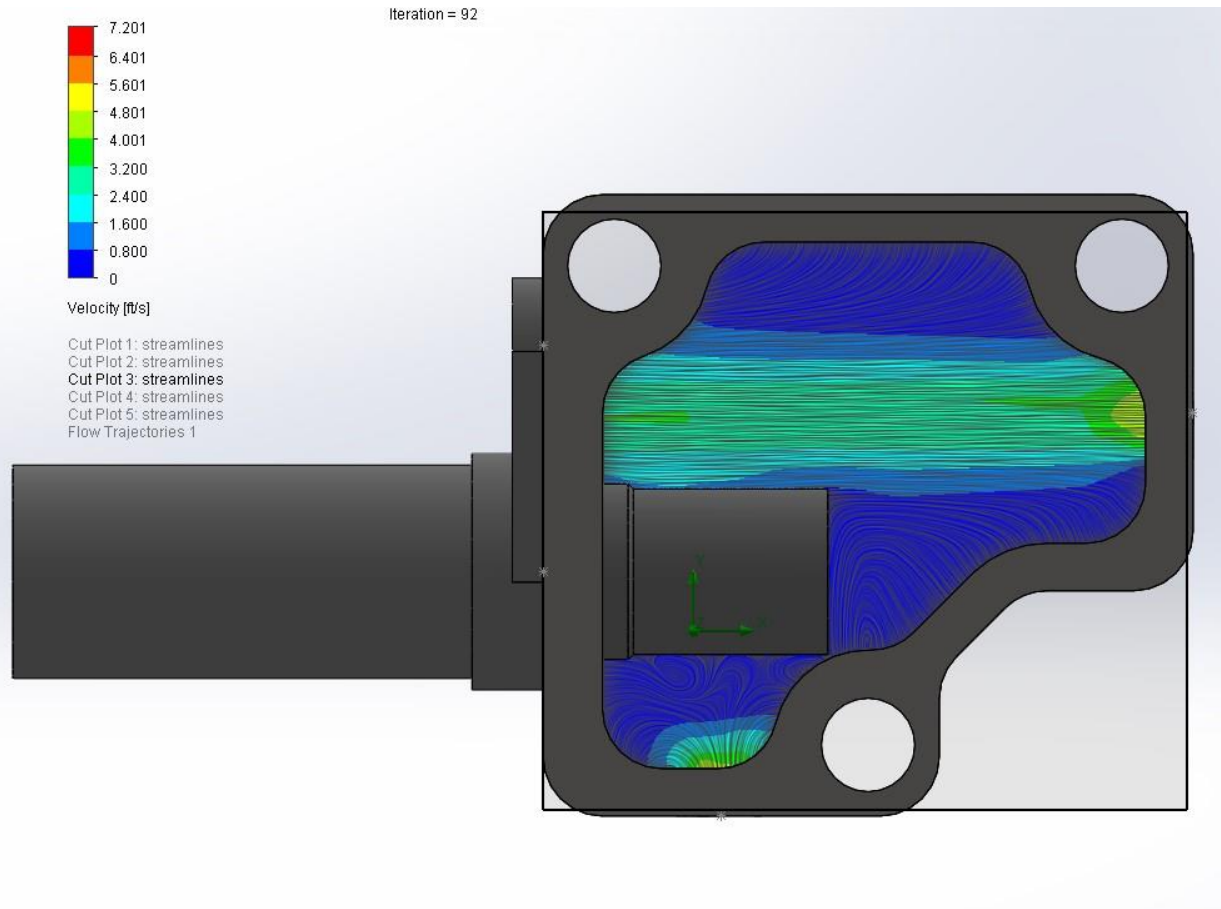
Figure 4. Cut-Out 3

Figure 5. is the cut-out section of the flow on the end of the lid. The velocity color bar and streamlines are included within the figure.
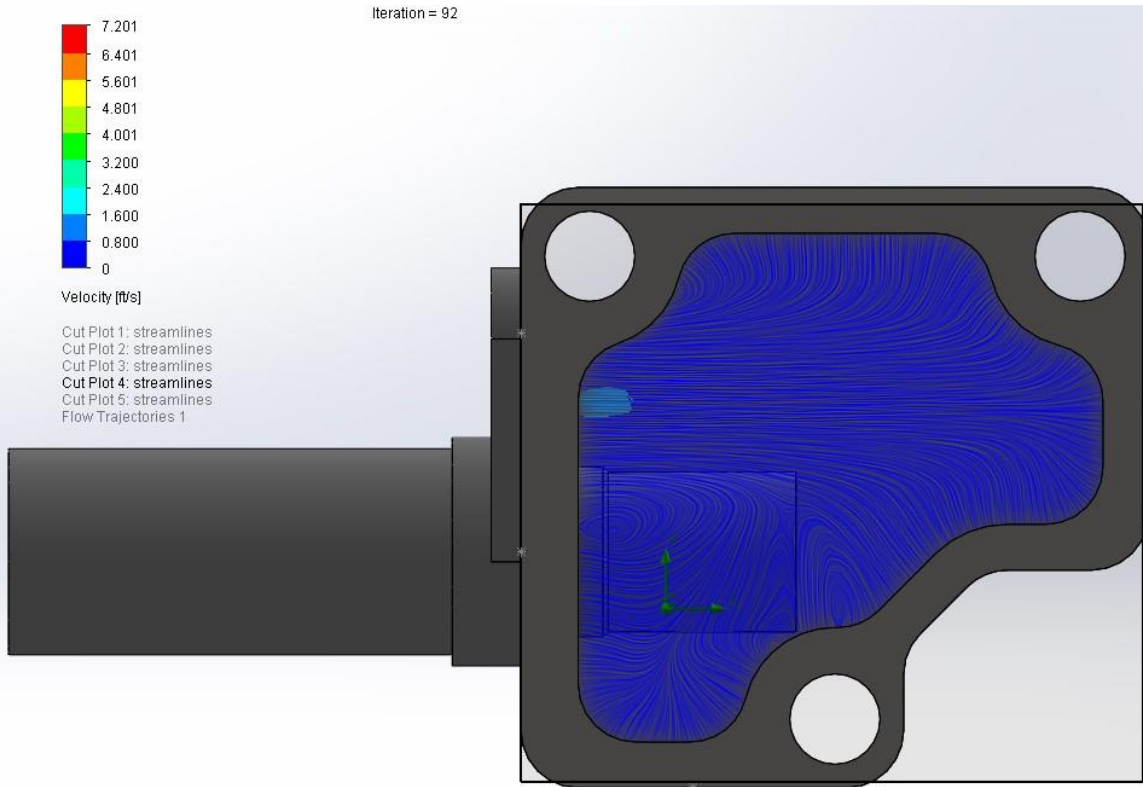
Figure 5. Cut-Out 4

Figure 5. is the cut-out section on the back of the OCDH. The velocity color bar and streamlines are included within the figure.
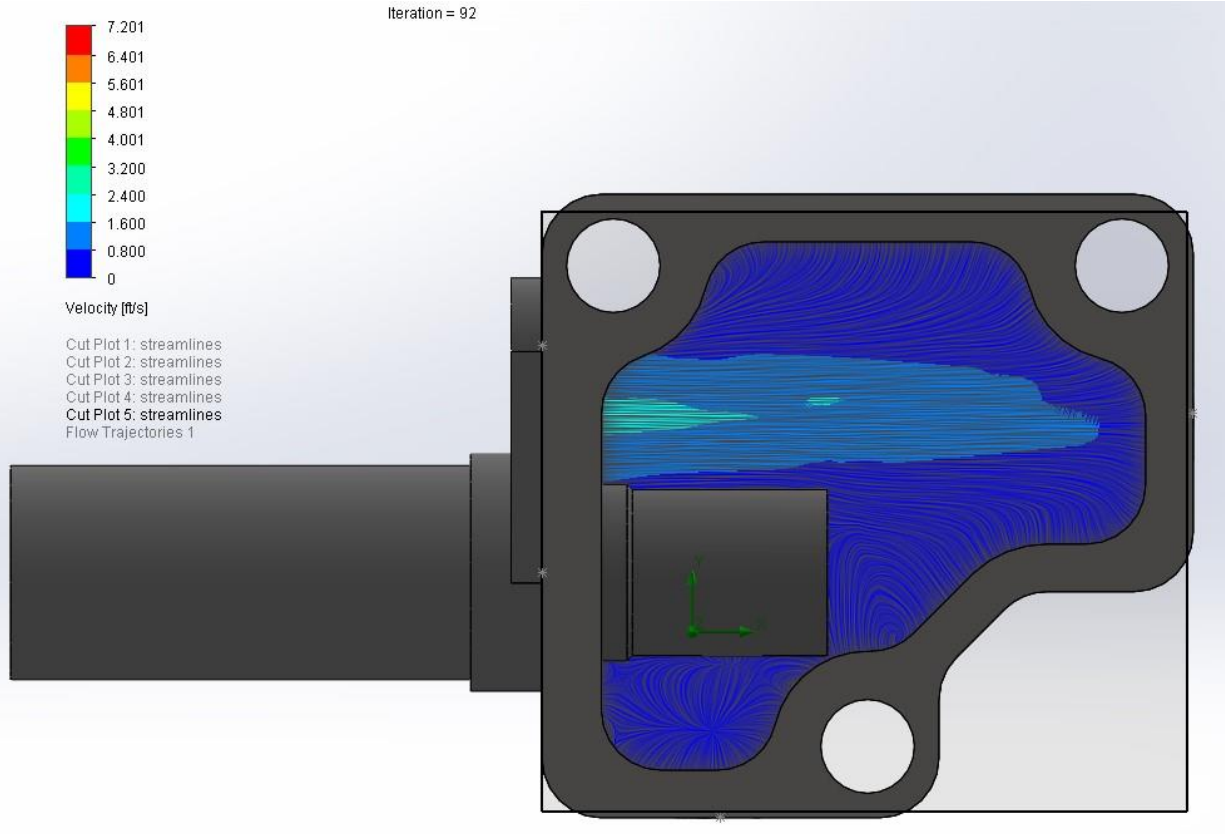
Figure 6. Cut-Out 5

The next set of figures are the velocity vectors of the flow within the housing. The color bar will be included with each figure. Due to the large amount of velocity vectors many figures will be included to help reduce confusion. To help for better visualization the lid has been hidden but the flow simulation was run with the lid included.
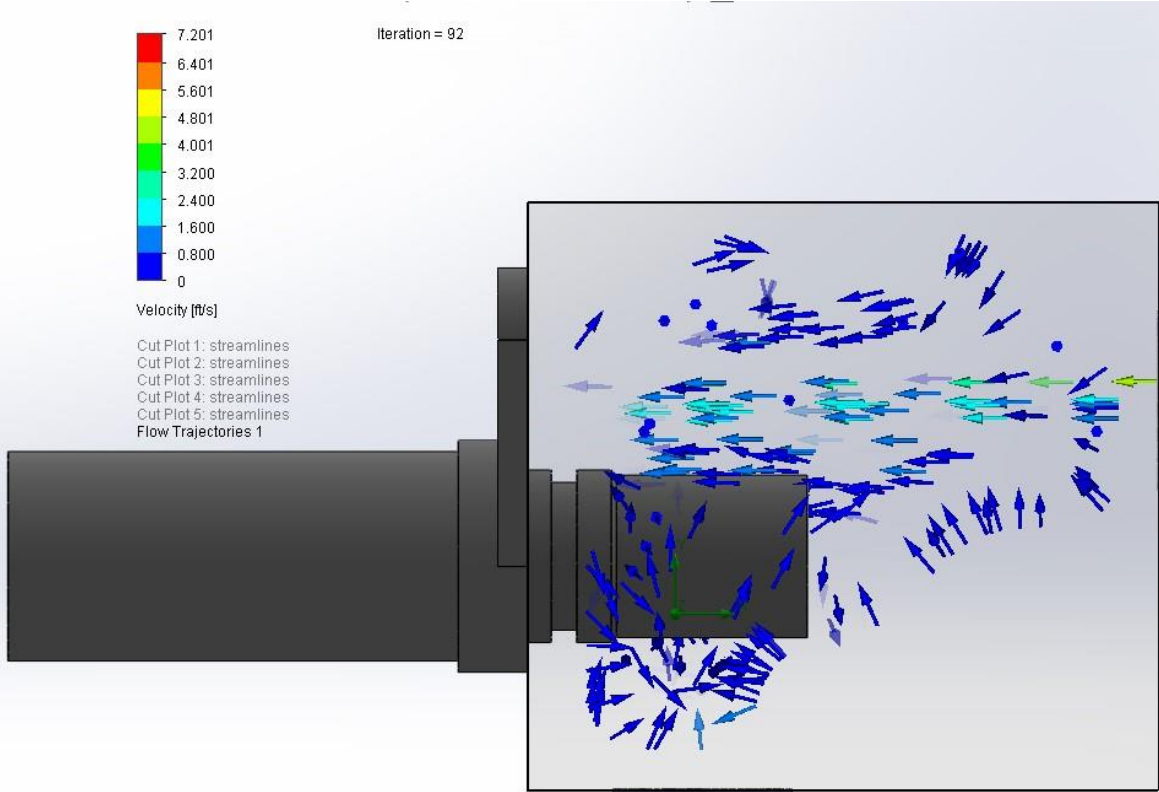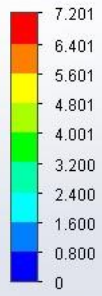
Figure 7. Front View of Velocity vectors
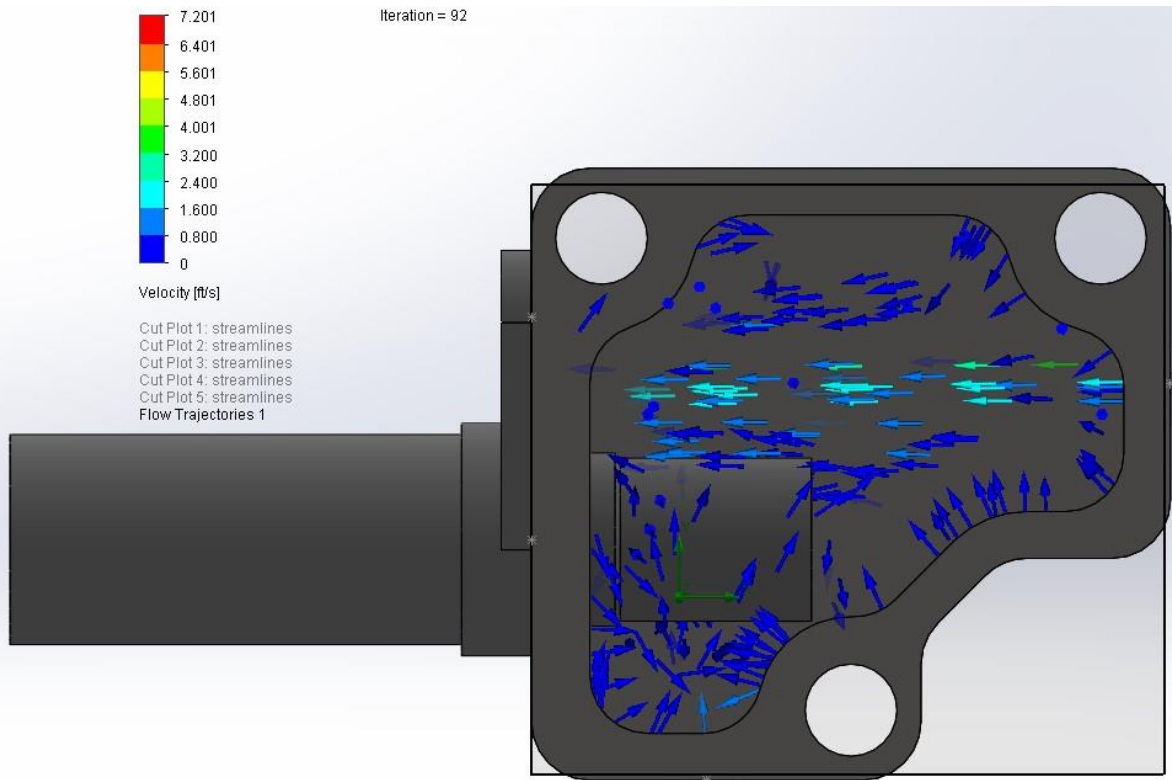
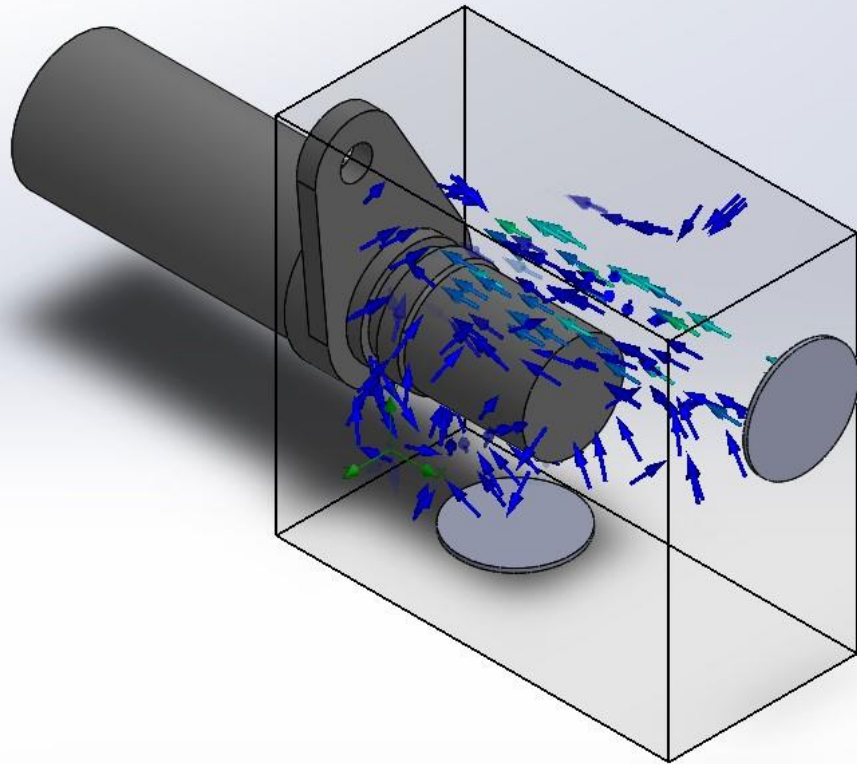*Figure 8. Front View of Velocity vectors with OCDH*

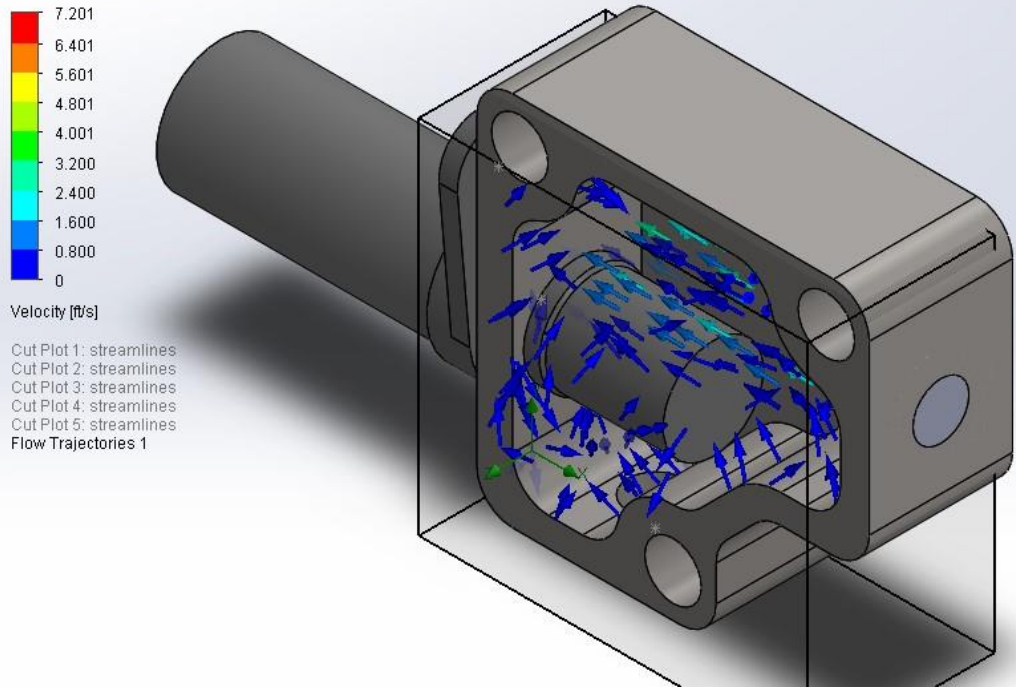*Figure 9. Isometric View of Velocity Vectors*

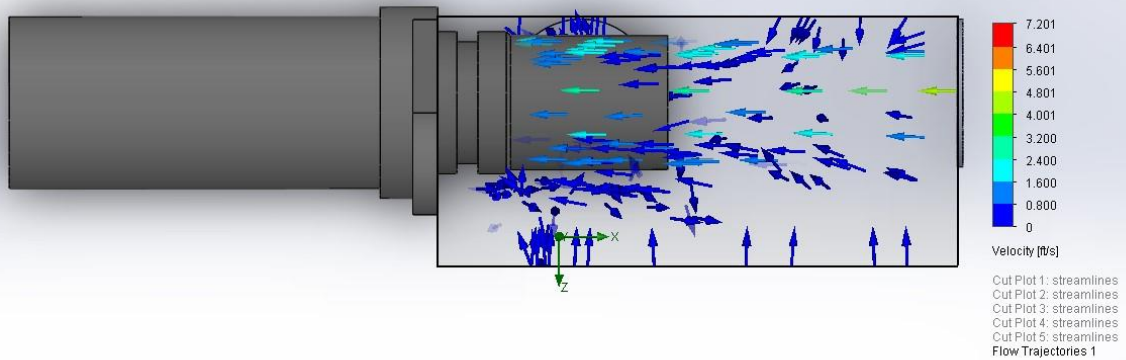*Figure 10. Isometric view of velocity vectors with OCDH*
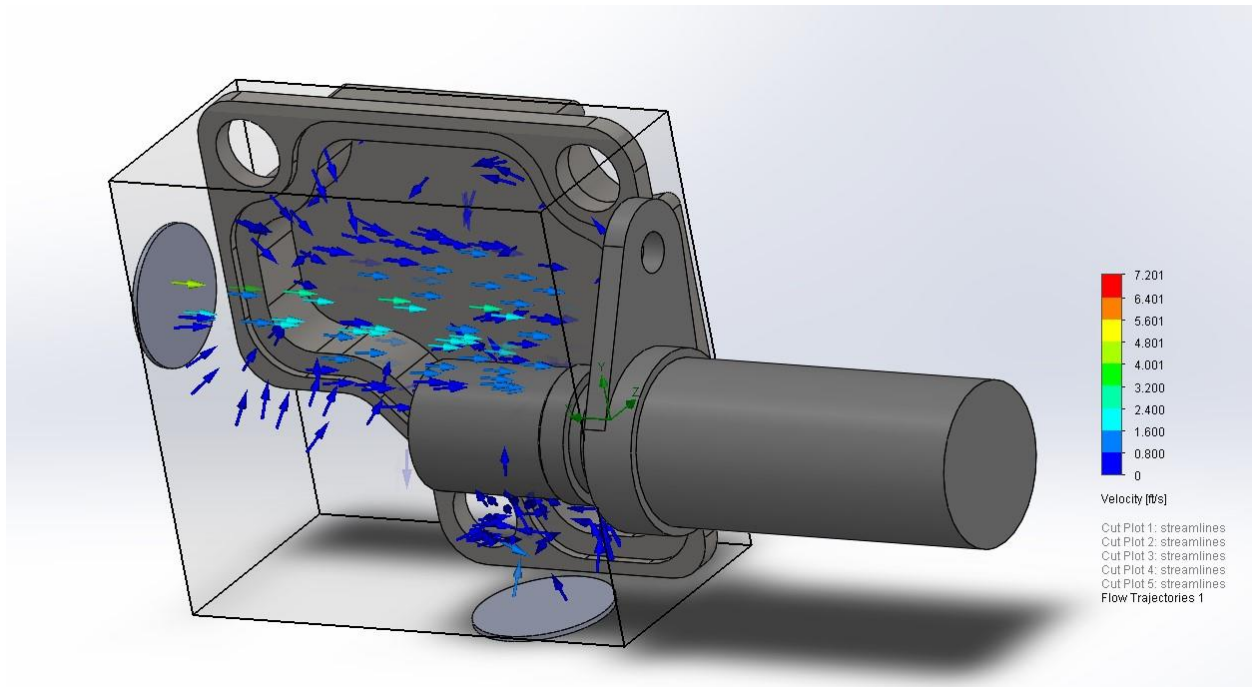

Figure 11. Front view of Velocity Vectors

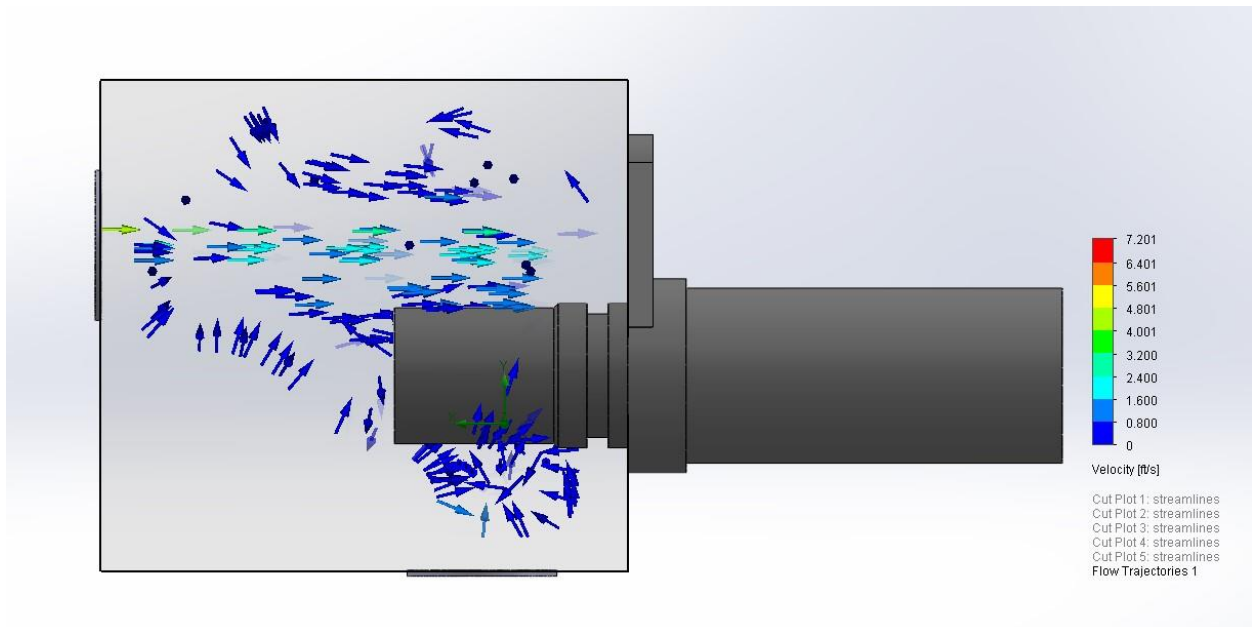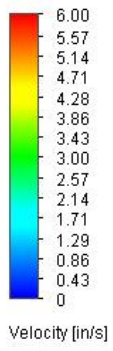*Figure 12. Rotated view of the velocity vectors with the OCDH lid only*

Figure 13. Back view of the velocity vectors

The final set of pictures include the full set of streamlines across the sensor. This includes all a velocity color bar across the sensor.
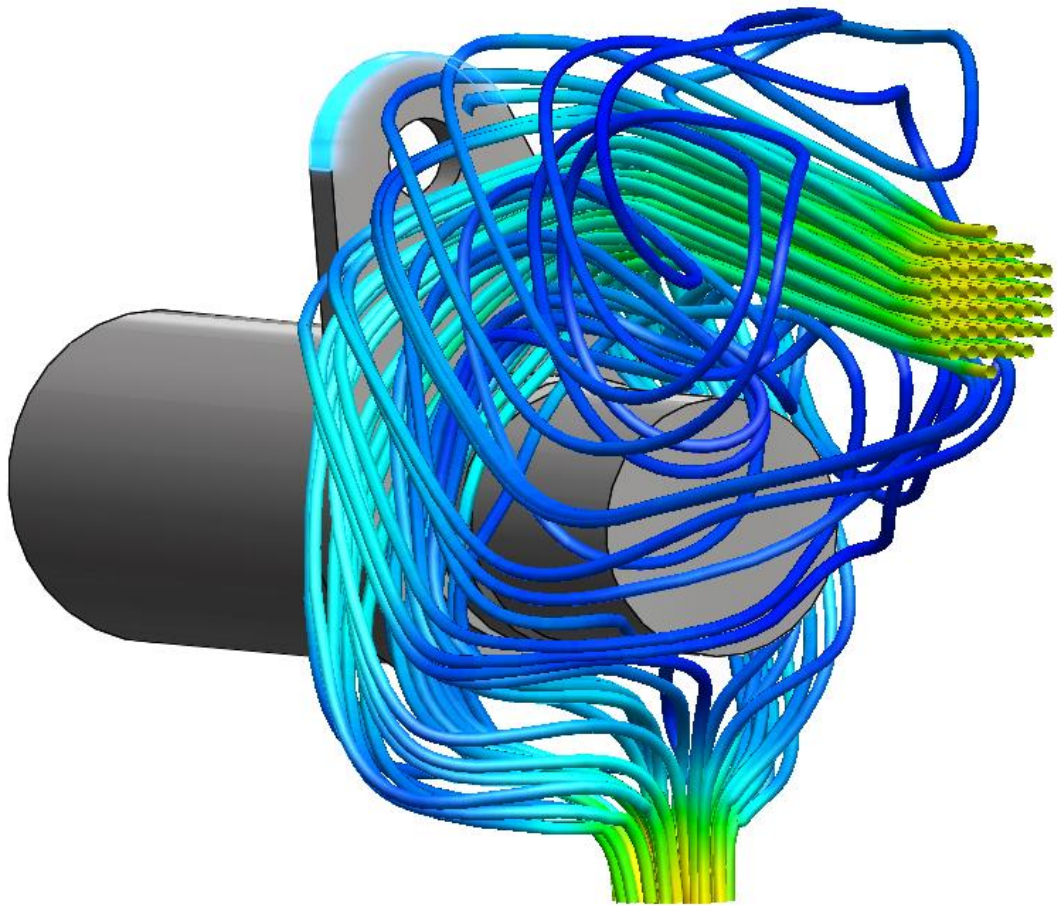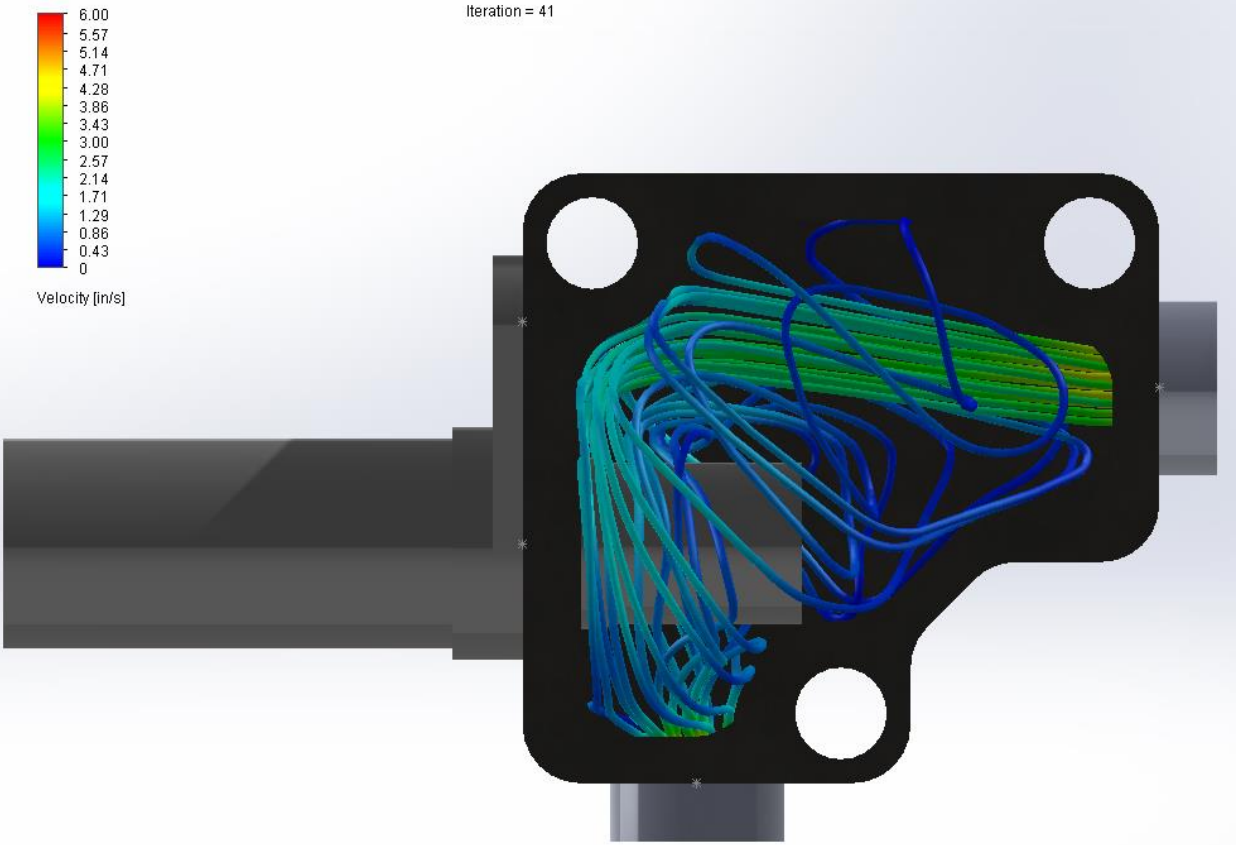
Figure 14. Streamlines side view
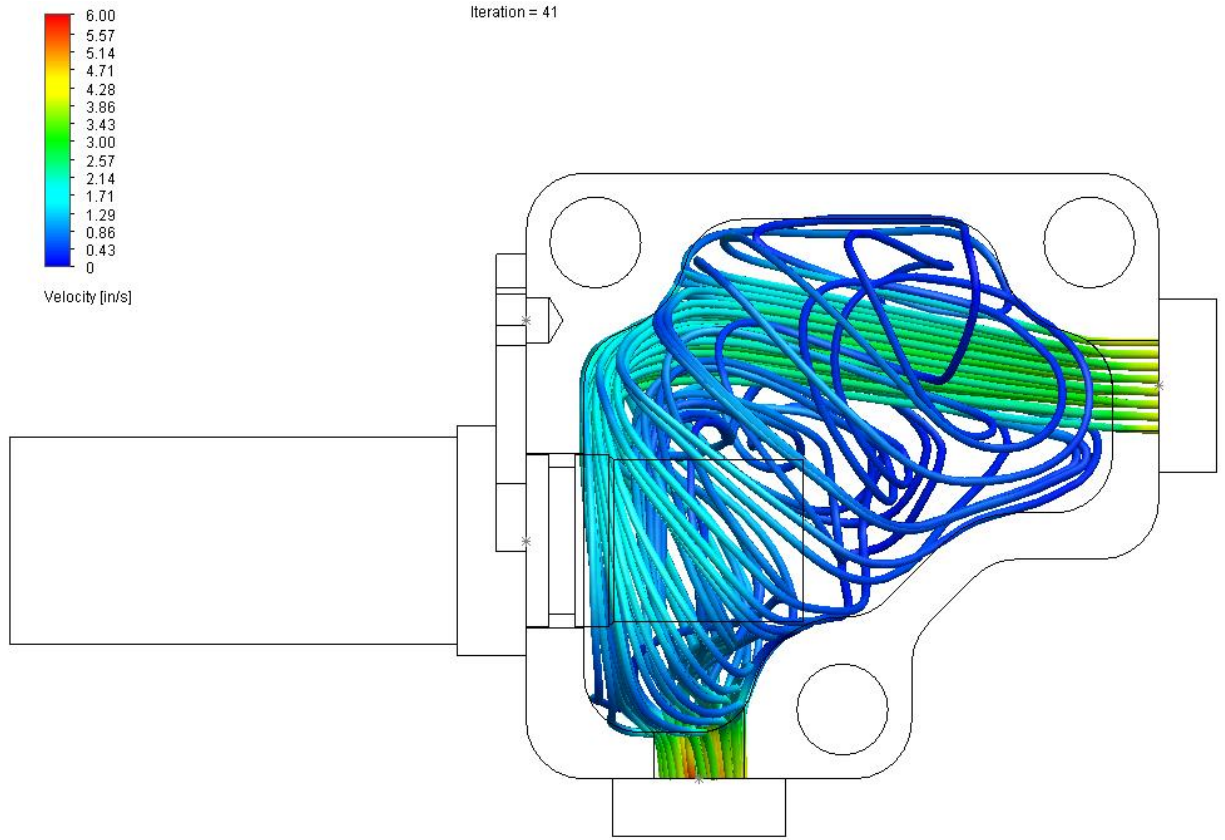
Figure 15. Front streamlines with OCDH
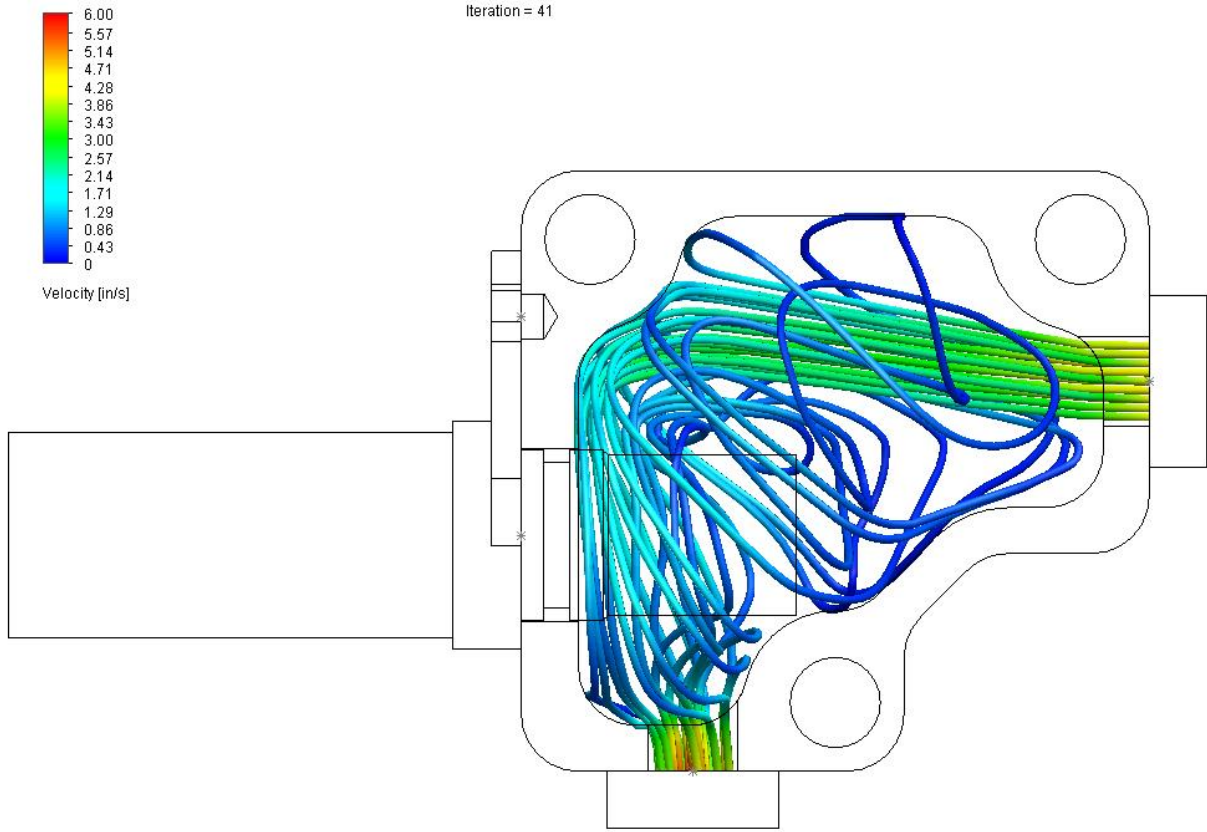
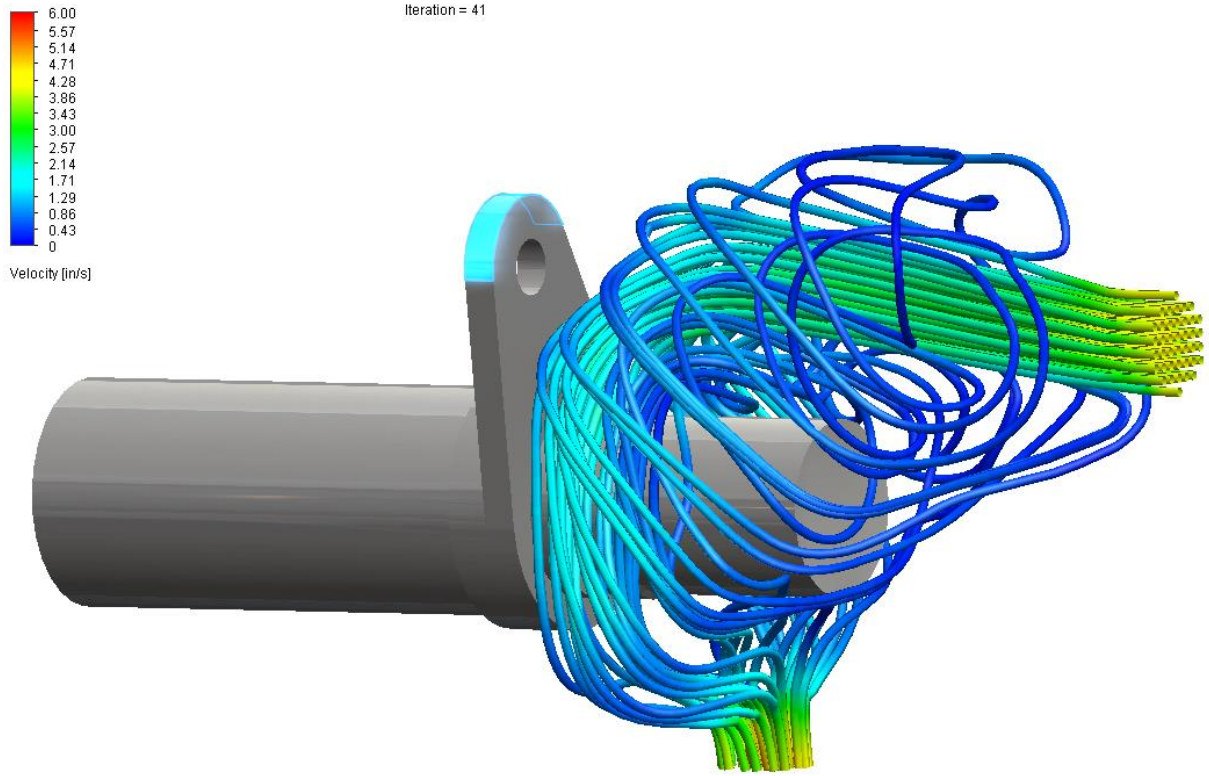*Figure 16. Front streamlines with a wireframe*
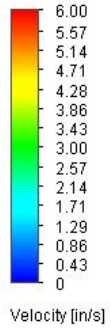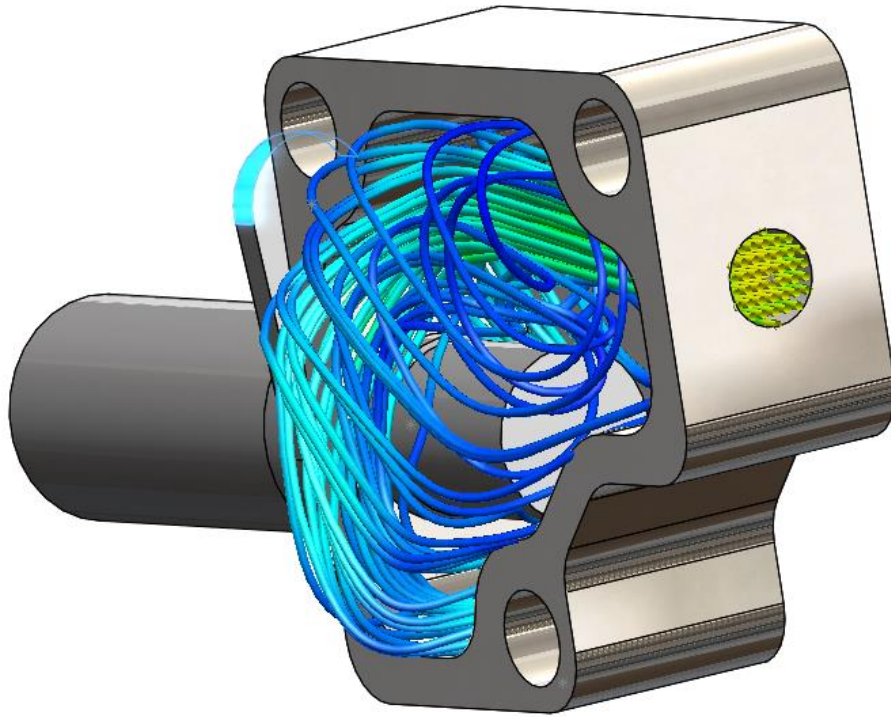
Figure 17. Front Wireframe

Figure 18. Isometric Housing hidden

Figure 19. Isometric with Housing