Simulation Files

The following document presents the results of the simulations that were required to the well functionality of the equipment.

The results for the stress analysis, factor of safety and displacement analysis can be seen below.

Stress Analysis

For the Von Mises Stress Analysis graph a force of 1000 N on the top and a torque of 300 N on the X and Y axis.

The force on the top is the equivalent of someone standing on the top of the equipment and the force will be transferred to the spacer that holds the gas lift, for that reason, the final force was placed in the upper surface of the spacer.

The torque is calculated with the force and distance by multiplying them, in this case the force was the same, 1000 N, and the distance is the one that goes from the center of the sliding pieces to the extremity of the table, that force will apply torque to the equipment.
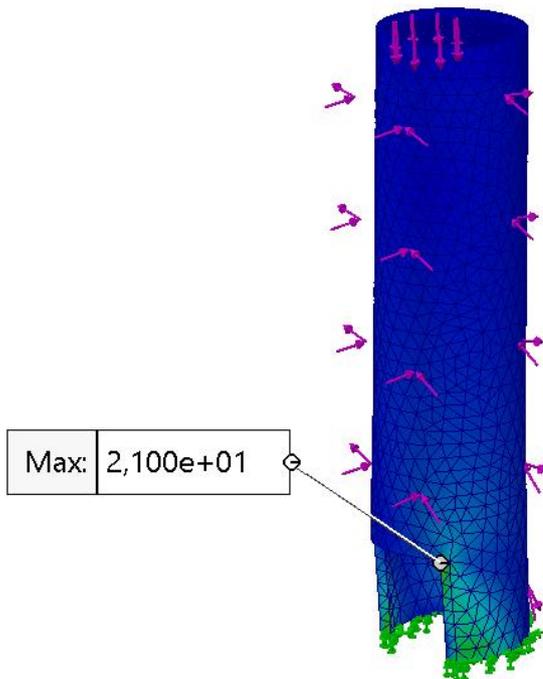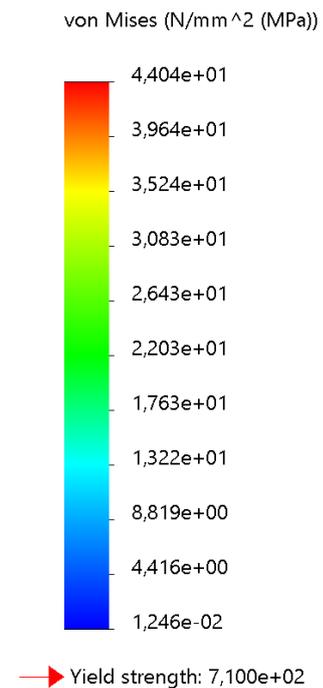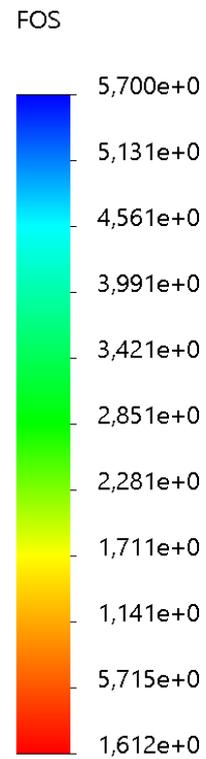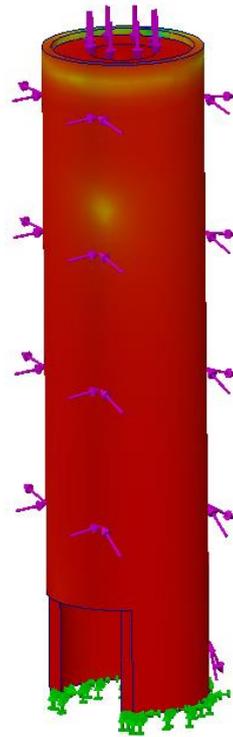

Figure 1: Von Mises Analysis   **Figure 2: Von Mises Analysis Graph**

Factor of Safety

The initial goal for the factor of safety was 2 and after the simulation studies the final value came out to be approximately 1,6 which is very close to the goal.

Consequently, the value given in the studies will be kept because the difference is very small. If the factor of safety were improved, the material would have to be changed, which would imply a big difference in the equipment principle.

FOS

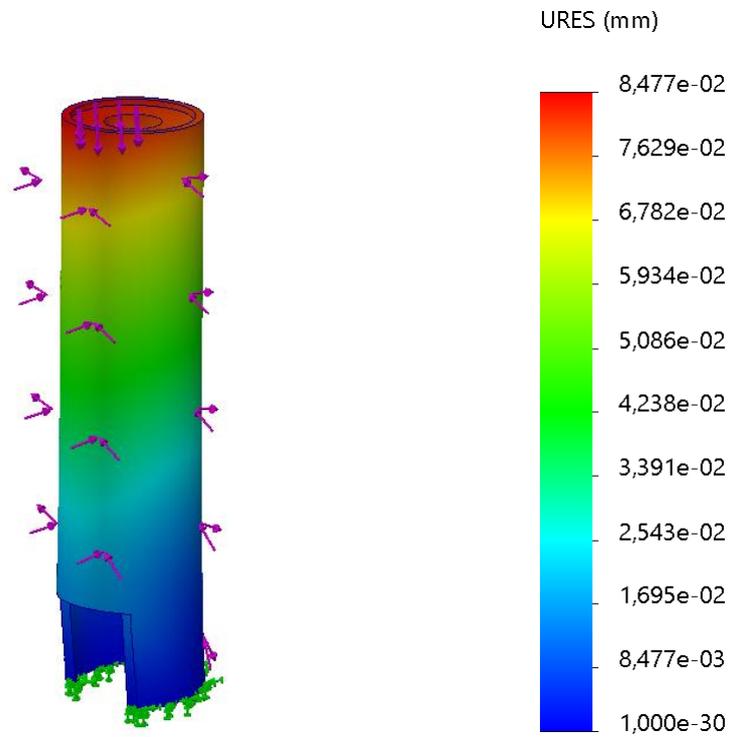|	
	5,700e+0
	5,131e+0
	4,561e+0
	3,991e+0
	3,421e+0
	2,851e+0
	2,281e+0
	1,711e+0
	1,141e+0
	5,715e+0
	1,612e+0

Figure 3: Factor of Safety Analysis   *Figure 4: Factor of Safety Analysis Graph*

Displacement

The displacement seen in the analysis is as expected, the minor displacement distances can be ignored. No adjustments must be made to the structure of the equipment.

URES (mm)

8,477e-02
7,629e-02
6,782e-02
5,934e-02
5,086e-02
4,238e-02
3,391e-02
2,543e-02
1,695e-02
8,477e-03
1,000e-30

Figure 5: Displacement Analysis   *Figure 6: Displacement Analysis Graph*

Shift It

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