

## Exosent Engineering

### Welding Non-Concentric Cylinders



Since 2010, Exosent Engineering has been leading the industry in the innovation of cargo tanks and pressure vessels. The design of these highly engineered products has been relatively constant for decades in North America. Exosent has gone above and beyond in order to create new designs that are custom, innovative, and safer for their customers.

The engineers at Exosent wanted to improve on the design of cargo tanks so they created tanks that allow high pressure, flammable fluids to be transported lower to the ground. This is an advantage which minimizes the potential of tank trailer roll over. Just by lowering the center of gravity, Exosent has created a product that is safer for truck drivers and motorists alike.

In order to improve these tanks, Exosent wanted to lower the center of gravity. However, in order to connect the tank to the truck bed, they had to keep the front of the tank at the same height as classically designed tanks. Exosent engineers overcame this issue by lowering the tank a full 16 inches after it clears the truck. The result is a cargo tank that is not perfectly cylindrical which creates a challenge in itself when it comes to manufacturing.

The team at Exosent Engineering didn't stop at just designing a revolutionary product, they also created a way to manufacture these products faster and with more precision. Exosent prides themselves in keeping all levels of manufacturing in house so their engineers devised a better way to manufacture these one of a kind cargo tanks. They came up with a solution that required them to build a special machine to assist in manufacturing.

Exosent Engineering teamed up with Galil Motion Control to create this machine to weld these non-concentric cargo tanks. When welding these tanks, the welder head needed to keep a constant velocity and vertical distance across the entire work piece in order to obtain a uniform weld. This created a challenge for the engineers at Exosent since the target welding point would be moving in both

the horizontal and vertical plane due to the non-concentric design of the tanks.

In order to overcome this challenge, Exosent engineers designed a four axis welding machine using Galil's precise and intuitive controllers. Galil's controller takes the information from feedback sensors in order to position the welder at the target welding point. Two axes are used to control the horizontal and vertical position of the welder head while a third axis is used to move the entire welding machine along the tank. This third axis is primarily used to weld the long seams of the high quality steel plates that are rolled to create the tank. The fourth axis is used to control a cross slide for the weld head. This design allows the machine to weld these unique tanks with high accuracy and efficiency.

Galil and Exosent engineers worked in collaboration to create this advanced, custom machine. Daniel Freer (one of Exosent's engineers) said it best when he described his personal experience in working with Galil's support team. ***"The Galil engineers were friendly, responsive, and seemed truly interested in what I was working on. I had heard that the tech support at Galil was good, but even so, it exceeded my expectations."***

With the team work of Galil's and Exosent's engineers, Exosent now has a manufacturing solution that will get these revolutionary cargo tanks to customers in less time and with more accurate welding.



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