# HOW WE MADE AEROBARS FASTER: THE AERODYNAMIC DESIGN OF THE ICONIC TORPEDO BOTTLE

The pursuit of reducing the drag of aerobar setups led us to the development of the first horizontal between-the-arms aerobar hydration mount in 2009. The **XLAB Torpedo System** successfully reduced aerodynamic drag and created a safer, more streamlined hydration source than previously available.

You can explore the background development of the now iconic shape at http://xlab-usa.com/aerodynamics.html#aerobars

# REVOLUTIONARY XLAB VERSA COMPUTER MOUNT

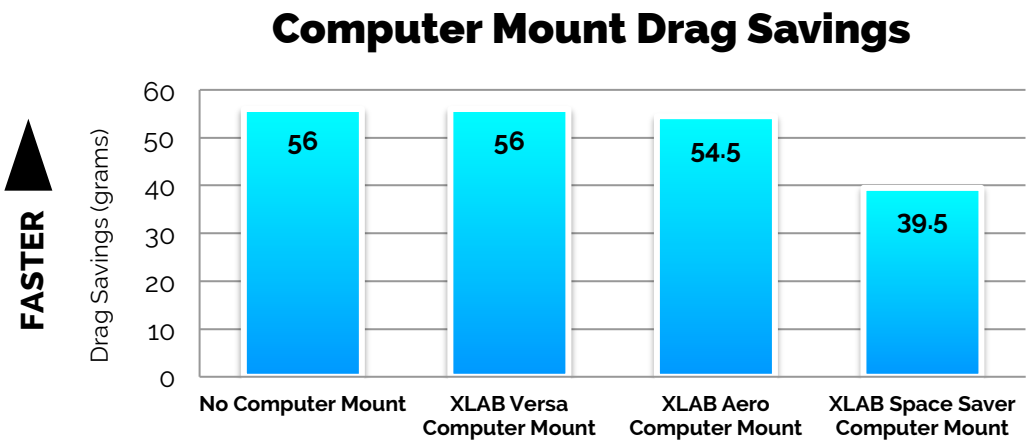
The **XLAB Versa Computer Mount** is a new, telescoping computer mount for viewing performance data no matter what type of bottle is used. Our objective in designing this mount was to add versatility without sacrificing aerodynamic performance. Raise the computer mount up to tuck in an **XLAB Torpedo Refill Bottle** for race day, or lower it down to clear a Standard Bottle while maintaining optimal view for training days. Avoid sun glare by simply tilting the computer.

Extensive Computation Fluid Dynamics (CFD) testing went into the development of the **XLAB Versa Computer Mount** to ensure the optimal drag profile of the overall system would not be compromised.

# TESTING CONDITIONS

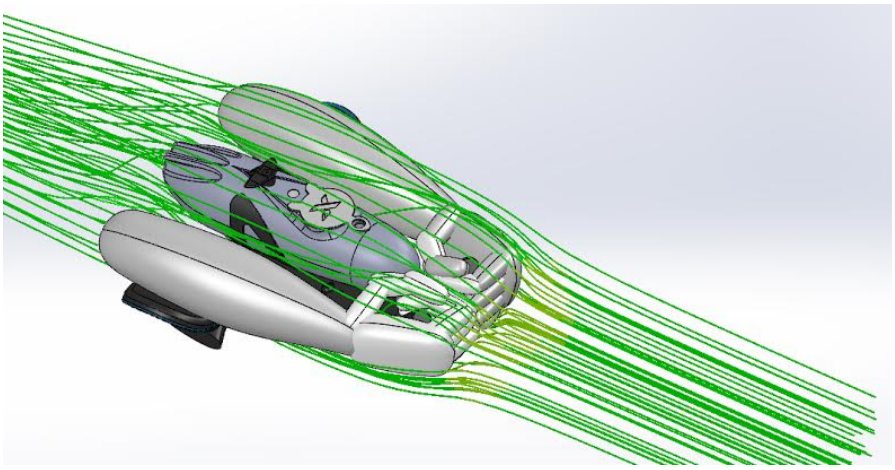
Virtual test conditions for our CFD Analysis measured aerodynamic performance at 25mph (40 km/h) at 0° yaw. Baseline comparisons are those used during the development of the shape of the **XLAB Torpedo System** mentioned above. The void between a rider's arms creates turbulent pressure and filling the gap between the forearms with a hydration system significantly reduces drag.

A rider without any bottle positioned between their arms serves as the baseline for our testing. You can read more on this initial test at http://xlab-usa.com/aerodynamics.html#aerobars




## NO COMPUTER MOUNT

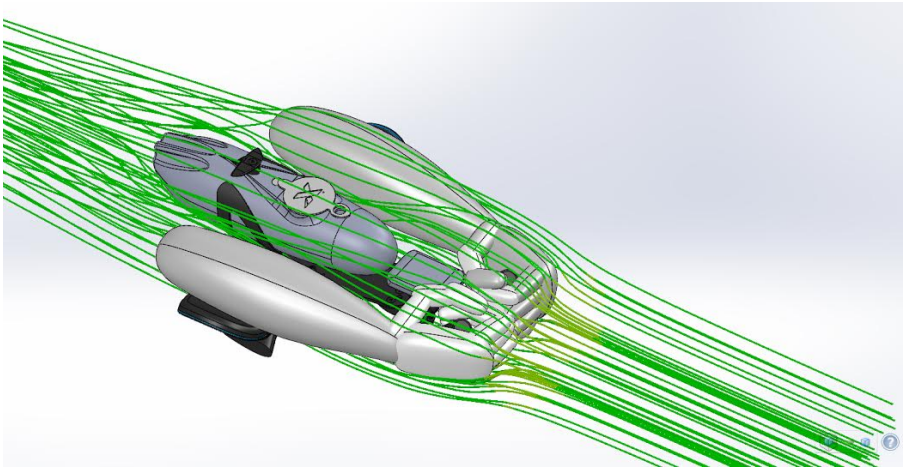
Our first test demonstrates the significant drag savings simply by installing an **XLAB Torpedo Bottle** between the rider's arms. No computer mount is used for this test. Not all horizontal bottles will give you as much time-savings as the **XLAB Torpedo Bottle.**



The **XLAB Torpedo Bottle** without any style of computer mount produces a drag savings of 56 grams / 5.6 watts compared to a rider without anything positioned between the arms.

## XLAB VERSA COMPUTER MOUNT

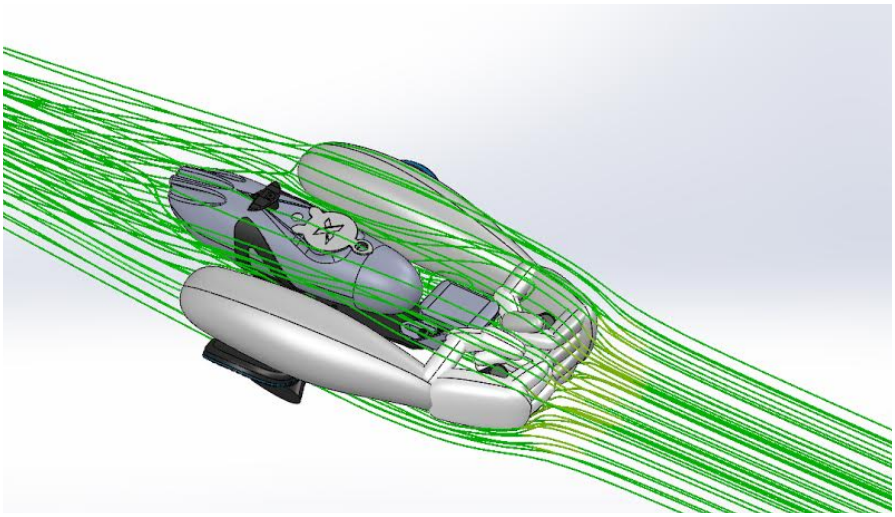
With the **XLAB Versa Computer Mount** positioned horizontally at the centerline of the **XLAB Torpedo Bottle.**



Using the **XLAB Versa Computer Mount** yielded zero change in drag compared to a **XLAB Torpedo Bottle** without any type of computer mount.

## XLAB AERO COMPUTER MOUNT

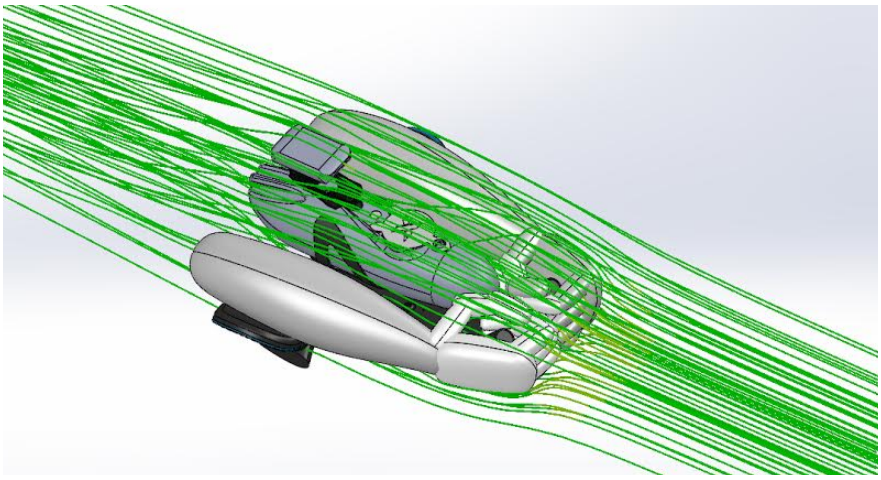
We measured another popular option, the **XLAB Aero Computer Mount** and measured its performance against the new **XLAB Versa Computer Mount.**



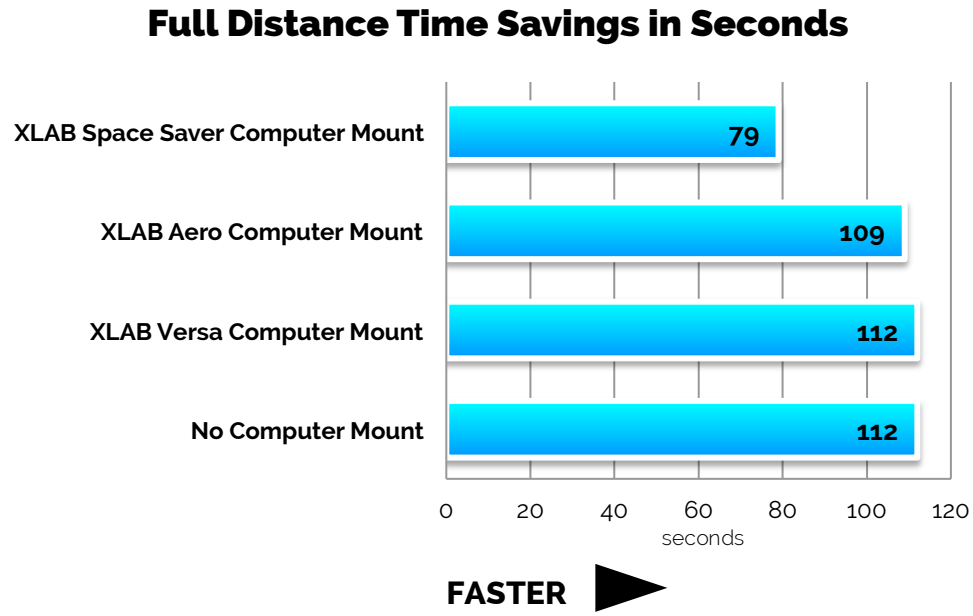
**XLAB Aero Computer Mount** yielded a drag savings of 54.5 grams / 5.45 watts.

## XLAB SPACE SAVER COMPUTER MOUNT

The **XLAB Space Saver Computer Mount** places the computer on top of the bottle and is a popular option for riders with shorter aerobars.



**XLAB Space Saver Computer Mount** yielded a drag savings of 39.5 grams / 3.95 watts.




## SUMMARY

The **XLAB Versa Computer Mount** adds zero drag to the proven aerodynamics of the **XLAB Torpedo System.** The new mount achieves our goal to design a new adjustable mount that adds versatility without sacrificing aerodynamic performance of our time-saving proven setup.