

The Cardinal Velo competed in the 2022 ASME Human Powered Vehicle Competition. The team vision was to minimize the overall coefficient of drag area. The project mimics the iterative design process of modern bike frames where each year, the former model is modified and improved. A fairing was designed, and its aerodynamic characteristics were analyzed using Solidworks® Flow Simulation software package. The team designed a fairing with a CdA of 0.204 m². The team utilized a local company to create a sandmold of the fairing model in order to have an exact mold for manufacture. CdA testing was completed by comparing power data from a pedal based power meter compared to real world speed. Real world power testing results suggest that the fairing reduced the CdA of the unfaired trike from 0.524 to 0.340 m².

- The vehicle must be able to come to a complete stop from a speed of 25 km/hr within a distance of 6 meters.
- The vehicle must be able to turn within an 8 meter radius.
- The vehicle must be stable enough to travel for 30 meters in a straight line at a speed of 5-8 km/hr.
- Each front wheel must have its own brake.
- The vehicle must have a rollover protection system (RPS) which protects any driver of the vehicle
- Must not show any permanent deformation or fracture against subjected test