

# Eagle Rally Aerodynamics



**Purpose :** Test two body styles of the Subaru WRX STI for performance characteristics through wind tunnel and water tunnel testing. ERA will be testing the 2007 Subaru WRX STI and the 2012 Subaru WRX STI.

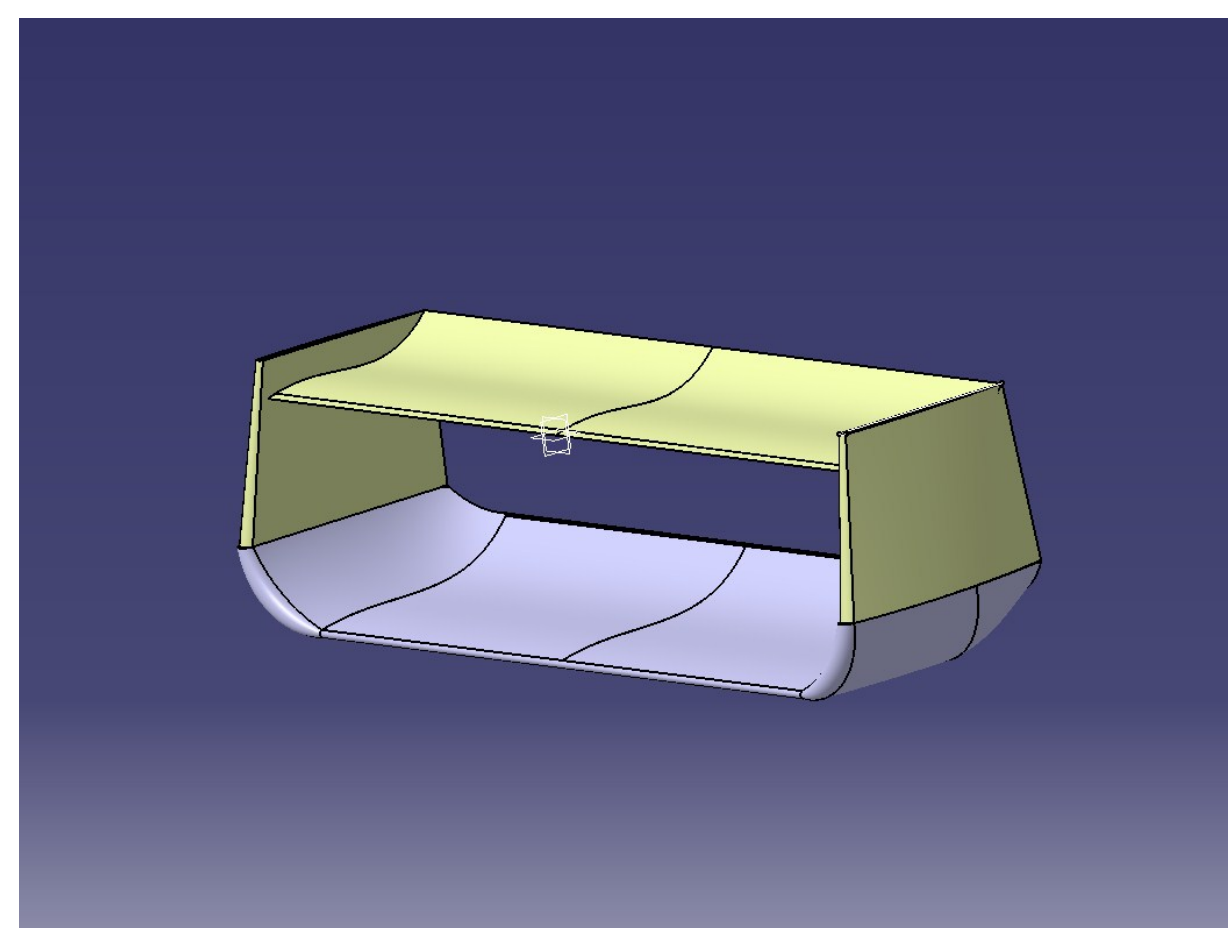
**Background :** Subaru last won WRC in 2003 with Peter Solberg driving the "Blob Eye" configuration. Subaru withdrew from WRC in 2008 but Dominates in Rally America winning the championships behind Travis Pastrana and David Higgins.



**Method :** A total of 6 different spoilers, 3 per model, will be designed and tested through wind tunnel and water tunnel testing. The designs will be similar between models in order to compare performance characteristics between the two models. In order to simulate a rolling road in wind tunnel testing, a pair of matching models will be put tire to tire. The models will be moved from yaw angles ranging from  $0^{\circ}$  to  $30^{\circ}$  to simulate drifting that is common in rally. Water tunnel testing will also be conducted for flow visualization as well as further performance testing.

**Future Plans :** After performance testing is completed with only spoiler designs, ERA will research and develop various body kit additions to improve performance. Such devices include: vortex generators, diffusers, vents, scoops, and stabilizers. After various body kit additions are developed, ERA will conduct further wind tunnel and water tunnel testing.

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