



BIKEVALLEY

Wind tunnel testing Alex van Breedam
July 1, 2019



Date	1-7-2019
Test type	Aerofit
Riders	Alex van Breedam

Run	Position	Yaw angle [deg]	Velocity [m/s]	Velocity [km/h]	CdA [m2]	Power [W]	Deviation	Power @ 40km/h	Time	COMMENT
1	Bike only	0	10.8	38.88	0.1034	79.8		86.9		
2	Bike only	0	10.8	38.88	0.1022	78.9		85.9	14h33	
avg	Bike only	0	10.8	38.88	0.1028	79.3	+/-0.45W (0.57%)	86.4	14h33	
3	Baseline	0	10.7	38.52	0.3624	271.9		304.5		
4	Baseline	0	10.7	38.52	0.3649	273.8		306.6	14h46	
avg	Baseline	0	10.7	38.52	0.3637	272.9	+/-0.95W (0.35%)	305.5		
5	Bioracer Speedmaster TT	0	10.7	38.52	0.3478	261		292.2	15h00	
6	Bioracer Speedmaster TT	0	10.7	38.52	0.3487	261.6		293	15h04	Relaxte positie
avg	Bioracer Speedmaster TT	0	10.7	38.52	0.3482	261.3	+/-0.34W (0.13%)	292.6	15h04	
7	Lazer Victor	0	10.7	38.52	0.333	249.9		279.8	15h11	
8	Higher extension angle	0	10.7	38.52	0.3289	246.8		276.3		Meer comfort
9	Aero shrug	0	10.7	38.52	0.3251	244		273.2	15h27	
10	Further back on the saddle	0	10.7	38.52	0.3198	239.9		268.7	15h32	More stable position, easier to hold shrug
11	Run 10 - overshoes	0	10.7	38.52	0.3226	242.1		271.1		

It is found that the best aerodynamic position for Alex is the position further back on the saddle. This results in an aerodynamic gain and a gain in stability. However, there will probably be a slight loss in power output and therefore it is expected to be as fast as the aero shrug position from run 9. It is good to have multiple fast positions to be able to change position throughout the world hour record attempt such that muscle soreness will be less of an issue.

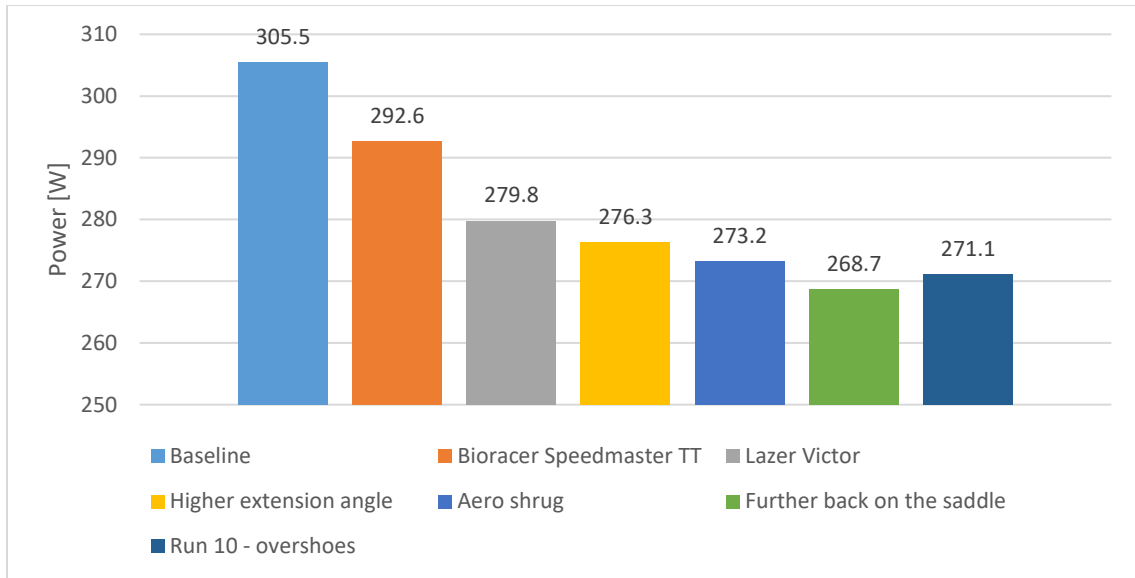


Figure 1 – Measurement results of Alex extrapolated to 40km/h.

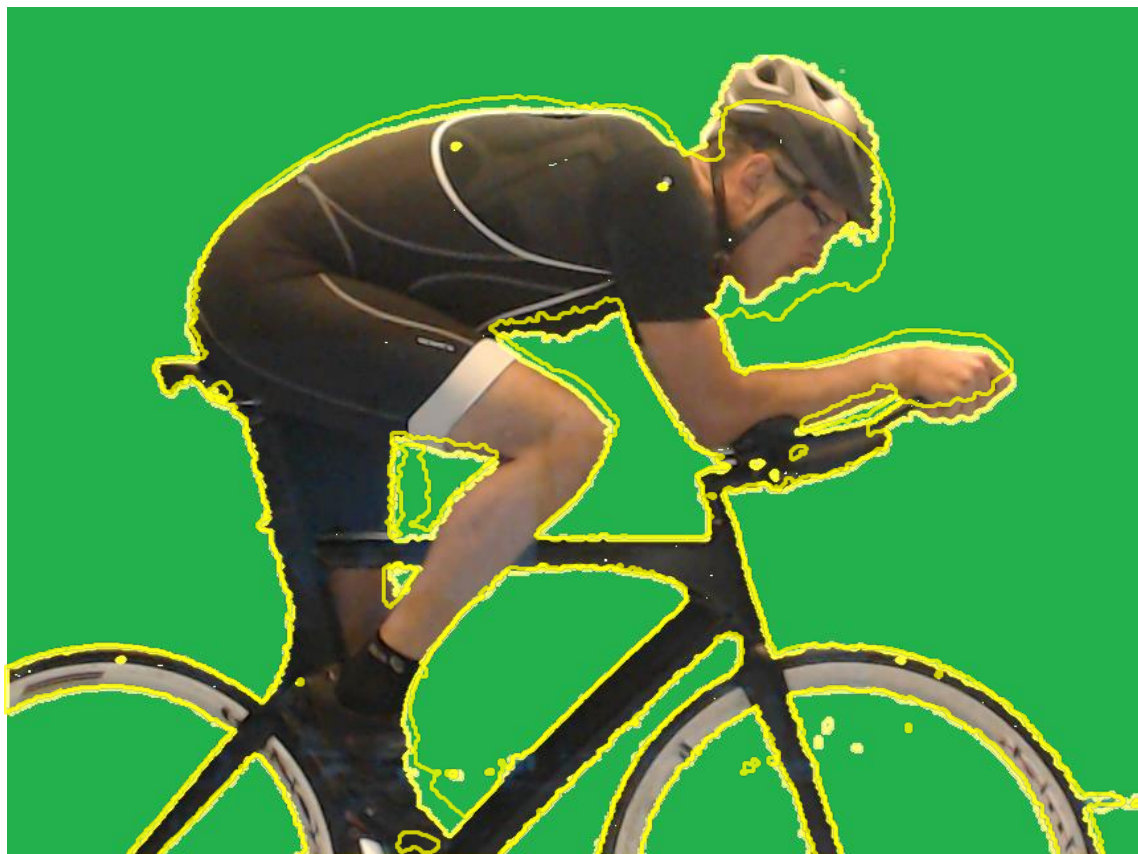


Figure 2 – Baseline run (run 3 – figure) and higher extension angle with Lazer Victor helmet (run 8 – contour).



Figure 3 – Higher extension angle with Lazer Victor helmet (run 8 – figure) and aero shrug position (run 9 – contour).



Figure 4 - Higher extension angle (run 8 – figure) and position further back on the saddle (run 10 – contour).