

QFD Matrix

PHASE I QFD

Deflection at wing ends at 60 mph	-																		
Damage to car after cone impact at 60 mph																			
Decrease in lap time on 45 second course																			
Fuel used in 22 km endurance event																			
Downforce at 60 mph with no wind																			
Average lift-to-drag ratio with no wind																			
Weight of complete aero package including mounts																			
Sustained lateral acceleration																			
Horizontal extension behind rear tires																			
Horizontal extension in front of front tires																			
Width of widest aero component																			
Clearance of aero components around tires																			
Minimum radius on leading edge of all components																			
Cost																			

Correlation Codes	
++	Very Positive
+	Positive
-	Negative
--	Very Negative

Preferred

Engineering Metrics

Customer Perception

Customer Requirements	Customer Weights	Engineering Metrics												Customer Perception						
		Deflection at wing ends at 60 mph	Damage to car after cone impact at 60 mph	Decrease in lap time on 45 second course	Fuel used in 22 km endurance event	Downforce at 60 mph with no wind	Average lift-to-drag ratio with no wind	Weight of complete aero package including mounts	Sustained lateral acceleration	Horizontal extension behind rear tires	Horizontal extension in front of front tires	Width of widest aero component	Clearance of aero components around tires	Minimum radius on leading edges of all components	Cost	1 <i>Worse</i>	2	3	4	5 <i>Better</i>
Lower lap times	3			1		1	1	1												A
Increase lateral acceleration potential	1							1												A
Maintain current aero efficiency	2				1		1													A
Sustain aero loads	3	1																		A
Sustain cone impact loads	2		1										1							A
Sustain car vibration	3							1												A
Perform sufficient component testing	2	1	1																	A
Integrate with surrounding components	2		1																	A
Meet FSAE/FSG Regulations	3									1	1	1	1	1						A
Remain within financial means	1														1					A
Technical Targets (Specifications)		0.125 inches	Not structurally compromised	1.0 second average over previous car	0.6 gallons	500 pounds	2.3:1	20 pounds	3 G	12 inches	30 inches	Within outside of the tires	2.7 inches	0.060 inches	\$2,000					
	<i>Better</i>	5	A	A	A	A	A	A	A	A	A	A	A	A	A					
		4			A	A														
	Technical Benchmarking	3						A			A	A	A	A	A					
	<i>Worse</i>	1																		
	Raw score	5	6	3	2	3	5	6	4	3	3	5	5	3	1					
	Relative Weight	9%	11%	6%	4%	6%	9%	11%	7%	6%	6%	9%	9%	6%	2%					

A: Benchmark Product #1 RIT F21