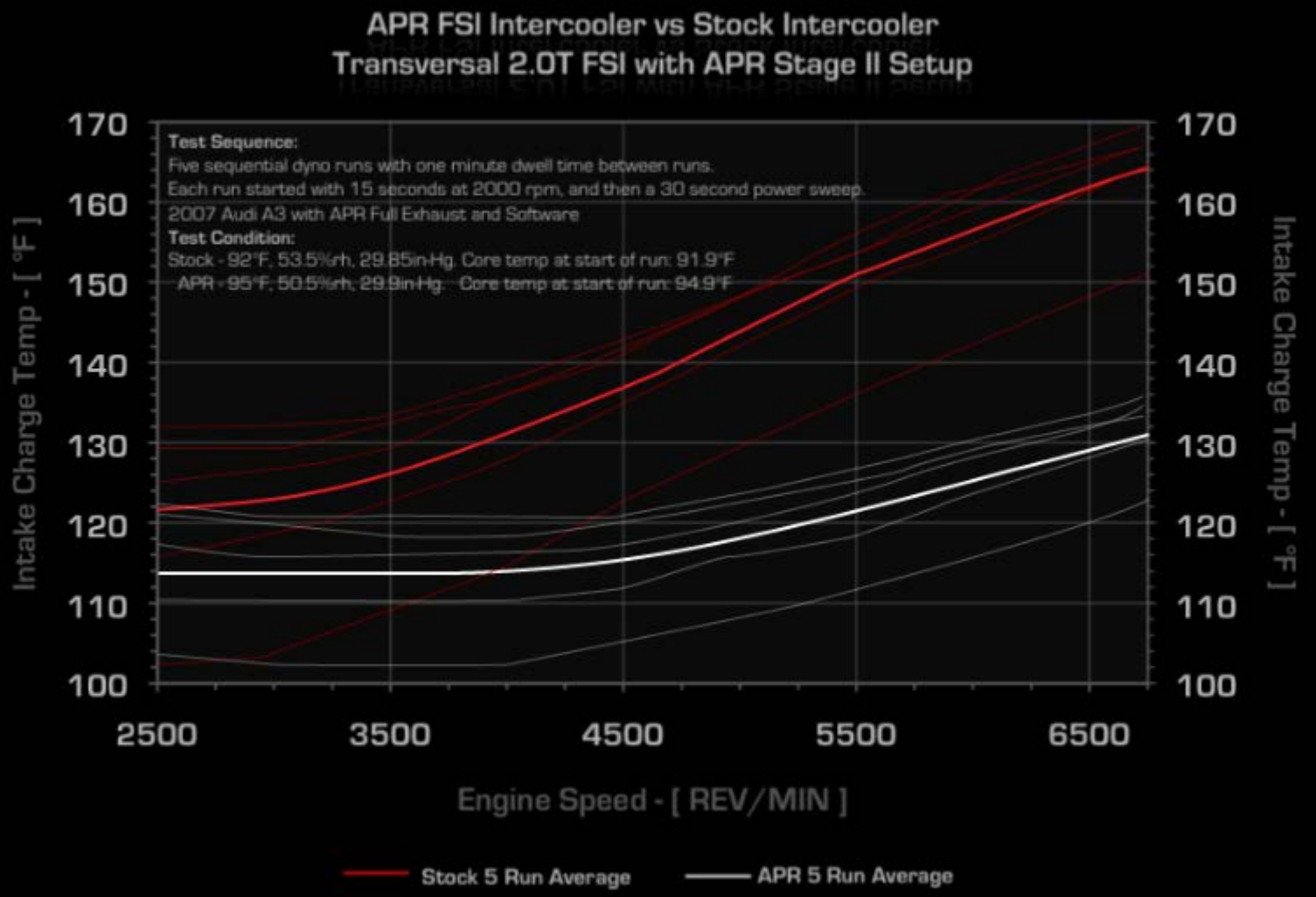
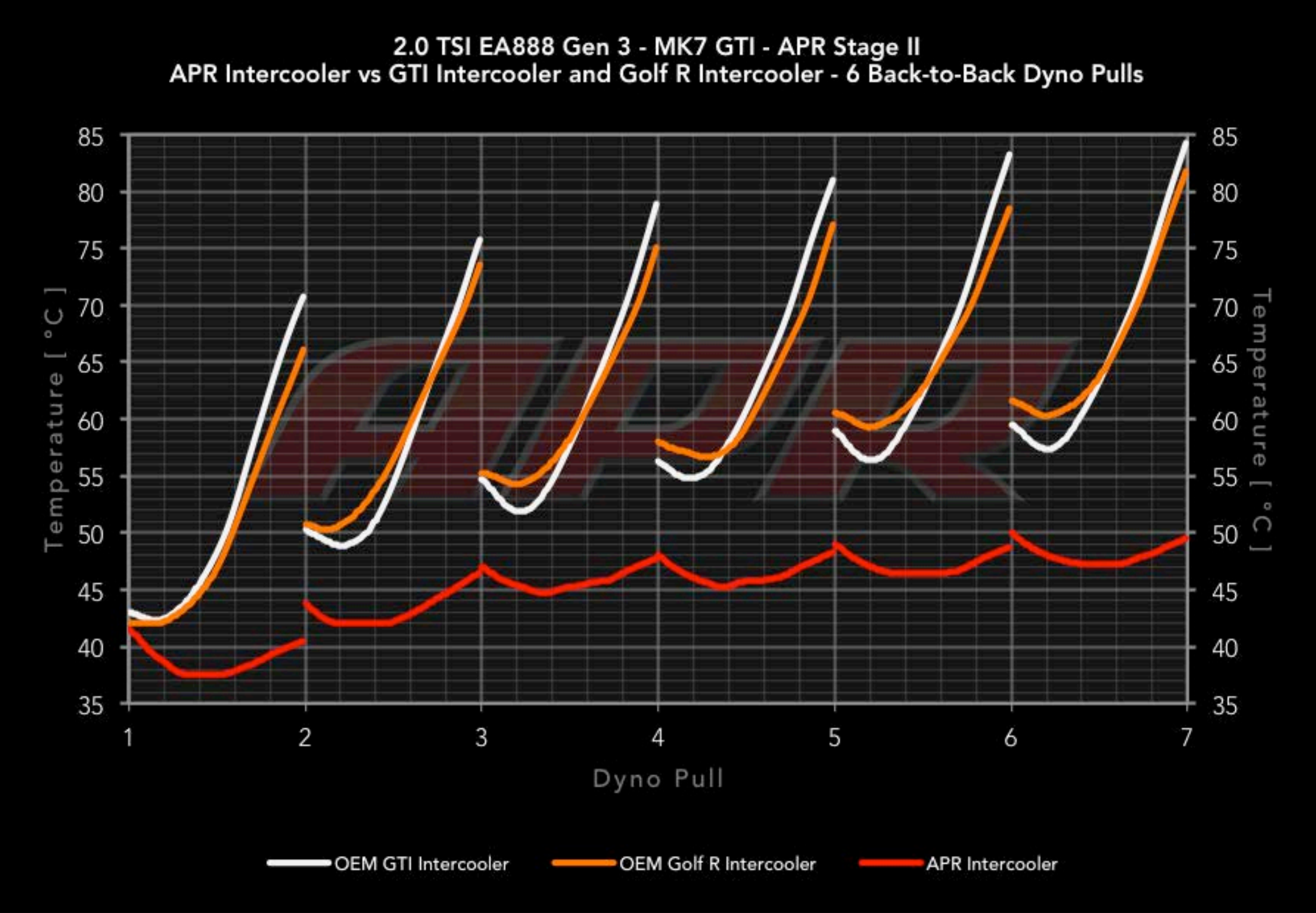
Testing Data

Several tests were done in order to prove the differences between the stock intercooler and the APR one. One test for thermal effectiveness involved placing the car on the dyno with our normal assortment and arrangement of cooling fans. The car was then run through a rigorous testing procedure that involved allowing it to idle to a normal operating temperature, and then running it through five power runs.

During each run, the engine speed was brought to 2000 rpm for fifteen seconds. This allows the air to run throughout the system and allows the intake air temperature to normalize and negate heat soak from the car sitting at idle. The car was then taken from 2000rpm to 6800rpm at full throttle under load over the next thirty seconds. The car was then allowed to idle for one minute before the next run was started. Each lighter line on the graph above represents each power run, and the darker line represents the average over five runs.



The stock intercooler was tested on one day, the APR intercooler was installed, and the testing repeated the next day. The conditions were very similar on both days, but it was slightly hotter (3°F) on the day the APR intercooler was tested. Most alarming about this entire test was the fact that during the third run with the stock intercooler, the car began to pull boost and timing in order to protect itself from the high intake temperatures. The car also exhibited this protective behavior in both the fourth and fifth runs as well. The APR intercooler performed as we expected, keeping the intake charge temps almost 40°F lower by the end of the fifth run.


2.0 TSI EA888 Gen 3 - MK7 GTI - APR Stage II
APR Intercooler vs GTI Intercooler and Golf R Intercooler - 6 Back-to-Back Dyno Pulls
Temperature [°C]
85
80
75
70
65
60
55
50
45
40
35
1
2
3
4
5
6
7
Dyno Pull
OEM GTI Intercooler
OEM Golf R Intercooler
APR Intercooler

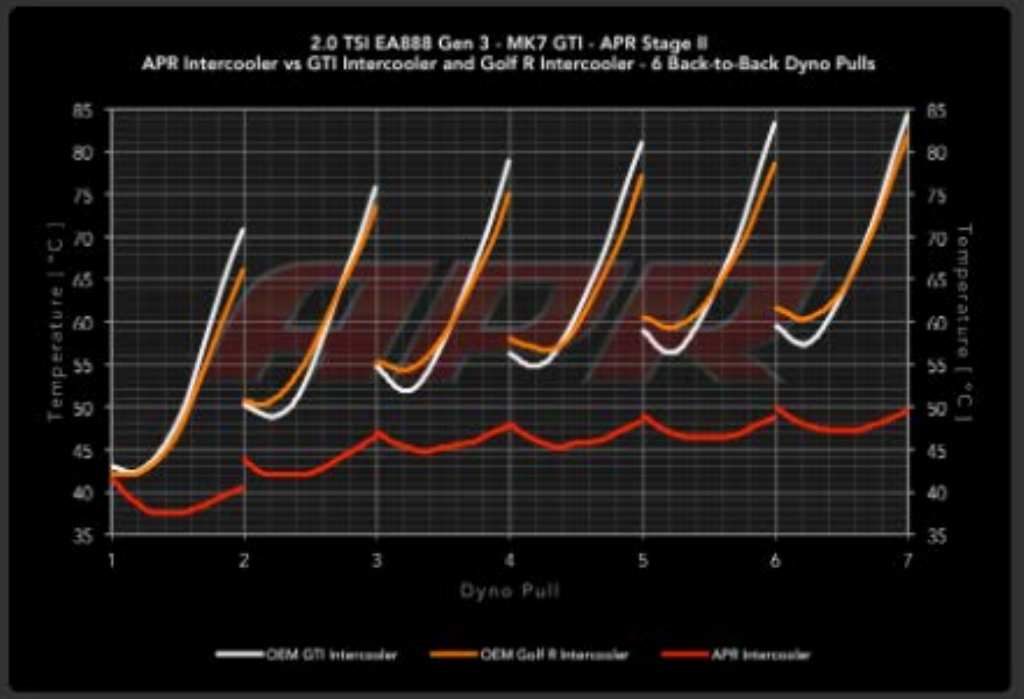

MK7 GTI 2.0T - APR Stage II - 93 Octane (R+M)/2 - Sixth Back-to-Back Dyno Pull
APR Intercooler vs GTI Intercooler vs Golf R Intercooler
Wheel Horsepower [WHP]
300
275
250
225
200
175
Wheel Horsepower Loss [WHP]
25
20
15
10
5
0
2500
3300
4100
4900
5700
6500
Engine Speed - [REV/MIN]
APR IC
Golf R IC
GTI IC
Golf R IC Power Loss
GTI IC Power Loss

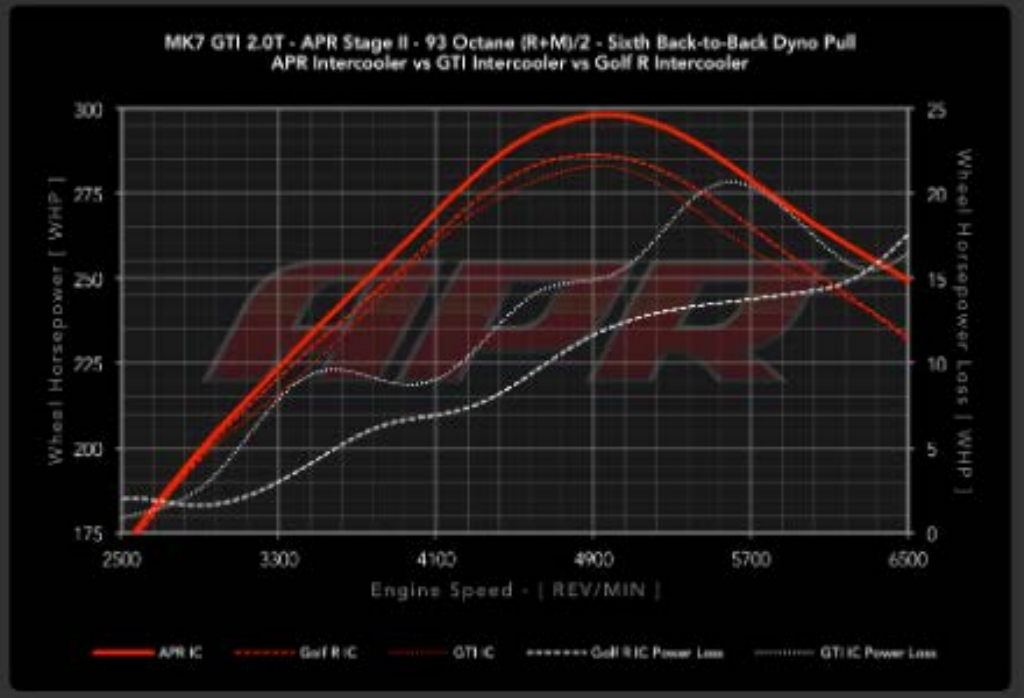
MK7 GTI 2.0T Intercooler Testing

Back-to-back stress testing on the dyno help to further prove APR's intercooler upgrade's effectiveness compared to the factory unit. Tests were first conducted with an APR Stage 2 MK7 GTI using the factory intercooler, then the slightly upgraded Golf R intercooler and finally APR's Intercooler system. Each dyno pull lasted 12 seconds with 5 seconds of dwell between runs. Raw sensor data was collected using APR's ECU Explorer high resolution datalogging system.

The tests quickly proved the long sought after OEM "upgraded" cooler (factory Golf R intercooler) showed minimal improvement over the standard GTI unit. However, the APR intercooler saw a dramatic difference that made a positive impact on performance.

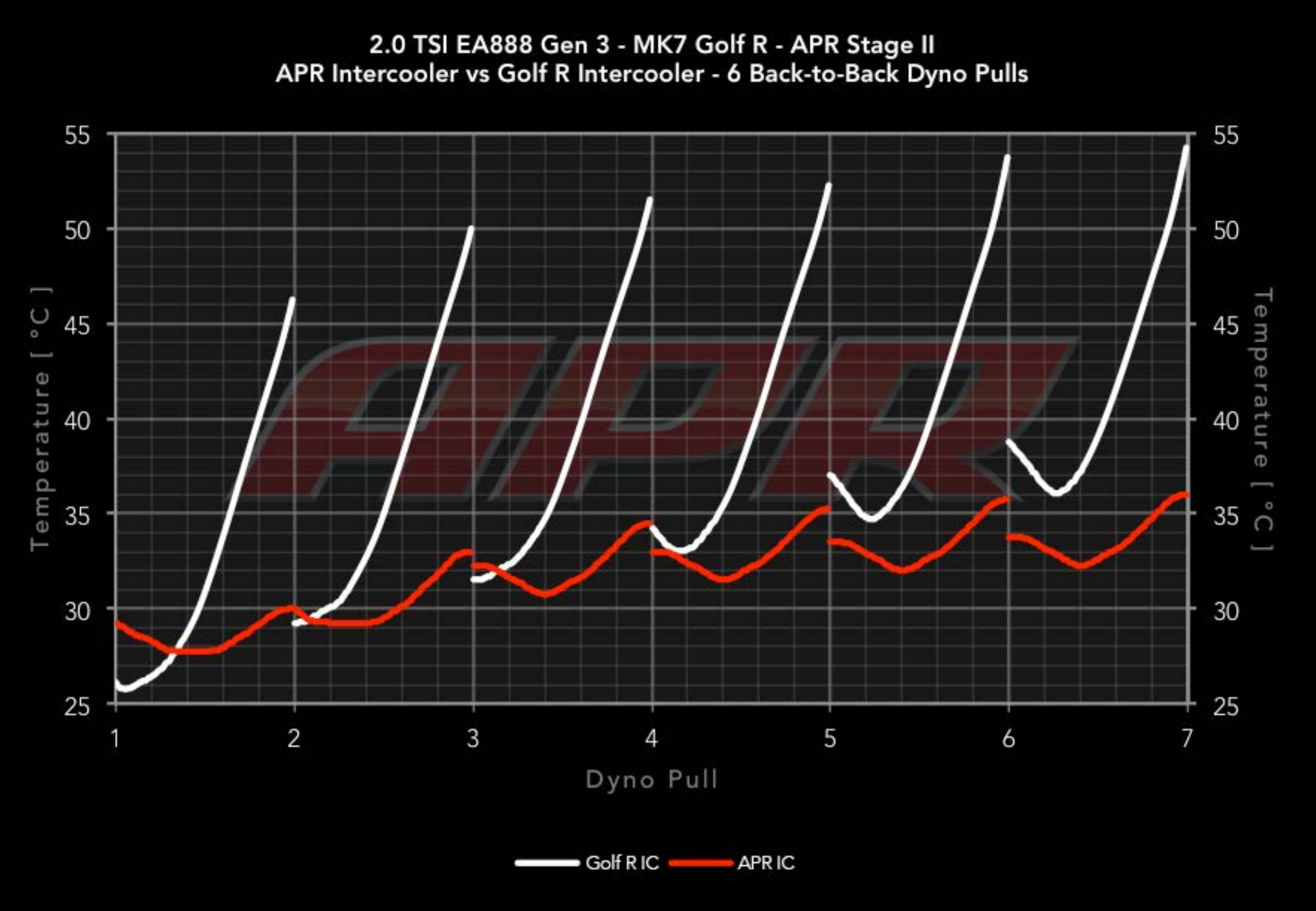
The factory GTI and Golf R intercoolers saw a starting IAT of 43 °C and 42 °C which climbed to as high as 71 °C and 66 °C, respectively, by the end of only the first pull. In contrast, the APR intercooler system saw IAT's drop to 40 °C! The APR system effectively rejected heat soak and by the end of the sixth run saw a final IAT of 49 °C where as both the GTI and Golf R intercoolers struggled to keep up, resulting in a final performance robbing IAT of 84 °C and 82 °C. **This translated to a final gain of 21 WHP over the GTI intercooler and 18 WHP over the Golf R Intercooler!**

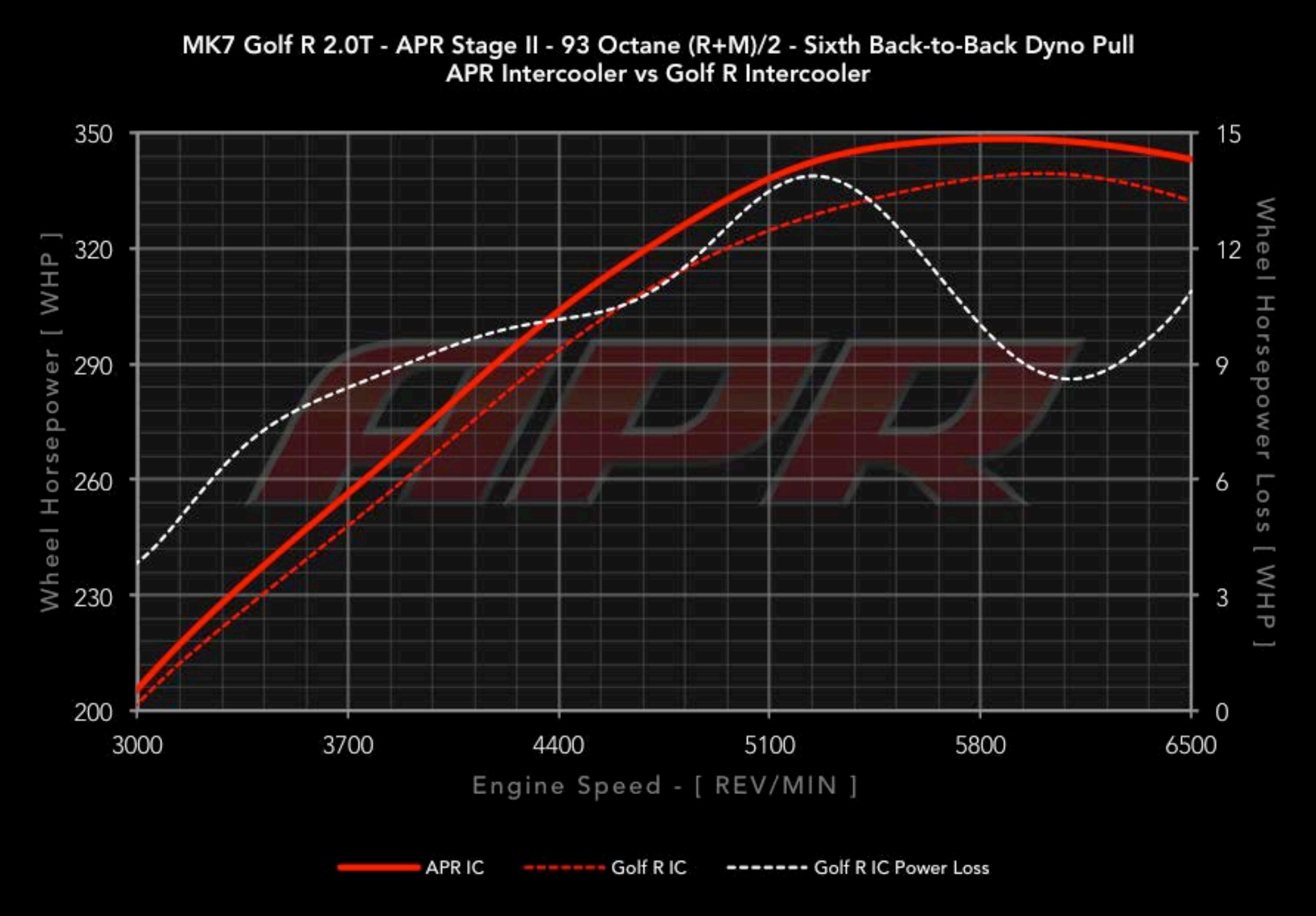




Testing Temperature Data Report

	Start	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
OEM (GTI)	43 °C	71 °C	76 °C	79 °C	81 °C	83 °C	84 °C
OEM (Golf R)	42 °C	66 °C	74 °C	75 °C	77 °C	79 °C	82 °C
APR	42 °C	40 °C	47 °C	48 °C	48 °C	49 °C	49 °C
Delta (GTI)	-1 °C	-31 °C	-29 °C	-31 °C	-33 °C	-34 °C	-35 °C
Delta (Golf R)	0 °C	-26 °C	-27 °C	-27 °C	-29 °C	-30 °C	-33 °C


2.0 TSI EA888 Gen 3 - MK7 Golf R - APR Stage II
APR Intercooler vs Golf R Intercooler - 6 Back-to-Back Dyno Pulls
Temperature [°C]
55
50
45
40
35
30
25
1
2
3
4
5
6
7
Dyno Pull
Golf R IC
APR IC

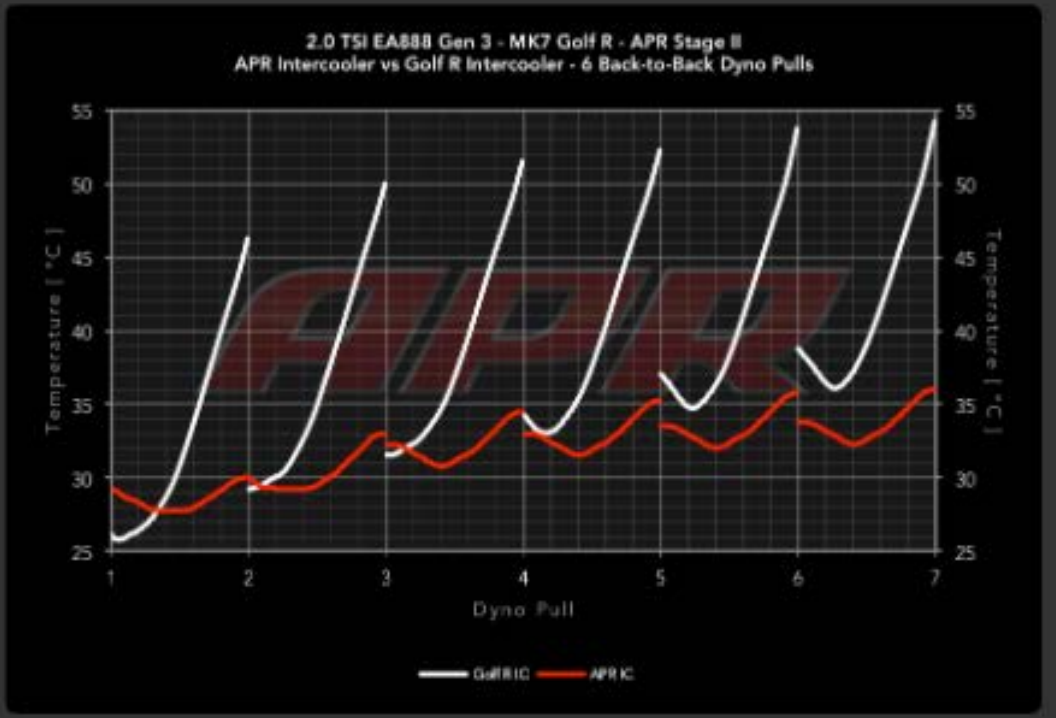

MK7 Golf R 2.0T - APR Stage II - 93 Octane (R+M)/2 - Sixth Back-to-Back Dyno Pull
APR Intercooler vs Golf R Intercooler
Wheel Horsepower [WHP]
350
320
290
260
230
200
Wheel Horsepower Loss [WHP]
15
12
9
6
3
0
3000
3700
4400
5100
5800
6500
Engine Speed - [REV/MIN]
APR IC
Golf R IC
Golf R IC Power Loss

MK7 Golf R 2.0T Intercooler Testing

Back-to-back stress testing on the dyno help to further prove APR's intercooler upgrade's effectiveness compared to the factory unit. Tests were first conducted with an APR Stage 2 MK7 Golf R using the factory intercooler, then APR's Intercooler system. Each dyno pull lasted 12 seconds with 5 seconds of dwell between runs. Raw sensor data was collected using APR's ECU Explorer high resolution datalogging system.

The tests quickly proved the factory Golf R intercooler could not effectively reject heat soak on vehicles equipped with APR's performance software. However, the APR intercooler saw a dramatic difference that made a positive impact on performance.

The factory intercoolers saw a starting IAT of 26 °C which climbed to as high as 46 °C by the end of only the first pull. In contrast, the APR intercooler system saw IAT's only raise 1 °C! The APR system effectively rejected heat soak and by the end of the sixth run saw a final IAT of 36 °C where as the factory intercoolers struggled to keep up, resulting in a final performance robbing IAT of 54 °C. **This translated to a final gain of 14 WHP over the Golf R intercooler!**



Testing Data Report

	Start	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
OEM	26 °C	46 °C	50 °C	52 °C	52 °C	54 °C	54 °C
APR	29 °C	30 °C	33 °C	35 °C	35 °C	36 °C	36 °C
Delta	+3 °C	-16 °C	-17 °C	-17 °C	-17 °C	-18 °C	-18 °C