



INTAKE DUCT TESTING

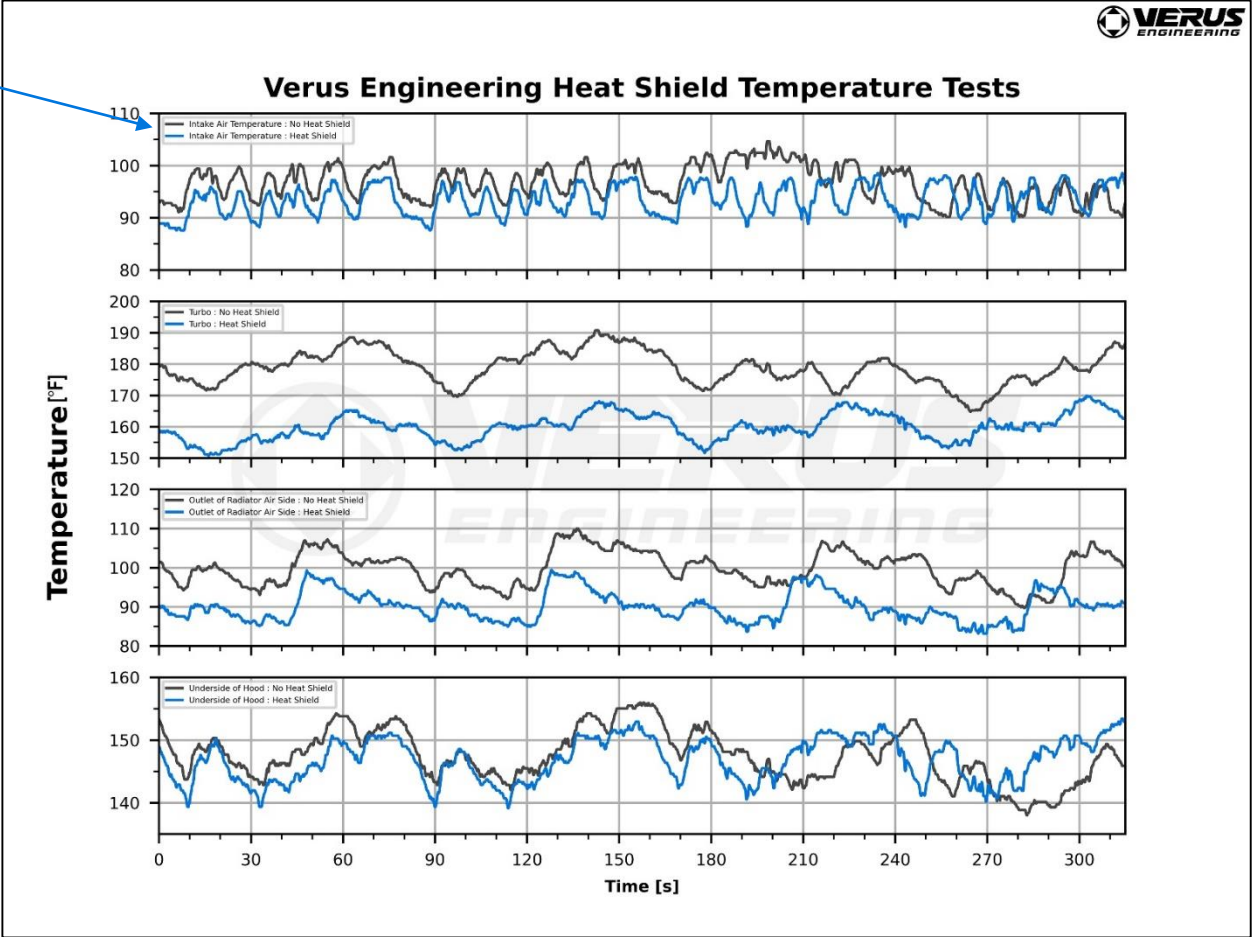
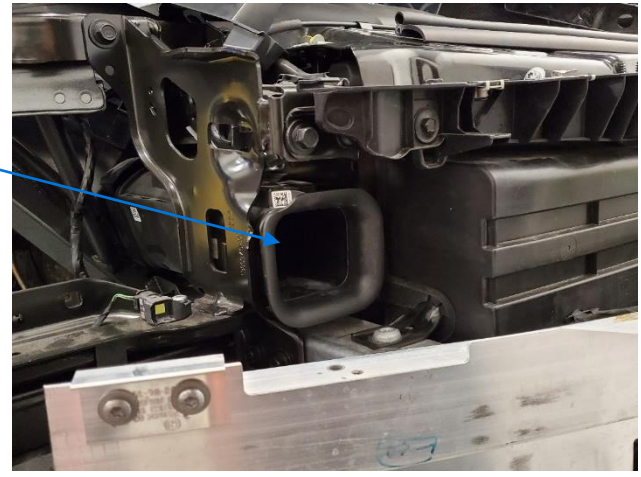
ON TRACK TESTING SHOWING IAT DIFFERENCES

BACKGROUND

1

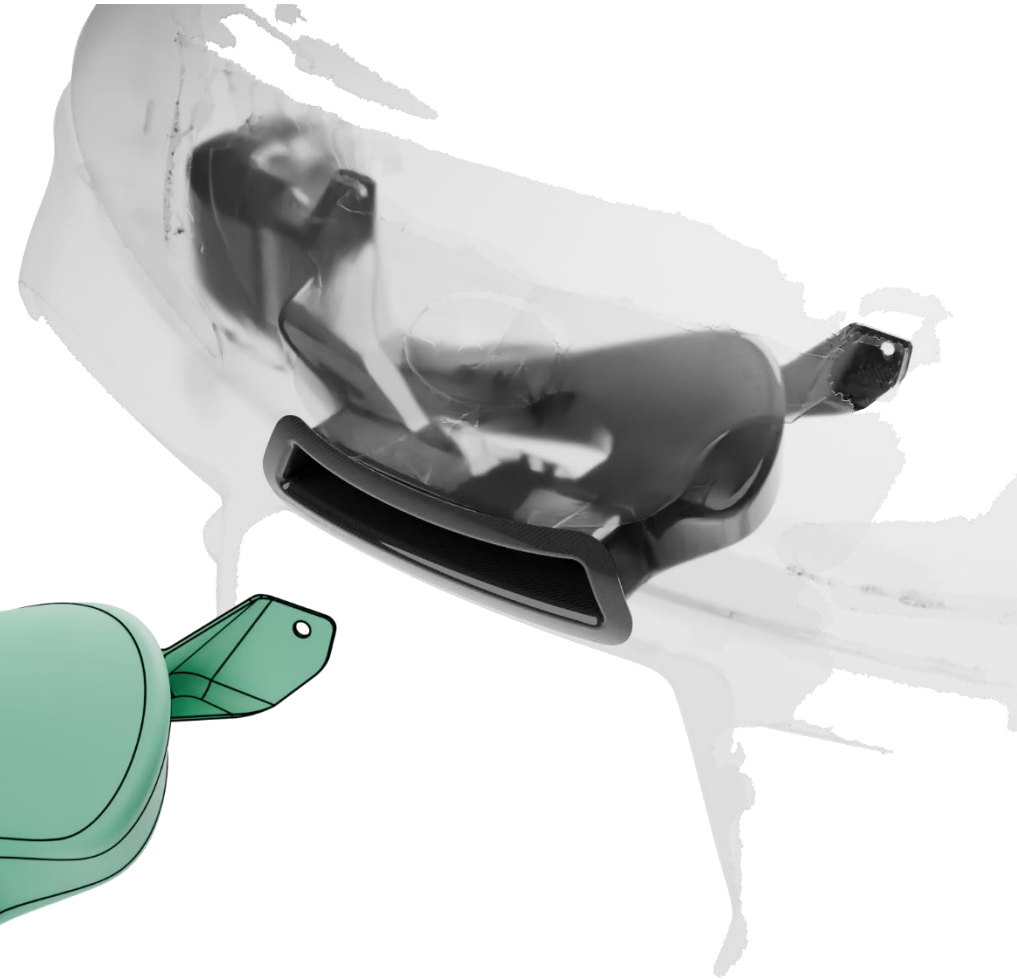
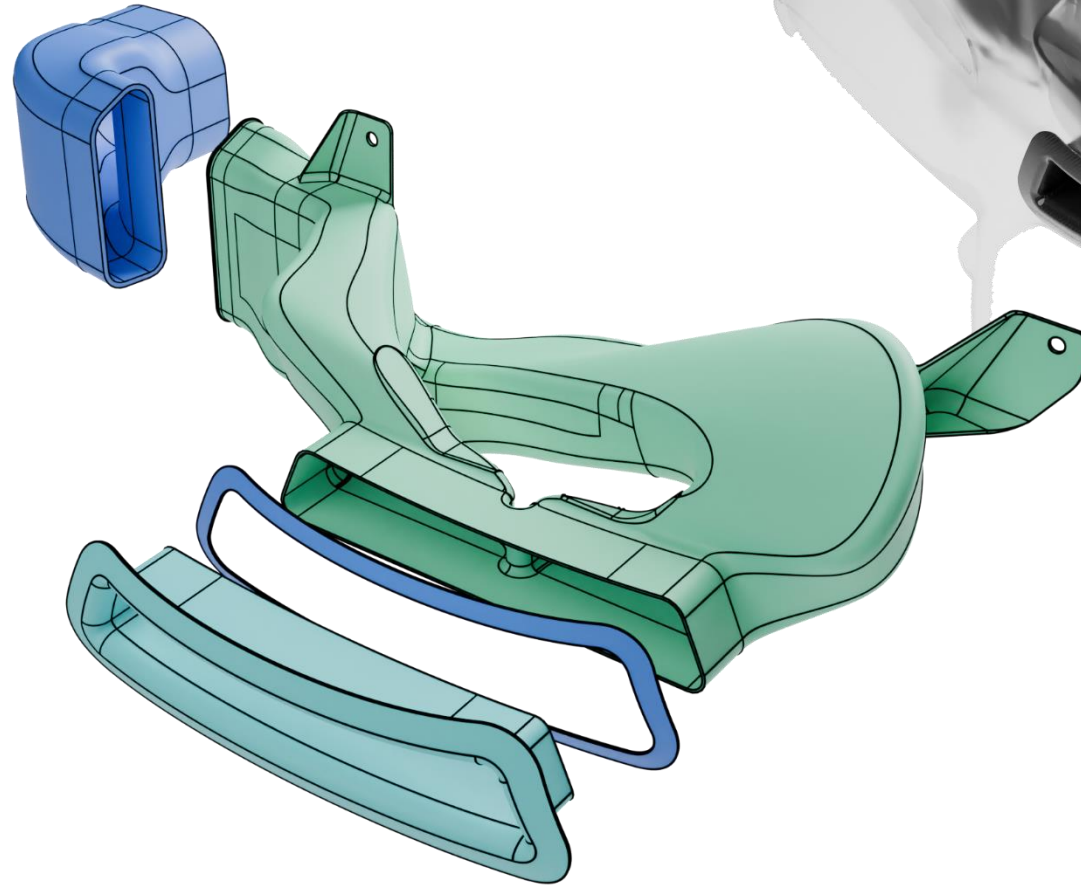
- During testing of our hood louver and turbo heat shield, we noted IAT (Intake Air Temperature) 15-30 degrees higher than ambient temps (#1)
- Seeing how the factory air box grabs air forward in the bumper, we questioned why IAT was so much higher
- When pulling the bumper off we noticed that the intake pulls air from behind the bumper, but not from fresh air (#2)

2



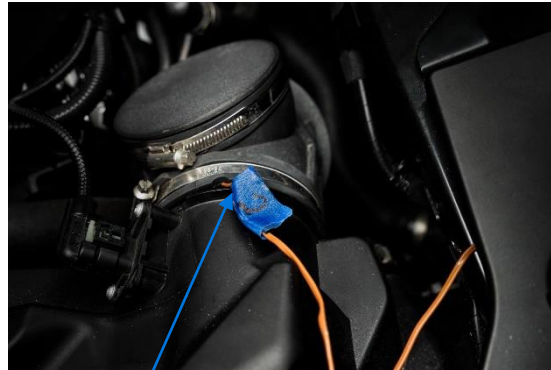
THE VERUS SOLUTION

- Design a duct that will feed ambient air directly into the airbox from the high pressure zone at the front of the car
- Fit like an OEM+ solution, requiring zero modification of the factory crash structure
- Mimic the aggressive front bumper look of the factory GT4 cars for aesthetics



TESTING SETUP

- AIM EVO 4 Data Acquisition
- Thermocouple in intake hose post air filter (#1)
- Thermocouple at front of vehicle on top of splitter for track temp (#2)
- Ignored first few laps for temps to normalize
- Ambient temp taken from weather data that day
- Testing was done at Putnam Park Road Course, with similar lap times (~1:15), same power, same driver, and no traffic on track



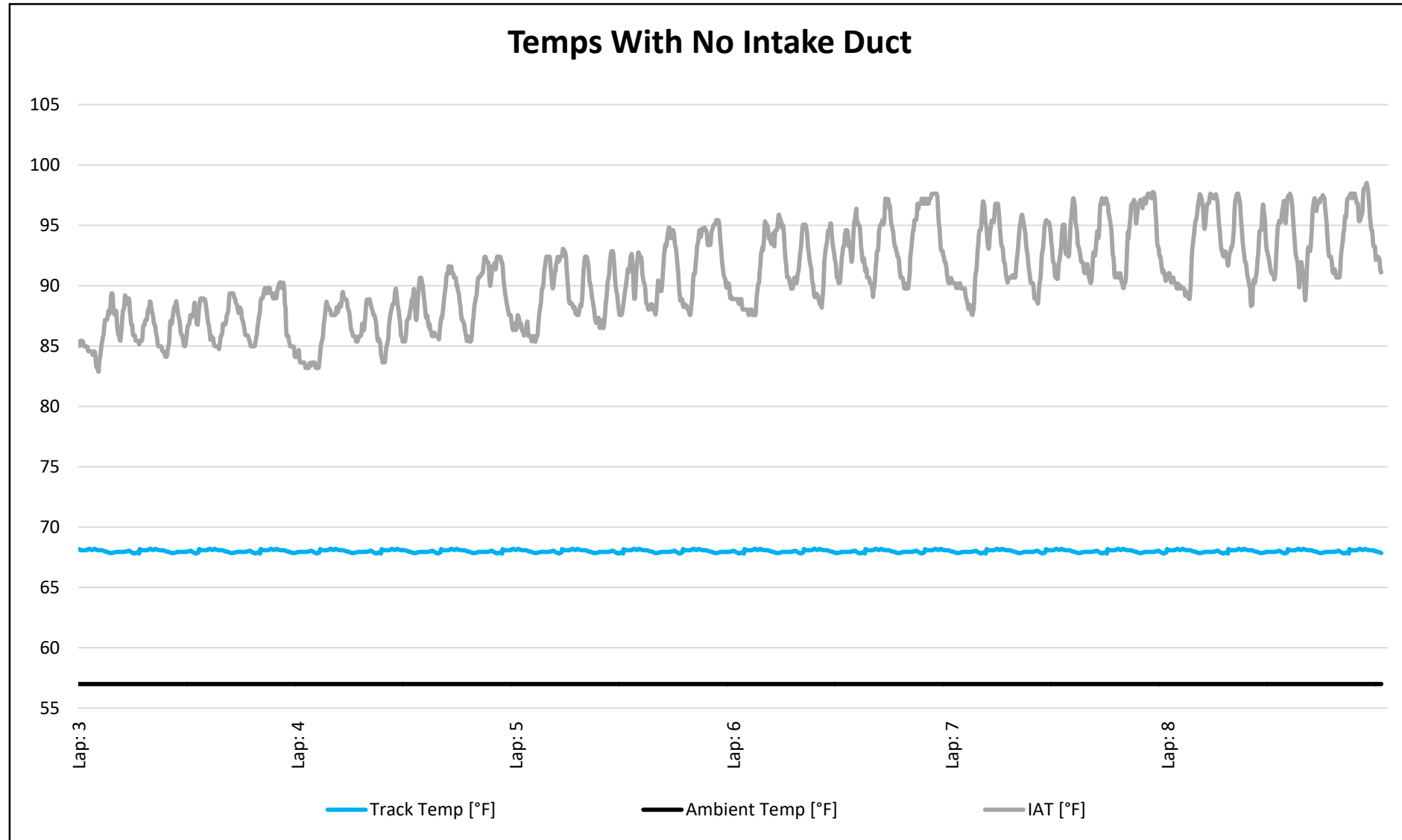
1



2

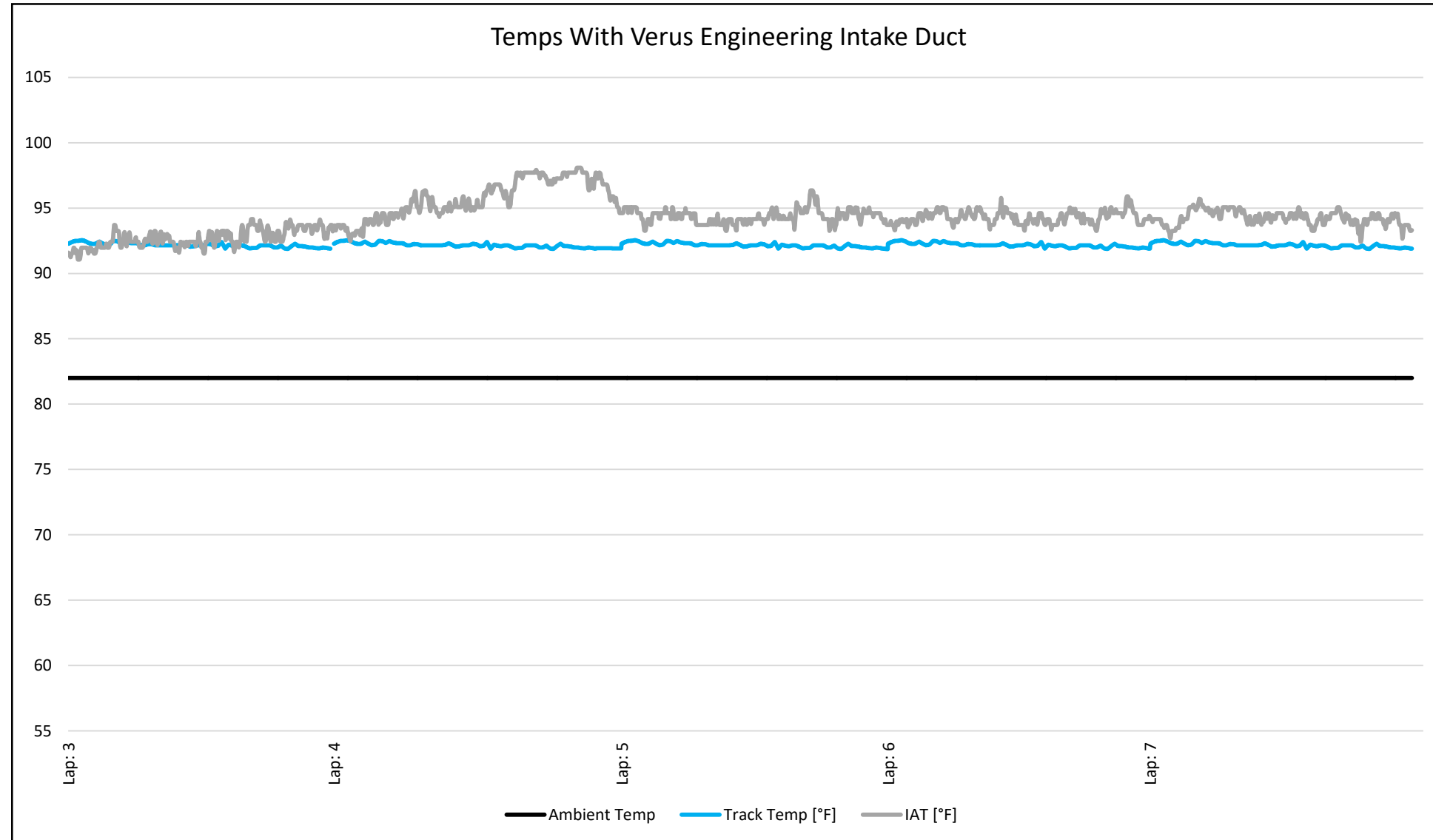
DATA – IAT, No Duct

- IAT continually rising over time
- IAT roughly 20-25 degrees more than track temp
- IAT cyclically up and down 5 degrees over short periods of time



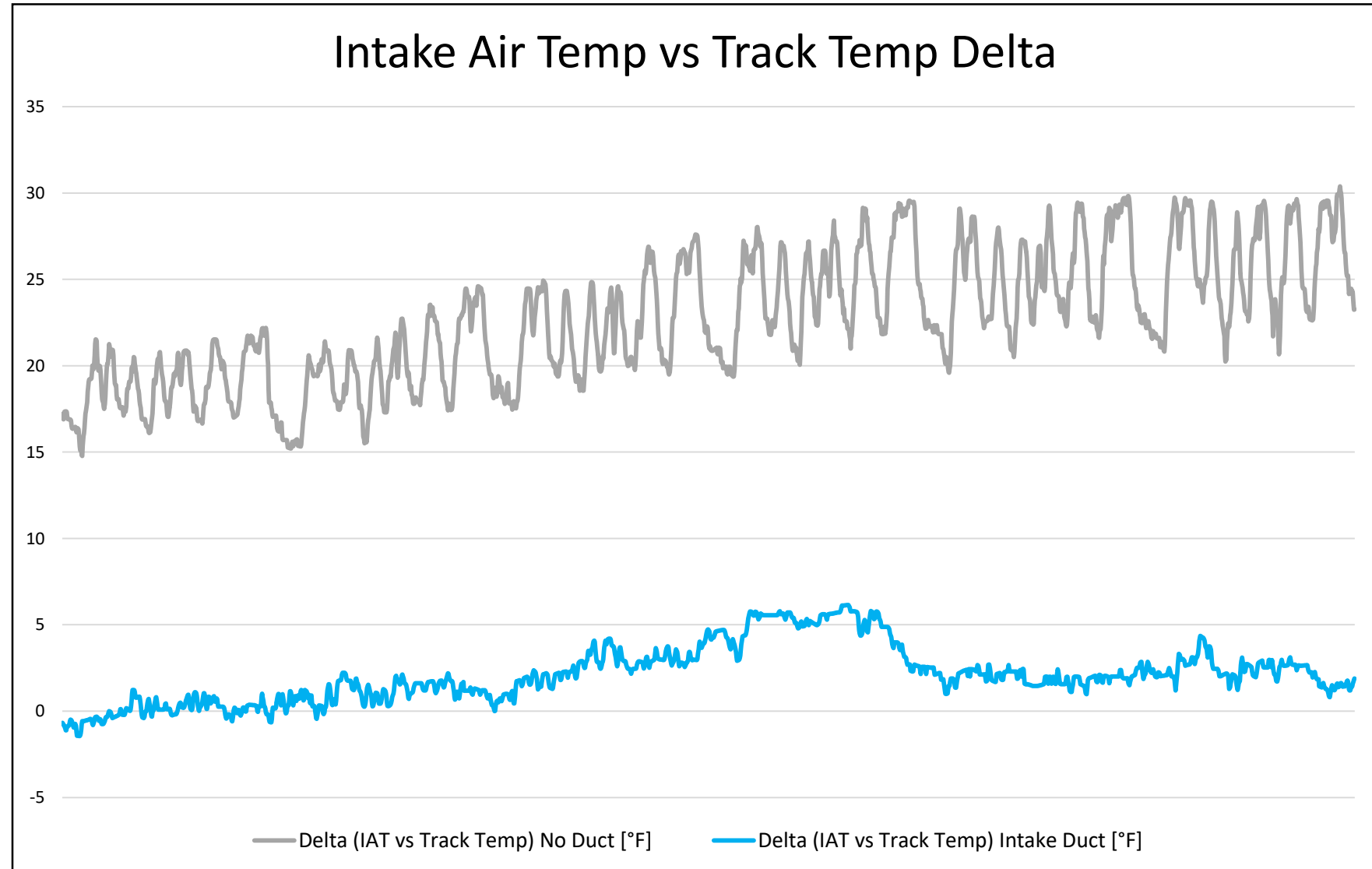
DATA – IAT, With Verus Duct

- IAT no longer rises over time
- IAT extremely close to track temps
- IAT no longer cyclically up and down 5 degrees



DATA – DELTA VS. TRACK TEMP

- Delta is the change or difference between two measurements
- In this graph we are studying the delta between the intake air temp and track temp, with and without the duct.
- A lower number means intake temps are closer to track temps outside the car



CONCLUSION

- The Verus Engineering Duct dramatically decreases the delta between track temps and IAT
- Turbo performance improves due to cooler air
- Charge cooler will have less heat to remove from charge air
- Engine power should increase due to decreased intake temps and denser air charge
- One thing we have not tested and would like to is if there is a pressure increase in the air box due to ram air. If there is a pressure increase, this would improve engine performance slightly as well.

