#337
October 15, 2019

Ross Bentley writes, "When **Martin Schacht** first submitted the article below, I thought it was a bit too commercial, as it was certainly singing the praises of one specific product. But when I read it a second time, I realized what it really was: a story of a driver looking for a solution to his problem. And I then understood how valuable Martin's piece was to you, as I doubt he's the only driver to have gone looking for a device to help him self-coach while driving. My job with *Speed Secrets Weekly* is to help you be the best driver you can, and sometimes that requires a boost from an outside source or product.
Martin has been a member of the Porsche Club of America for thirty-four years, and the Porsche Owners Club for thirty years. Yup, he likes Porsches! Those years have led him to these thoughts: "I have been constantly amazed and baffled how a small percentage of drivers, with cars similar to mine, are consistently faster. Is it that they have better-prepared cars, or is it talent? Put a gifted driver into a subpar car, they'll most like do very well. So then, the most obvious answer is a natural talent. Can a shortage of driving talent be compensated for? I strongly believe it can be. The question for many of us is can desire, focus, perseverance, accumulation of seat time, and a willingness to try new approaches overcome any personal shortcomings in the talent department?"
Let's see how Martin approached those questions. Enjoy!"

One Driver's Quest to Find a Self-Coaching App

by Martin Schacht

The inspiration to write this piece came from the results produced by an APEX Pro borrowed from **Veracity Racing Data** in Paso Robles, CA.

Numerous iPhone apps serve as GPS-based lap timers. Some leverage the power of a phone or tablet to record, or "log data" and make powerful computations for post-session performance review. Examples include Harry's Lap Timer, Porsche Precision Track App, BMW's M-App, Speed Box, Track Addict and RaceChrono. A few will need additional hardware along with their own apps, like the RacePak CL1/CL2 and the APEX Pro. Having been an iPhone user since its introduction, I did some research on some of the iPhone apps and hardware to figure out what might help me the best.

I already have an AiM Solo DL lap timer, providing predictive lap time information, and post-session access to data. But even predictive lap timing has its limits. It can only show how much faster or slower than the reference lap using a numeric or LED display. The analysis must wait for the post-session data review, and that got in the way of my learning. Frankly, I found myself relying on some great local resources to help me make sense of all the squiggly lines in the analysis software. I wanted something I could coach myself with.
I know I am not alone in wanting to make driving adjustments in real-time and being able to easily gauge results. I'd prefer a live coach, but this is can be cost-prohibitive. My

solution for affordable, effective coaching (with easy to access, meaningful post-session data), ended up being the APEX Pro device and their iOS app. After reviewing the claims of many of the iPhone apps mentioned above, I found that the APEX Pro provided a real-time driver coaching feature, something that I could use on-track to help me get better. As a bonus, simple straightforward post-session analysis could be done on an iOS device quickly and easily - no more lugging a computer to the track!
This real-time coaching is accomplished with a compact, dash-mounted, GPS-enabled, accelerometer equipped device with an LED array in the peripheral view of the driver. To enable the post session analysis of recorded, or “logged” data, the APEX Pro can send this information through a Bluetooth connection to an iPod, iPad or iPhone carried with you in the car. Yes, it’s more expensive than some of the other apps, but it includes very sophisticated hardware, well worth it if it really works. Less than $450 for unlimited real-time coaching! The payback on my investment with this tool was quick, and a good value in comparison to hiring a coach.

The APEX Pro device is mounted using a suction cup. Packed into the module are some seriously high-tech components, the power of the hardware leveraged by utilizing Artificial Intelligence (AI) and Machine Learning (ML). This results in the device having the ability to learn the car’s grip potential, for that driver, in just a few laps. The measured grip potential calculations are constantly recorded, benchmarked and refined. The display can show a driver’s use of the tire grip in real-time, graded by the colors displayed from left to right across the width of the device - green, red, or a mix thereof. The goal is to minimize the red when the tires are taxed by braking, cornering or the transitions in between. If a faster driver drives the car and the unit is not power-cycled, you can compare your own utilization of the grip compared to their demonstrated use of the grip!

The more red LEDs when the tires are under load, the more unrealized grip there is to take advantage of under braking or through a transition into (and through) a particular corner on that lap. Using the APEX Pro, there was no need for me to wait for a reactive, post-session analysis to find this out. Coaching was done on the fly! Then, using the iOS app and an iPad or iPhone, I could also do simple analysis to add more depth and to validate what was seen on track.

For me to gain access to 100% of this added post-session review value though, some study was required. I used several helpful YouTube videos to help guide me on this journey. When the session is logged, a few other post-session visual measures are available and easily accessible. The most basic is the speed trace of a lap, noting that a mini-track map is on the screen showing the position of the car at any given time. Another is the “Apex Score,” or a calculation of how much grip over a lap was measured by the driver’s execution versus what was possible, calculated by the device.
Step it up a notch? Want to compare one of your slower laps to your fastest lap of the session? Go to the lap time display, and tag the two laps of interest by pressing them. Next, press the diamond play button on the app screen. The two laps will be represented on the satellite view as a Red and a Blue dot respectively. Originating at Start/Finish, the dots proceed around the track at speeds relative to the actual times in that session. Before long, you will see where the faster dot picked up speed over the slower. The satellite detail is incredible as you can view the respective lines taken on both laps. To see an area of interest, pause the dots, go to the speed trace and scrutinize that turn for speed in, speed out, etc. The respective lines take on more definition the larger the screen used.

Unique to APEX Pro, drivers may opt to share a session with another APEX Pro driver or their coach. They can share their data using Air Drop or e-mail. If you are lucky, a really quick driver using APEX Pro will agree to share their session data with you. For example, at Willow Springs, you are a 1:39 driver. You can learn a lot seeing what a 1:34 driver in your class is doing around the track and focus on those areas to get closer incrementally to the better time.

Another unique feature is Crew View. In the app, you can specify who is authorized to monitor your data in real-time. When you are out on the track, an overhead view of the track is presented to the viewer using a race car symbol driving the track in real-time. With an iOS device with cellular service in the car, you now have the real-time broadcast of the data, the definition of telemetry.

This proactive coaching has resulted in a one-and-a-half second improvement at the most difficult track I drive, Willow Springs. Going up Turn 2 and seeing all the LEDs showing green helped my confidence and helped calibrate my “butt dyno.” Subsequent data review also showed me all the places on the track where the potential for improvement was greatest.

I need to point out that I have no association with APEX Pro, other than as a customer. I’m simply sharing my experience so that you may learn something from it. And let me add the words of **Peter Krause** (you know him from his contributions to *Speed Secrets Weekly*, and the Virtual Track Walks he does with **Ross Bentley**):
"Despite the low cost and small package, relative to other systems, the APEX Pro has power beyond other tools in the fact that it uses a much more capable IMU (Inertial Measuring Unit) and incorporates 'learning' capabilities, whereas most other loggers are just recorders. It can calculate the amount of forces acting on the car in all axes and readjust on the fly, giving an accurate assessment of 'how much is left?' I call it a risk management tool!
"With my understanding of how people learn, assimilate information and get faster, I do know that it offers benefits that are central to the reason why pros are quicker than most, and more consistent in their driving, making full use of the tire contact patch. Just as drivers improve, the APEX Pro does more than most other much more expensive systems, none of which do that calculation themselves - real time - or with as much 'local knowledge'."

Finally, if you’re like me, you’ll want to learn more. To do so, do like I did and go to the APEX Pro YouTube channel.https://www.youtube.com/channel/UCp1gjrm-7rAKen3KN70HBFw/videos
- Martin Schacht