

High Tech Help to Improve Your Game

By Roy Robertson

I'm standing on the 18th tee at Pebble Beach Golf Links, looking out across the rocky Pacific shoreline, waves crashing on the beach as I'm taking dead aim down the fairway. It's one of the most unique experiences in the golf world.

OK, so that's not *really* what's happening here.

I'm actually at the Callaway Golf Performance Center in Carlsbad, CA , 400 miles south of the Monterey Peninsula, looking at a giant *canvas* of the fabled 18th at Pebble stretched out in front of me. It's the backdrop for the Callaway Performance Analysis System -- and it's *still* one of the most unique experiences in the golf world. There are only six such centers worldwide and I've come to Callaway for a custom club fitting session at the only center in the United States staffed by Callaway's fitting specialists.

It's the first time I can recall having first tee jitters *indoors*.





The evaluation center is located at Callaway world headquarters in Carlsbad, just a chip shot away from the private facility where Callaway's tour pros, including Ernie Els and Phil Mickelson, have been fitted for their equipment. Seldom do Ernie, Phil and I travel in the same circle, so I welcome the opportunity to visit one of golf's elite equipment outfitters. Callaway club fitting specialist Marc Zien greets me at the entrance of the massive Callaway complex. Images of Phil and Ernie, Annika and Arnie look over our shoulders. "There really isn't a comparison out there where a company opens its doors, and says 'Come on in and take a look'", says Zien.

You don't need to win a major to take advantage of the Callaway Performance Analysis System. This facility is open to the public, and available to golfers of all skill levels. When I inform Marc Zien that I play to about



a 15-handicap, he tells me – with a straight face, no less – that most of the golfers he sees can't touch that. Hearing that makes me giggle audibly as we prepare for an hour and fifteen minute sequence that's equal parts swing analysis, golf lesson and custom club fitting session.



"No matter what, everyone will benefit from a custom club fitting, even with something as small as grip size," Zien says to golfers contemplating custom fitting, speculating that only about 15% of us play using custom clubs. "Retailers will be able to help, but just not as in depth as what you get here."

What you get *here*, with the Callaway Performance Analysis System, is a precise analytical breakdown of your swing components: club head speed, ball spin speed, launch angle, club head path and attack angle. From the information that's gathered, the club specialist assesses which shaft type and length, lie angle and grip best fit your game.

We enter the one of center's club fitting bays, which is fronted by the 30-foot wide canvas of #18 at Pebble Beach, about twenty feet forward of a synthetic tee box. Dozens of Callaway clubs line the darkened suite. Overhead, two high-speed cameras focus on a center spot on the hitting mat. Specially marked balls crossed with lines from pole to pole and side to side, are laid out.



Club head sensors and the cameras feed the computer data about a golfer's swing prior to contact, at impact, and as the ball flies toward the simulated fairway (or the simulated rocky shoreline, as the case may be). The data from the lines on the balls is digitized and digested by the CPAS computer. Simultaneously, it animates the ball's trajectory.

Two large flat screen plasma TVs are mounted behind the teeing area. On one, a progression of dots traces the exact path your ball would have traveled had you decided to pony up the cash to play Pebble Beach. On the other, the numbers regarding the swing that got it there, are crunched. The feedback is delivered within five seconds of the swing.

Zien says of the statistical data he sees, "It's going to show me everything I need to know to get you in the right golf club. I'm here to interpret the numbers. Your swing is going to do all the work."

After an explanation of the technology, originally developed for Callaway's research and development department, and a measurement of my height and hand size, I'm on the tee. Before I hit, I'm told "If you don't like your shot, I've got a delete button." (I ask if that button might be available during my next round.)

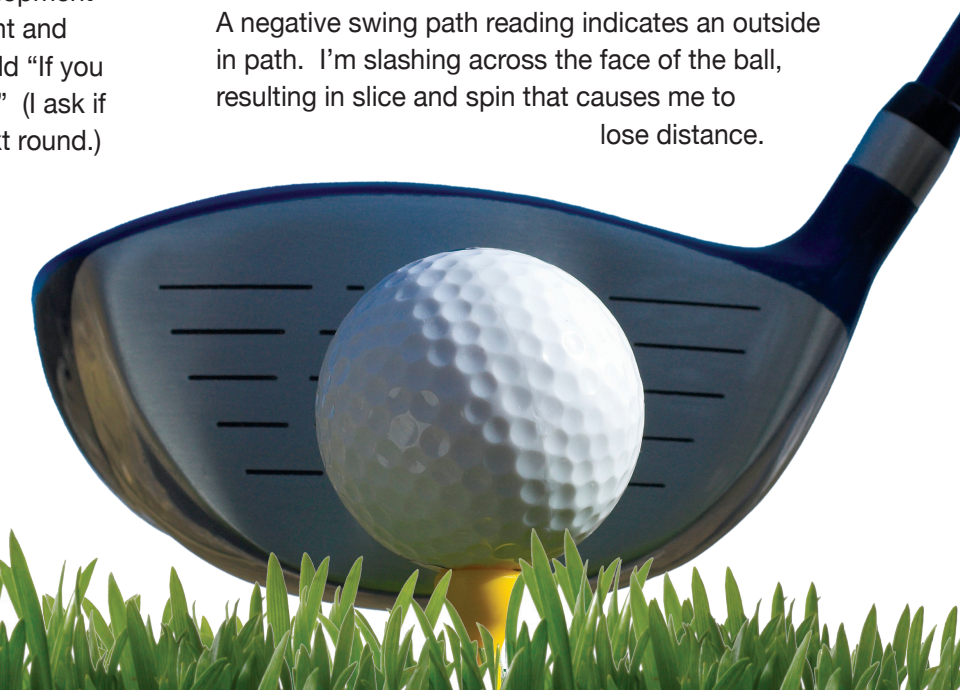
After I take five swings with a Callaway X-20 6-iron with a standard length steel shaft, we've got some data to analyze. A cumulative image appears on the video screen, showing exactly where each of the shots would have landed in relation to the 18th fairway.

One on the beach. One flirting with it. Three on the fairway, but it's a *wide* fairway. The pattern splays out in rainbow colors like fireworks bursting across the monitor. On the data screen, numbers pop up that, to the uninitiated, are as cryptic as the scoring system for the FedEx Cup.

With just a glance, Zien makes his first recommendation.

Reading the data, he explains that my club head speed indicates I'd be better served by stiff steel or graphite shafts. From my launch angle, he assesses that I wouldn't benefit from Big Bertha wide sole clubs that would make me hit the ball higher. I don't need to hit it any higher, but like most golfers he works with, he thinks I might be able to hit it a little farther.

He explains that a formula has been devised that relates head speed to ball speed to come up with an 'efficiency rating'. The ideal rating for the 6-iron, the benchmark club of the fitting session, is 94%. I'm at 89%. Zien tells me each efficiency point converts to two to three yards distance. "So, we've still got another 12 to 15 yards hanging out there." I'm excited by the potential. "That just comes from you striking the ball better," he says, bringing me back to reality. A negative swing path reading indicates an outside in path. I'm slashing across the face of the ball, resulting in slice and spin that causes me to lose distance.





I've been struggling with it for years. He's confirmed why it happens after five swings. For the average golfer, the custom club fitting session often becomes more of an invaluable custom swing analysis and high-tech lesson.

The numbers Marc Zien is seeing lead *him* toward selecting the right clubs for *me*; his analysis leads me to the conclusion that I need to spend more time on the driving range.

Additional data shows my take away is a little shallow, my ball spin rate is a little fast, my ball flight is a little high, my hands are a little open, and I'm not rolling my right hand over at impact. "You're a lot more consistent than you think you are," my instructor says, reassuringly. "It's just that sometimes you're doing the wrong thing over and over again." Not reassuring, but accurate.

The five-shot sequence is repeated with a graphite 6-iron with remarkably similar results, except I've gained a few yards with the graphite shaft. More importantly, I've started to adjust some of the swing flaws Marc was quick to point out. There's a symbiotic relationship between the swing analysis and the custom fitting process. "If I can get you to start swinging inside out, then I can figure out how to put the right club in your hands," Zien says.

Next, a strip of tape is applied to the face of the 6-iron which determines lie angle: simply, whether the heel or toe of the club is favored at impact.



Seeing the tell tale scuff at the toe, Marc recommends irons that will increase my lie angle, in order to get more club face squarely on the ground at the point of impact.

As we move on to hitting a Callaway hybrid club, I'm trying to keep a simple swing thought standing over the ball. But after seeing all the data, that's not so simple. During my takeaway, I'm wondering, "Hmmm, what adjustments can I make here to bring my ball spin rate under 5000 and get my efficiency index closer to the perfect 1.4 head speed to ball speed ratio?" Nope. Not this time. Over the top. Outside in. Short and right.

Marc Zien, a former player at the University of Tulsa before coming home to Southern California, acknowledges the amount of information can be overwhelming. "You've got a whole bunch of numbers going through your head you've never seen before."

After five swings with the Callaway hybrid, then a driver, the data is as revealing as a polygraph test. As my club specialist said it would be, the information shows remarkable consistency in my somewhat flawed swing. Zien continues to make notes regarding the clubs he'll recommend; at one point telling me I just *missed* a swing with a driver. I hit it a little thin. His back is *turned to me* at the time. He's so in tune with swing analysis, he can generally tell how good a swing is by listening to it. Or maybe he's just seen enough of mine.

In the final stage of the fitting, just before we leave the testing bay, we measure my hands for the right grip size, and Marc reiterates that even a small adjustment here could have dramatic results in the way a golfer turns his or her hands over at impact.

Marc prints the information he's compiled, assembles a portfolio for me, and we sit down in the atrium of Callaway's headquarters, to assess all the data and review his recommendations.

He says he'd put me in a set of Callaway X-20 irons, with standard length stiff graphite shafts, and tilt the lie angle one degree up. A 9 degree FT-5 driver constructed with a draw bias to offset that slice is suggested, along with a Callaway X hybrid club, again with a stiff graphite shaft, and HX Tour balls. There's no pitch to sell me new equipment, however. That's a decision the club fitters leave to the individual. "We're just here to fit," says Marc.

The Callaway Custom Club Fitting Experience runs \$150, but each visitor receives a \$100 certificate to use toward any purchase of \$400 or more. Callaway also provides a goodie bag at each session that includes a dozen golf balls (the type determined to best fit your game), a personalized engraved bag tag, and either a Callaway hat or golf towel.

