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The Teludyne Tech (TTI) Straightjacket

Accuracy Technology Comes of Age

by Paul Helinski & Ben Becker

When I first heard about the Teludyne Tech (TTI) "Straightjacket," I was extremely skeptical. I have seen literally dozens of products come and go over the years that claimed to increase accuracy by "reducing barrel harmonics." I thought that the Straightjacket, if I bothered to waste my time on it, would turn out to be just something else to throw on the pile with all of the bore treatments, weights, stocks, stock beddings, even something resembling electrical tape, that have crossed my path over the years. Nothing, in my opinion, could make a big difference in long range accuracy beyond what we knew up until now. If you want a rifle that would reliably shoot sub-MOA, you had to work up loads, build your own consistent match ammo, bed or free float the action, get the best trigger, the best stock, and especially the best and most expensive barrel. Teludyne wasn't going to convince me that match grade accuracy would come out of a regular stock rifle with their "new technology."

It is hard to explain what the Straightjacket is. This is not an in and a quarter heavy bench rest barrel. It is a regular rifle barr like the one above it, with a steel sleeve fitted to it that is filled with a proprietary media and capped. The muzzle break is optional and the rifle comes back with an separate crown protector.

The most absurd about thing about the Teludyne story is what they want you to do with your gun. This is no "try it and see if you like it" product. They want you to send them your rifle, after which they will take it apart, press fit (at something like 50,000 pounds of pressure) a steel sleeve around your barrel, then they fill that sleeve with a proprietary compound, filling in all around your barrel. Then they weld a permanent cap on top, grind and sand your stock down to fit the new inch and a quarter thickness of your new "Straightjacket"ed barrel, then put the whole works back together and send it back to you.

Our Straightjacketed Sako A7 ready to rock with the Vortex Razor HD.

Who in their right mind would send a perfectly fine but maybe not as accurate as I'd like it to be rifle out to be modified to such a degree, with experimental technology? This is a permanent deal. Love it or hate it, your rifle will never be the same.

Well it turns out that I was willing to do it, with two rifles in fact, and you aren't going to believe the results. You are

however welcome to come to sunny South Florida this winter and try them for yourself if you like. I know the discussion boards will be buzzing with disbelief as soon as this comes out and I welcome all comers. I feel priviledge to be one of the people who got a Teludyne gun "back when nobody knew about them" and I plan to keep my guns and shoot them a lot.

Rigidity and Heat

I was introduced to the Teludyne technology in May of last year at the NRA show, while setting up the GunsAmerica booth with our crew. Two gentlemen approached me and offered me a brochure about a new accuracy technology that one of them, a Mr. Alan Adolphsen, had invented several years before. Instantly visions of the electrical tape guy flashed into my mind. I tried to blow them off, but there was an earnestness to them that made me stop what I was doing to listen.

The other gentleman, Mark Hatfield, explained that Mr. Adolphsen had discovered that accuracy in rifles and the improvement thereof was not what we have thought it was all of these years. The phenomenon all of us know as "barrel harmonics" existed, but there was no mystery to it as most of us thought. "Anyone who has ever cut a gun barrel, he explained, knows that there is no way within the bounds of our manufacturing capabilities to make the hole perfectly center, all the way perfectly through the length of the barrel. The steel itself has different densities, however slight, and this effects the resistance to the cutting tool. "

Even the most precise barrel maker is going to have some minor inconsistencies in straightness and wall thickness of every barrel. Under normal conditions, if we fired only one bullet at a time from the gun with complete cool down in between, this wouldn't be an issue. But as the gun heats up, the varying wall thicknesses push and pull the barrel along its length, because it can't by the laws of physics expand and contract evenly. This effects accuracy, the phenomenon we call "barrel harmonics."

"All of these years, " Mr. Adolphsen piped in, "we have been obsessed with perfect loads that we thought "matched" the barrel. We have been fiberglass bedding our stocks and free floating our barrels to relieve the touch points along the barrel length that theoretically made our barrels pull themselves out of perfect harmony. We have invented the most sensitive and ergonomic trigger systems and gun stocks to reduce as much human error as we can. But all the while we ignored the simple fact that the cutting tool wavers during the manufacturing of our barrel, and when we heat up that barrel by firing more

Ben sighting in the Savage Axis after it's Teludyne treatment that is YIKES permanent.

This was our best target from the Savage, .866 inches at 500 yards.

than one round, the steel contracts and expands, exacerbating the variations."

The Straightjacket is designed to take away the heat. In physics and electronics parlance, the Straightjacket is a "heat sink." They won't tell me exactly what is in that mixture they pour in the sleeve around your barrel, but I suspect it has some aluminum or copper in it. Both metals blend well with others and are more heat conductive than steel. By the laws of physics, if you bond a piece of aluminum of copper to a piece of steel and heat up the piece of steel, the heat will race to the other metal, because it offers less resistance to the travel of the heat. The heat will then live in that metal and bleed off into the air before it returns to the steel.

In practical terms for the Straightjacket, this means that you can put five quick rounds through your bolt rifle, open the bolt and stick your pinky in the chamber and it will be cool, while the outside of the Straightjacket will be hot, but not as hot as your bare rifle barrel would be because of the increased surface area that the Straightjacket provides. The jacket material sucks the heat away from the rifle barrel itself. Therefore the cutting inconsistencies in the barrel that Mr. Adolphsen have explained are never amplified, and your rifle shoots more accurately. To quote Teludyne, "the Straightjacket completes the rifle barrel."

Understanding the technology breaks down to rigidity and heat. The sleeve of the Straightjacket is 1 ¼" thick and resembles a heavy barrel rifle, but is much lighter than a comparable thickness solid steel barrel, which would be around 12 pounds. The StraightJacket Barrel System adds about 1.5 pounds or less. The inner barrel (you remember, the one that used to be your rifle barrel), is bonded to the poured in media material, making the whole unit one, and adding a great deal of rigidity, preventing any real flex. Then you factor in the heat, or lack thereof. The barrel stays cool, so it never goes out of whack. I have a friend who hunts prairie dogs and he is sending his fluted custom .22-250 dogtown rifle to Teludyne, because, in his words, he "can't shoot ten rounds out of the gun without the accuracy going south." With a Sraightjacket fitted rifle, your accuracy stays constant, no matter how many rounds you pound through the gun.

The Guns, the Straightjacket, and the 500 Yard Targets

I sent Teludyne two rifles, both of them are in the companion article to this piece, Out of the Box MOA. One is the Sako A7 in .30-06 and the other is the Savage Axis in .30-06. Both rifles performed in exemplary fashion at 100 yards with no Straightjacket, so Ben took them to the

The best Sako A7 target, 1.10 inches at 500 yards.

Ben with the lean and mean Sako.

500 yard range in Tampa to see what they would do with their new and very permanent heat hungry barrel sleeves from Teludyne.

For those of you reading this who will actually make the jump and send your guns to Teludyne, the company seem to be very together as far as getting you your gun back in a timely manner. It was only a matter of weeks for two guns. Teludyne claims that they can currently modify 100 guns per month, with the facility space for 4 times that production level.

For this article, I should mention, I elected to not get into the AR-15 side of the Teludyne story. I feel that a bolt gun has much fewer variables in it and that the technology needs to be measured standing by itself as much as possible. I also didn't send a wood stocked gun or a stainless steel barreled gun, all of which the company can easily handle. I have included some pictures, provided by the company, of other projects they have recently completed to give you an idea of the custom nature that they operate under.

Prices for the Straightjacket on a carbon steel bolt gun start at $349. You send in your rifle and they send it back. Stainless, aluminum, and the AR configuration are all varying prices, but not far away, and you can buy a whole upper or complete rifle from Teludyne in whatever rifle you would like. As you'll see in a picture here, they recently did a Ruger #1, which is one of my favorite rifles ever, and not a gun that people modify lightly. The entire price list and contact information can be found on the Teludyne website of course, as well as the process they require to send in your rifle.

You will notice that there is more than one target here from each rifle. If there is something I would like everyone to take away from this article it is that Ben and I went into this as skeptics and did not cherry pick the results. Target after target after target came back on both rifles with both guns shooting into an inch to an inch and a half at 500 yards, and it didn't seem to matter how many rounds of standard Hornady brown box or Hornady Superformance we put through the guns. In total Ben shot 160 rounds through two guns, some at 100 yards to get a baseline, but most at 500 yards in light to no wind on a 90 degree Florida day.

The optic Ben used was not the same as for the Out of Box MOA article. Vortex was kind enough to send us their $2500 MSRP (street price under 2k) scope called the Razor HD, in 5-20 power X 50mm. We are doing a full review of this incredible piece of technology itself apart from this article, but the results here have to be taken in context of what scope we were using as well as to whether

Five rounds from the Savage into 1.46 inches at 500 yards.

Another five rounds from Sako into 1.45 inches at 500 yards.

you could duplicate the results. Ben is an accomplished US Army Sniper and can shoot like nobody's business, but the Razor has a reticle that grows and shrinks as you zoom the scope. So at 100 yards, the reticle is covering the same percentage of the target as it is at 500 yards. It also has a fine tunable and viewable parallax adjustment with comprehensive directions on how to correct the sightline of the scope to the shooting line of your rifle. Our friends at Vortex made a huge difference in the hard data we were able to collect for this article. The scope is amazing.

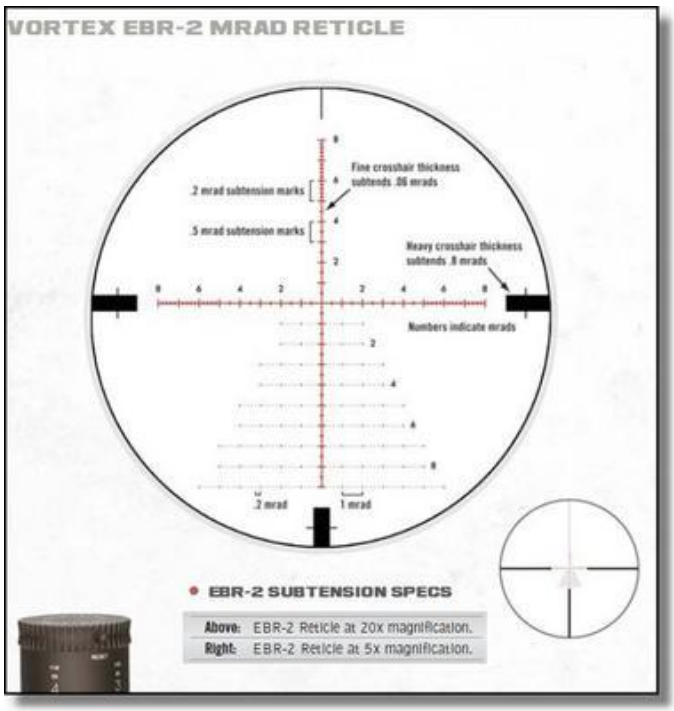
I'm not going to bore you with calculating the percentage of one "Minute of Angle" or MOA that both the Sako and the Savage shot with their Straightjackets. The Sako ranged from an inch to an inch and a half reliably at 500 yards, and the Savage even had a couple targets under an inch. Both guns are essentially low cost hunting rifles with decent but hunting triggers, and have hunting stocks. The ammunition was not fine tuned for the guns by a hand loader. We went to Bass Pro and bought it off the shelf just like you would. Granted we didn't test either gun without the Straightjacket and with the Razor HD, but to say they improved would be a significant understatement. You can pay $2,000 plus for a custom made accurized rifle and not get these results with factory ammo.

Competition & The Biathalon Twins

One of the reasons I so readily sent two fine rifles away to be 'jacketed was because the Teludyne technology is not actually a new and experimental product. It was invented in 2004, but instead of rushing it to market (because Mr. Adolphsen knew he had something real), the Straightjacket took the long road to commercial availability. It had to be patented, and long term financing had to be secured so that the company and not just the product would be solid for the long haul. The gun buying public and the gun industry in general doesn't accept anything new very easily. As my friend Michael Tenny from Cheaper Than Dirt once told me, "it took the gun industry 20 years to adopt screw in chokes." In our industry and in our gun people mindset, The Straightjacket could spit 24k gold quarters every round it fired and it would still be a long time until it gained wide acceptance.

That hasn't kept it from finding its way into competitions the world over since it did go commercial in 2009. Nobody is keeping coherent records of what they have won, but according to Noel Lasure, their VP of marketing, they have stock M77 Rugers out there winning bench rest NRA High Power competitions all over the country. At the FN sniper competition in Maryland this year, the Maryland State Police team shooting StraightJacketed rifles came in 4th in the grueling unknown distance

The Vortex Razor HD made this level of accuracy possible. I don't think this could have happened with an everyday optic.



When I first looked down the Razor and zoomed I was blown away. The reticle zooms with your zooming, and for very close it is joined by a very effective battle site.

Tracy & Lanny Barnes,
2006 & 2010 Olympians
in the Sport of Biathlon, competing in Canada with thier Straightjacketed Anchutz rifles.

competition and beat elite sniper teams from all branches of service and federal law enforcement as well as Special Operations units.

Perhaps the most notable story is that of Tracy and Lanny Barnes, the US Olympics Biathalon Twins. They are using Straightjacketed Rifles and are winning all sorts of competitions and setting new records. They were 2 of 17 to ever shoot perfect scores in the North American Cup and they did it with Straightjacketed rifles. This is part of an email that they recently sent to Mr. Adolphsen after returning from a match in Canada.

"We wanted to let you know that it is very safe to say that the Straight Jacket is extreme cold certified. We had our barrels in below zero temperatures for up to 2 hours and the groups were as tight as if it was 60 degrees! We don't see this very often with the anschutz barrels and many people were having problems with their groups spreading because of the cold. We have been extremely impressed with the size (or lack there of) of the groups with the straight jacket! We were
putting 5-10 rounds right on top of each other. We couldn't be more pleased. You guys really have a good thing going. Also a warning… don't be surprised if all of the U.S. and Canada (and soon europe) will call you up in the spring and be willing to pay big money to have the TTI installed! We had so many people asking about it and they are interested and willing to pay a lot for such a great product." -Lanny & Tracy Barnes, US Biathlon Team

The top rifle is a Remington model 700 XCR in .300 win mag with a carbon steel StraightJacket Duracoated flat black. The bottom image is of a Winchester model 70 Safari magnum in .3 H&H magnum w/ a carbon steel StraightJacket also duracoate flat black.

FNAR .308 with StraightJacket installed and the 14 shot group target.

Not Just for New Rifles

It is hard to just dispose of things that you thought you knew in life, things that have governed your paradigm and been key factors in decision points (W pun intended). To believe in the Straightjacket is unfortunately a case where you have to stop believing and parroting aspects of accuracy that you have been taught and perhaps have even taught to others yourself. One of those is the concept of a "shot out" barrel. We have all relegated guns to the back of the safe or sold them off for cheap because we felt that the accuracy potential for the gun is gone. I know shooting competitors who consider 1500 rounds the limit for a service rifle match, and will actually change out the barrel before waiting for the accuracy to go down.

Alan Adolphsen shooting his Straightjacket equiped AR. In carbine length with 16" barrel has been described as boringly accurate out to 800 meters..

That is why one of the most disturbing things that Mr. Adolphsen taught me on that exhausting NRA show day in May was that the Straightjacket could make a tack driver out of your old and worn out deer rifle. I personally haven't seen this, but the claim is that you can send them an old gun, with poor rifling, that you consider to be "shot out" and they will Straightjacket it and you'll get it back

shooting into an MOA. Apparently the rigidity of the bonded jacket itself takes the flop out of an old barrel, and contrary to what we believed, it is floppiness and not bad rifling that causes the majority of the problem with an old gun. I may send them my old Mosin 91/30 and let them show me.

The AR-50 in the picture is the one tested with the 45 consec rounds and a mere 91 degree chamber temperature. It gaine only 3.1 pounds with addition of the StraightJacket.

Torture Test

No, first off I can say that I am not going to go outside and beat my Straightjacket rifles against the nearest palm tree. But I feel that there are valid concerns about the durability of the Straightjacket once it is on the rifle. Teludyne fully expects the military and police departments to adopt the Straightjacket, and I wondered what the thing would do if you tripped in urban combat and whacked the thing at a 90 degree angle on a concrete block wall. Is the whole works just going to crack inside and slide off the front of the gun? It is, after all, not welded to your barrel. The sleeve is press-fitted, or swaged, onto the front.

A Ruger #1 with a beautiful laminate wood stock and stainle action w/ polished stainless StraightJacket in .204 Ruger.

Teludyne claims that in the over five years from invention to commercial application, they have submitted the Straightjacket test guns to all sorts of abuse you could imagine, and there was never any evidence of internal damage or failure. The have pounded on them with sledge hammers and then taken cross sections of the barrel. Nothing. No cracks, no separations, and certainly no systemic failure.

To quote Noel Lasure, “Using Blow torches, chop saws, and big hammers we have tested the StraightJacket to withstand the abuse we know a Soldier would give their rifle and in every case the rifles have shocked us by surviving.”

Extreme Stories for an Extreme Invention

You can see from here what Ben and I actually tested. But I feel that the Straightjacket story has a lot yet to be told, and it could end up being a very long story. It seems that the heat sink nature of jacket material has had unexpected results in guns that have been shot a lot since being Straightjacketed.

- USSOCOM re-barrels an AR-15 pattern rifle after 6000 rounds. Teludyne has an AR with far in excess of 6000 rounds, upwards of 10,000 rounds, with no noticeable throat erosion, and a great deal of these rounds were fired in full auto mode. This could be the end of life expentancy for competition rifles. You have one gun made and it lasts forever?
- At a recent 50 BMG shoot, a StraightJacketed Armalite AR 50 was shot for a 45 round sustained fire test, using Military surplus machine gun ammo. On an 86 degree day the chamber temp never got above 91 degrees. While every other rifle on the range were being left to cool after 3 or 5 shot groups for fear of damaging their rifles and loss of accuracy.
- At the recent big 3 media event in Kansas the only semi auto rifles that didn’t go down from all the shooting were the ak series guns and our StraightJacket AR rifles. When the heat is reduced at this rate the actions stay cleaner longer allowing for longer shooting intervals.
- You can empty a 30 round mag on an AR full auto and still put your hand around the barrel.

Can My Gun Be Straightjacketed?

Most rifles can indeed be Straightjacketed. All bolt guns, regardless of barrel and stock material are candidates, and all AR-15 pattern rifles. Most single shot rifles can easily be Straightjacketed, as you see with our friend the Ruger #1. Teludyne has made a version for an AK pattern, but it is not in commercial production yet. Likewise for the FN-FAL, with great results. The M-14 is a solid no, as is the CETME and HK-91 tactical rifle pattern.

Whether your gun should be Straightjacketed is of course up to you. But I agree with Lanny and Tracy, this isn't going to stay a secret much longer and when demand comes up, even at four times current production, the price is going to come up. Get your gun done while they are still having to individually sell people on the technology. There is no planned price increase as of today, but you never know.

There is also a serious risk that one of the big gun makers will buy the company. I know that several of the "Big 5" have been looking at them for licensing possibilities, and we know from experience that for one of those Big 5, money is no object. If Teludyne gets bought, there will be no telling if you will be able to still retro-fit your rifle, or if you will be forced to buy one brand of rifle, in whatever configurations they offer.

At present Teludyne is not selling whole guns, but if you want a whole gun you can request it. They will purchase the gun from a distributor and Straightjacket it for you, then send it to your FFL dealer for legal transfer. If you feel like you have questions, feel free to call them. They are still answering their own phones. Contact details are at www.teludynetech.com