



"Everyone is entitled to my opinion." Madonna

MAGAZINE ENGINE BUILDERS

If you want to know how something works ask the person who uses it, not the person who made it. Certainly, without a doubt, don't ask the person who sells it. As with any type of product, in any type of market, in any society or profession, there are falsehoods. Mostly in the advertising/marketing of many products claiming to do something they don't. To say that they are preying on the ignorance of the general public doesn't seem fair. How can people be expected to know what performs as advertised and what doesn't. We, the public, choose what we buy mostly based on how convincing a particular advertisement was to us. We realize that the first time purchase of a product may be risky because we may find out that it isn't what is was touted to be. With most products it's a simple matter of trial and error until we find something that "works" for us especially if it's a product like spaghetti sauce or under-arm deodorant. If it's something a little more technical like tooth paste or a lite-bulb it's not so easy to determine if you've got the best or even a reputable product.

Sometimes there are products endorsed buy the so-called professionals that can actually have negative results. They can harm you. These types of products usually don't last long before they are weeded out . But for the majority the con goes on and on.

This charlatanism certainly runs rampant in the automotive /engine industry. I always wonder how people can be so gullible when I seen them pouring certain chemicals in their engine oil, or using certain ring packages, or for that matter buying European cars. "The Ultimate Driving Machine", for Pete's sake, give me a break. That's just a catchy slogan dreamed up by some ad agency. How about a spark plug claiming to give 5 extra miles per gallon. Unfortunately, many people believe that because they've heard it on TV or read it in a magazine it must be true. That's the way advertising works by staying in the gray area or on the fringes of the truth. Maybe that's what Mark Twain meant when he said *"most writers regard the truth as their most valuable possession, and therefore are most economical in its use."*

These are educated people praying on the gullible public because they realize it's very hard to prove them wrong. *"A man who has never gone to school may steal from a freight car, but if he has a university education he may steal the whole railroad.* Franklin D. Roosevelt

Advertising is one of the worlds major industries and it's a necessity for most businesses. You can't expect to sell your product if no one knows you have it. None of us are naive enough to take advertising at face value. Products are always overstated and over-rated by manufacturers and we accept that as a way of life and we compensate for it. After all, every product can't be the best. We expect these exaggerations.

"Advertising is the rattling of a stick inside a swill bucket." George Orwell

There is only one thing that an engine builder can be relied on to do, and that is to contradict other engine builders. In fact, if all the engine builders were laid end to end, they would not reach a conclusion. The problem is that anyone who has ever read a magazine considers himself an engine builder. Automotive magazines are quite often nothing more than cess-pools of bad information. When I read some of the garbage they print they seem like hucksters trying to sell their product by making false or exaggerated claims. I get so sick of reading about people who should be prosecuted for engine mal-practice but they get all this "ink" just because they advertise in these magazines. They get a lot of notoriety and make money from it because they can make conjecture sound like the truth. I guess they figure its up to the reader to prove them wrong. Can they (the people the magazines interview) be so stupid as to believe they are putting out accurate information. *"It is not the crook in modern business that we fear, but the honest man who doesn't know what he is doing."* - Owen D. Young

The technical editors of these magazines call or actually go and see their advertisers to solicit an exchange of words (technical stories about the virtues of the advertisers product) for advertising dollars. I was once involved in the manufacture of a product (the Kool Suit) which we advertised in some of the racing magazines. The technical editor of one of the magazines came to our shop and said all the nice things any salesman must say to a customer to keep them buying the product - in this case advertising. He wouldn't have been there if we were not a customer. They wrote an article about our product and misquoted us on some things but maybe that's to be expected. Anyway, that's how it works. You scratch my back and I'll scratch yours. Magazine readers need to understand this concept and realize that what they are reading is heavily biased. It's just selling. Some, but not all of the technical editors are knowledgeable enough to realize that what they're printing might not be the truth. But it's legal. Like they say, "it's a court of law not a court of justice." *"Pretty much all the honest truth-telling there is in the world is done by children."* Oliver Wendell Holmes

To me, because of what I do, magazines are the curse of my industry. Even when I watch races on TV I feel somewhat tainted when I see ad's for oil additives and spark-plugs making claims that any semi-knowledgeable person knows are ridiculous lies. *"Honesty is for the most part less profitable than dishonesty."* - Plato

When doctors want to share something they've learned with others in their profession they submit their paper, for example, to the New England Journal of Medicine. This magazine then submits it

to a panel of other doctors who review it for scientific validity and uniqueness of theory. We have an equally impressive medium for getting accurate scientific data into the hands of anyone who desires it. It's called the Society of Automotive Engineers and you don't have to be a member to buy their papers. An engine neophyte seeking to learn about the internal combustion engine should read some of the many wonderful (but sometimes hard to understand) text-books and SAE papers written on just about anything you would want to know concerning engines or automobiles. These publications will help you separate the wheat from the chaff.

These magazines that I speak so lowly of are published in Hollywood (that alone ought to tell you something) and I see them as the **National Inquirer** of the high-performance car and boat industry. The reason I try not to read these magazines is that they don't seem to be above printing anything the advertiser says whether it's accurate or not. I think that's because they (the magazine's technical editor) believe they are talking to "experts" or maybe they realize that most things they print can't be proved anyway. Everyone has a right to their opinion but don't try to pass it off as fact. I have enough confusion in my head without taking on someone else's also. *"There is so much to be said in favor of modern journalism. By giving us the opinions of the uneducated it keeps us in touch with the ignorance of the community."* Oscar Wilde.

I am taking the liberty of mentioning that there are only a couple of technical writers for magazines that have credibility with me. Over many years they have shown the ability to present high quality technical information about engines. So, when I see an article written by one of these few, I read it (but only if someone loans me the magazine). I like reading articles by engine nerds who operate good dynamometers (like a Superflow) and base their opinions on what they have themselves observed. Hopefully they have practiced what would be considered a minimum of good scientific procedures - like repeating runs (thank you Jere Stahl) and going back and testing the original setup before they condemn or endorse any product or procedure. I think David Vizard, more than any other over the years, has done more to put quality information into the hands of engine enthusiasts. He too operates a Super Flow dyno. I have always hoped and usually felt that what he reports is what his data has shown and not been influenced by his customers which seems like most of the time are manufacturers trying to validate their products. I hope he practices good science in the dynoing process. He's written a lot of words over the years and I always tell my engine students to buy his books and not to waste their money on any of the other stuff.

Certainty, Kevin Cameon is another quality source of engine wisdom. Even if you're not a motorcycle nerd I would recommend buying and reading the engine stuff in his book [SPORTBIKE PERFORMANCE HANDBOOK](#). Also, Dema Elgin (Elgin Cams) has a very interesting book which is a compilation of notes that include some very hard to find facts and tidbits of engine and engineering insight. A "must have" if you're an engine nerd.

I don't like to read reports about engines dynoed on old obsolete water-brake dynos - like I used to have. I know their shortcomings regarding controllability (is that a word) and therefore repeatability. They can however, be made to work decently with a good data acquisition system.

What is really needed for adequate repeatability is a dyno where the load and rpm are controlled by a servo-valve. The other thing though, that I find the most offensive, that makes my blood boil, is when I see a magazine article showing a picture of an engine on a dyno with an electric water pump. How can I trust any of their presented data when I realize what must be going on with combustion in the back of their cylinder heads. Again, I digress.

A problem that has come up more than once is that my customers or potential customers read this garbage and believe it. They read the opinions of pseudo-experts and want me to build them an engine based on Hollywood hear-say using parts endorsed by these magazines. They think just because it's written it must be fact. A better approach might be to do rapid calculations in their heads wherein they subtract superlatives, figure the square root of an absolute and then multiply by maybe. I'm not in the parts selling business and the components I use in my customers engines I choose because I think they are the best for the application and not because I profit from their use. *"I have convincing proof that I speak the truth:" my poverty" Plato*

The aftermarket parts industry is not perfect. There are many bad parts that you can buy and put into your engine that will right away, or eventually cause it to fail or to detract from its performance. It's too easy to spend twice as much for an aftermarket part and get half the performance that a stock part could have provided. Using proven quality parts is like wearing a condom. It's practicing safe engine building.

Speaking of bad parts. Last year we had an interesting little experience. We were dynoing a big-block Chevrolet and since we have a large data base on this particular engine configuration we felt we could pretty much guess what the horsepower and horsepower peak RPM should be. The engine didn't come close to our expectations. We fought it for days on the dyno changing many components and redoing fuel and spark loops. Just before we were feeling we had to cut our losses and ship it I decided to do something I had never done before - to check the timing under full load at the horsepower peak. Common sense tells you that is not the smart place to be standing with an engine running WOT at 6500 rpm and that is why I had never done it before. Anyway when I checked it I saw the timing was being retarded over 10 degrees. We changed distributors and got the same results. To make a longer story shorter, we changed to a belt drive (Jesel belt drive for the camshaft) and eliminated the problem. No more timing retard but we didn't help the horsepower however. When I installed the belt drive I put the cam on the same centerline and I guess what we gained from increasing the spark lead at that point was offset by the fact that the engine must have liked the camshaft retard at that rpm. With the belt drive we were able to retard the cam easily and pick up most of the missing power - but not all.

In conclusion, I immediately condemned all timing chains since I didn't see anything different about that one. Since then I have checked many engines (at high rpm and full load) with timing chains - but none of that brand - and have found almost no retard (2 degrees max). Here's another case where an aftermarket part was worse than a less expensive stock part would have been. Many aftermarket manufactures don't have the resources to do a lot, if any, testing on their products. We (yours' and usins') are their testing department. This particular company (Cloyes)

however does have dynos and must have tested their own product. Was the one I got a fluke or did they not perform the same test I did. How long do you think a car company would be in business if they tested their products in the same way. General Motors has a large facility for crash-testing their cars and they crash one every day. That alone is a lot of money for testing.

It seems that some manufacturers consider some of their products a success if somebody buys it, not whether or not it really works. I, as well as most engine builders I am sure, could write a book on the junk parts we have encountered. Maybe that's part of what being an engine builder is about - re-engineering other peoples pooppy parts.

"We are all manufacturers - some make good, others make trouble, and still others make excuses."

Because we are a dyno facility, over the years we have been approached by several manufacturers and salesmen of engine related products. Some of these products have been ridiculous contraptions that were obviously designed only to separate money from the public. . In these situations we try to keep an open mind and be professional - but it's hard. They usually want to pay for dyno time with product or give us a piece of the action so fortunately it is easy to scare them off with the expected dyno costs.

Whenever you read a article look to see if the person, or company, they are writing about is advertising in the magazine. You'll find that they almost always are and that should say something about why they are getting the magazine space. It's because they paid for it not because they deserve it. To insulate myself from the Hollywood hype I would only like to read things that have zero advertising in them. But maybe that isn't good either. Maybe I need to read this stuff in order to understand where my customers are getting their warped ideas and to prepare my defense when I'm confronted with it. It's becomes very hard to argue against things that are printed. Maybe I should take Mark Twain's advice. He said; *"Never argue with people who buy ink by the gallon."*

It's OK to admit that you may not know exactly what goes on inside an engine. It may even be OK to admit you have made a mistake before. The only people who never make mistakes are the people who don't do anything. I seem to encounter more and more engine builders who have trouble admitting a mistake. History has actually remembered people who have made mistakes. Take the case of William Shanks. Before computers, this English mathematician spent twenty years calculating 707 digits of pi from an infinite series. Shanks made a mistake on the 528th decimal place; all the later digits were wrong (hence - shanking the ball).

So instead of reading everyone's opinion of how engines work I think it would be much more interesting, relevant, believable and educational to hear about some of the mistakes other engine builders have made. Mine alone could fill a book. According to Niels Bohr I must be an engine expert; he said *"An expert is a person who has made all the mistakes that can be made in a very narrow field."* I can look back now and laugh at some of them but there are others that still cause

me to still shake my head in disbelief that I could have done something so stupid. So if we would confess our mistakes to these magazines instead of engine theories other people might benefit more by avoiding a situation than by being led down a garden path that might end in quick-sand. Sometimes it can be just as important to know what not to do as what to do.

It's a shame people are not willing to share their mistakes. I would really like to see and hear about some of the things that didn't work. It makes me feel more human and less reluctant to try new things when other engine builders tell me about their mistakes.

I feel a curious kinship toward other engine builders because I realize they must have to put up with the same types of customers that I do - magazine engine builders.

So, if you're going to persist in reading the tabloids, that's fine, and I reiterate - just because it's printed in a magazine or seen on TV doesn't mean it's the truth. I don't think the situation can be stated any better than this paragraph from THE GOD PARTICLE.

The tragedy in all this is not the sloppy pseudoscience writers, not the Wichita insurance salesman who knows exactly where Einstein went wrong and publishes his own book on it, not the faker who will say anything to make a buck - not the Gellers or Velikovskys (I think those are the cold fusion people). It is the damage done to the gullible and science-illiterate general public, which can so easily be duped. This public will buy pyramids, pay a fortune for monkey gland injections, chew apricot pits, go anywhere and do anything to follow the huckster who, having progressed from the back of the wagon to the prime-time TV channel, sells ever more flagrant palliatives in the name of "science." - Leon Lederman

Pat Usher