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Subject: Design Mistakes

Posted by [smartt](#) on Sun, 12 Mar 2023 21:48:21 GMT

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Shocking!

<https://www.diyaudio.com/community/threads/design-errors-in-commercial-equipment.396887/>

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Subject: Re: Design Mistakes

Posted by [Madison](#) on Mon, 13 Mar 2023 08:25:05 GMT

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What on earth is going on? Is it just a matter of the machinery being coded incorrectly when building the models? I'm shocked to see that.

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Subject: Re: Design Mistakes

Posted by [gofar99](#) on Tue, 14 Mar 2023 02:07:18 GMT

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Hi, I suppose it is many factors at work. One thing I run into all the time is that few folks really understand how things work and the consequences of how components are used. I hear it all the time in diy projects. I applaud anyone who wants to build things...but have misgivings about them being sort of plug and play builds. No understanding of how the thing works. Another thing I run into regularly is the "simulation" view. The individual will say either the sim said it would work (but didn't) or said the sim said it wouldn't work (and it does). Again no real understanding of how things work, component tolerances, necessary safety factors, and often really no understanding of what a particular component does. From the link it is clear that there are similar issues in commercial gear as well. I find it inexcusable to get capacitors in backwards, diodes that are not rated to handle the voltages, and marketing folks changing stuff for cost (or any other reason) that might have been well designed.

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Subject: Re: Design Mistakes

Posted by [Wayne Parham](#) on Tue, 14 Mar 2023 14:31:38 GMT

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I would also take that "complaint" thread with a healthy dose of salt.

There has been a "thing" between engineers and technicians for longer than I've been around.

The usual mantra from engineers is that technicians are stupid, don't understand their designs and hack up the products they attempt to fix. Technicians often say engineers have no real-world

experience and design things that can't be maintained. Both sides sometimes point an accusatory finger at one another.

And then there are armchair quarter-backs, naysayers, sockpuppets, shills and other kinds of ne'er-do-wells. The internet has made all that 1000 times worse.

I rarely trust reviews - positive or negative - on the internet until and unless something gives me cause to trust the site and/or the reviewer.

So be suspicious of the "information" on that thread.

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Subject: Re: Design Mistakes  
Posted by [gofar99](#) on Wed, 15 Mar 2023 02:23:46 GMT  
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Being a skeptic is good...but I have personally seen and had to repair some things similar to what was mentioned. To be sure there is a lot of good stuff out there and as a percentage the problem ones are a small part.....

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Subject: Re: Design Mistakes  
Posted by [Wayne Parham](#) on Wed, 15 Mar 2023 17:33:08 GMT  
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Well, yeah, I've repaired a bunch of stuff like that too. But then again, guys like you and I are "Nth degree" guys and we regularly redesign things or completely start from scratch.

I think my point was - actually a couple of points - were these:

1. Take everything on the internet with a grain of salt.
2. All products are man-made and come in various degrees of sophistication. Some are elegant and others more like a Rube Goldberg machine. Most could use some refactoring. But I'm not sure that means the designs are flawed as much as they could be improved.

Sure, there are absolute mistakes. And these days, it's worse 'cause a lot of manufacturers assume they can push out updates to make adjustments. But still, I think it's more productive to discuss specific products and the things we do to improve them.

Some examples that come to mind right off:

Audio Note Kit 2: When a 6550 gets old, it starts drawing excessive current. The cathode resistor gets hot enough to melt the solder. Suggested mod: Install an inline 1/8A fuse on both 6550 tubes in series with the cathode resistor. When a fuse blows, swap both fuses and tubes and the

amp is good to go for several years before it happens again.

Oldsmobile 455 engine: Journals are large so engine speed must be limited. And the engine tends to pump all oil to the heads. Mains often starve for oil. Suggested mods: Reduce journal size, improve drain-back flow and install oil restriction orifices in the main galleys.

I could think of dozens more, spend all day with it. Lots of cool little upgrades we DIY types do to improve our stuff.

But are these design flaws? A case could be made both ways. The Audio Note amp could have been designed differently. Or the cathode fuse could have been installed from the factory. But no big deal. I liked finding it, fixing it and suggesting it to others.

How 'bout the Olds engine? It definitely never saw NASCAR specifically for the reason I just mentioned. It would have eaten itself up in the first few laps. But it wasn't designed for that. It was designed to live between 500RPM and 2500RPM and to produce good power in that range. It can idle super slowly and still build enough of a hydrostatic wedge to keep the bearings alive. It just can't do 7000RPM, but the mods I suggested will keep it alive a lot longer at higher RPMs.

So back to the thread - Electrolytics in backwards? Really? I'm sure that slips by Q/C occasionally, but that's a definite quick failure mode. Diodes and transistors passing way more current than their maximum rated values? That's not going to live long either. I can't imagine seeing a large long-term production run with those kinds of problems 'cause every single unit would fail. The manufacturer would definitely find that out pretty quickly and correct it before resuming production.

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Subject: Re: Design Mistakes

Posted by [Rusty](#) on Wed, 15 Mar 2023 20:47:56 GMT

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I agree with everyone here. What was the question again? My gripe is the complexity of things. Why do fridges have to have internet connectivity? Car's with touchscreen interface and internet connectivity? And my washing machine for instance. It was acting unsuitably not filling and giving an error code. Emailing the mfg. I was instructed to see if the water pressure sensor had a bad hose or disconnected somehow. No & no, but I removed it and couldn't get continuity on two of the tiny terminals I saw a Youtube how to for. Curious I opened it up and saw it had an IC chip in there on a little board with other mini components. Here was a plastic part that cost more to ship than it's cost.

The machine works now. But everything must have IC chips in them these days. They're not repairable, just replaceable. And hopefully not a major part like a control module or something with major markup by distributors. Components and washing machines of old were much simpler and reliable.

Too bad it doesn't have internet connectivity, they could of diagnosed and sent the part to me at 10 times the cost of the part. Future smart models probably online soon.

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Subject: Re: Design Mistakes

Posted by [Wayne Parham](#) on Wed, 15 Mar 2023 22:49:48 GMT

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Dude, I'm so with you there. But I love (and hate) both "styles" of products for different reasons.

I love the new cars (and other equipment) with all the bells and whistles. I like all the new features. A lot of this "automated world" is what I've been working on for my whole career, so I'm definitely a fan. I do voice my opinion though - which is that we should be careful depending on updates to install bugfixes and features. But really, everyone in the industry knows that. We trade-off speed to implement for the certainty offered by extra Q/A time. Nobody wants to push out a brick.

So but that's also why I love the old stuff. Not just for nostalgia, although that's a big part of it. I also love the simplicity. And really, the reliability.

That's a two-way street though. The old stuff may last longer in some ways - being made to be repaired rather than replaced - but it also often has to be rebuilt more often. My cool old cars are lucky to get 100,000 miles, and by then, they're loose and sloppy. Harleys made before the Evolution motor in the 1980s wouldn't last 10,000 miles before they needed a rebuild. New cars easily exceed 300,000 miles and new Harleys just never wear out.

Another thing I love about the old stuff is - since I grew up with a high-tech mindset - it was easier for me to fathom a computer-controlled device than one that was pneumatically, hydraulically or mechanically controlled. So I was fascinated to see how things worked prior to the micro-controller days. Some of the things designed prior to the 1960s are ingenious.

We went to the moon without micro-controllers.

And nobody could "hack" into your stuff back then.

When you picked up the telephone, it always worked. Even if there was no power and nothing else worked. The phone did.

Anyway, I definitely hear you. Some new stuff has cool features and some is actually more reliable or long-lasting. But a ton of our new stuff is not made to last. It's just cheaply made junk.

And even if the new stuff is rock-solid, reliable and packed with really cool Jetson-family features, sometimes it's nice to have an old-school, pre-computer-era, built-like-a-tank "Made in USA" product.

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Subject: Re: Design Mistakes

Posted by [Rusty](#) on Thu, 16 Mar 2023 15:28:49 GMT

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Irony is the washer is a Speed Queen. Made in USA. They're suppose to have a good reputation with their high price. Which I went for after a Whirlpool went kaput. But like you've mentioned in this thread Wayne. You can't trust the internet for review or recommendation. It's all so agenda oriented. While I will say comparing the innards of the two washers. The American built is more robust. Stainless steel washer drum vs pvc plastic and cast structural pieces holding the moving mass together. Hope this was an aberration.

My sisters husband has a loaded Tesla. It'll back itself out of the garage. I asked him if all he had to do was whistle for it to do that. Guess not yet. But it's so sophisticated that it seems to me to be distracting. With a big laptop size touch screen to enable where you're going. My sister won't entertain the idea of driving the thing.

Strange, I miss clutches. The car I have now is the first and only automatic I've ever driven. Guess manual transmissions are a relic of history now. Occasionally my left foot searches for the clutch pedal.

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Subject: Re: Design Mistakes

Posted by [Wayne Parham](#) on Thu, 16 Mar 2023 16:09:14 GMT

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I hear you on the stick! I'm teaching my youngest son to drive standard, 'cause I love 'em and I think he will too! He's still band new with it, so we're still chugga-chugga-chugga but once he's got it, he'll be like you and me and every other red-blooded young man - loving the shift!

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Subject: Re: Design Mistakes

Posted by [Miami](#) on Sat, 01 Apr 2023 09:34:12 GMT

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The computer chip going into everything imaginable these days is planned obsolescence on steroids, in my opinion. Chips are "needed" because new jobs are needed. Nothing actually works better because of computer chips.

To add to what Rusty was saying, I have an old wall heater, gas, that I need to light because we're out of wood for the stove, and it just won't warm up outside yet. I remember having to light the pilot on a few of the same types about 15 years ago, but because the process is so simple, I can dig the process out of my memory banks and figure it out again.

If those units had computer chips in them, I probably wouldn't have to go through the simple "relearning" process. Just one push of a button and you have heat. That doesn't make the heater better. That makes it easier to use. And it also takes out the sense of personal accomplishment you get when you figure something out that you knew a long time ago.

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