

HOGTUNES

Audio Solutions For The Great American Cruiser

Hogtunes Inc. Unit#14-70 Ellis Drive, Ontario, Canada, L4N-8Z3

Tel: (705)-719-6361 Email: info@hogtunes.com

www.hogtunes.com

What is Amplifier Efficiency Anyways?

As the motorcycle audio world continues to evolve, the term amplifier “efficiency” constantly used alot-but what does it really mean? If you think of the power being drawn into the amplifier from the battery as 100%, and the amp is 70% efficient, this means that 70% of the power coming in gets turned into music, while the other 30% gets “wasted” off as heat.

For the last few model years of touring bikes, the HD charging system (if all is working properly) is rated to produce 50 amps of current. 50 amps is plenty if your wanting to power up a nice audio system, but what many people forget is that the bike requires 20-25 amps just to run! That being said, at best, you have 25 amps of available current to power all your accessories, which is where an amplifier’s efficiency can become a very important consideration.

An amplifiers efficiency drastically changes depending on how much power it is making at the time. Music has loud passages, and soft passages, so the “demand” from the music does not force the amp to be at full power all the time, just like a 100hp bike isn’t always making 100hp. If a manufacturer gives an efficiency rating, they typically give the rating while the amp is at full power. This is where the number “appears” to be the best. Remember... most music vs least heat! The sad part of that is that under most typical listening conditions, amplifiers are only ever making 1/3 (or less) of their available actual power. At 1/3 power, amplifiers are much less efficient and yield a lot more heat “per watt”. This info can be vital in understanding how numbers games start to get played!

Then, there are all the different classes of amplifiers, each with its own characteristics. AB, D, G, H, to name a few. As general statements, under typical conditions, AB designs were the happiest medium between good sound vs efficiency, and therefore, by far the most popular design for several decades. Class D first appeared in the late 50’s as an efficient way to broadcast CB Radio signals. For talking back and forth, Class D was fine, but for music, sounded awful due to the low switching speeds of the day. In the 70’s switching speeds started to increase, and Class D became a popular method of running low power AM radio stations—usually for churches, local community events etc. As switching speeds started to really increase in the 90’s, Class D became popular for home and car audio subwoofer applications. Big power with high efficiency could be had for a speaker that didn’t require super fidelity (low bass only). In these situations, other amplifiers in the system, or home audio receivers would power the “main” speakers, so as a whole, the system could sound pretty good. Over the last 5 years, chips have made HUGE strides in switching speeds which gives Class D designs very good fidelity with very high efficiency. Classes G and H are almost as efficient as Class D (at full power), but tend to be very expensive due to the high complexity of the circuitry to make it work, and sound good. When done right, G and H designs can sound very good. It should be noted, as a “general” statement, at 1/3 power, AB amps are typically 20- 30% efficient, G and H amps are 40%-50%efficient, while a good Class D design is 70%-80% efficient.

In closing—were not saying efficiency is the “be all-end all” of amplifier specs. On motorcycles, we have a limited power source to drive our accessories, so efficiency should be considered if you want to add big audio, or other current demanding goodies to your bike.