

# ELECTRIC GUITAR PICKUPS

Here is information that all guitar players (*and builders*) will find helpful.

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### What Are Pickups?

There are three main categories of electric guitar and bass pickups;

1. copper coil wound magnetic pickups (passive),
2. battery powered pickups (active), and
3. piezoelectric pickups.

This report only discusses the copper coil wound magnetic pickups.

The following components are what contributes to the tone produced by any copper coil-wound magnetic pickup.

- The thickness (*i.e., diameter*) of the copper wire in the pickup coils.
- The length of the copper wire in the coil (*sometimes referred to as the impedance*).
- The type of magnet used (*i.e., alnico, ceramic, neodymium magnet types*).

Together, these three items — when combined in various ways — are the core "recept" for producing different pickup tone "flavors". This is how we get the various pickup tones ranging from Muddy/Dirty Blues tones at one end of the pickup tone spectrum to those glass shattering, out-of-phase tin-canny Mark Knopfler / Robert Cray pickup tones at the other end of the pickup tone spectrum.

The total *range* of pickup tones that are possible is presented below by using several *standard* benchmark tones and where they reside in this pickup tone range:

### **BLUES — JAZZ — METAL — SURF — COUNTRY — TIN-CANNY**

So the *entire range* of pickup tones is a result of how the above three components are combined. Just like with the previous "Capacitor" report, any pickup manufacturer who claims to have "different" or "better" (*a subjective term*) pickup tones is not being forthright. There are pickup manufacturers that would have you believe their products are *unique*.

However, all pickups are not unique regardless of who makes them. Increasingly, pickup makers are using subjective hyperbole words which appear to have been deliberately selected to *influence* the purchasing decisions of people who are easy prey for these words.

The exception to this is new asymmetric humbucker pickups that offer more versatility than the "standard" symmetric humbucker pickup. The symmetric pickup has both coils that are identical. But the asymmetric pickup has two coils that are different — enough to produce added tonal benefit.

In an industry now filled with people who make pickups, what is sorely needed is an **independent pickup certification organization** that can objectively and honestly evaluate and "quantify" a manufacturer's specific model pickup's characteristics.

Having an entity that can *certify* that a manufacturer's pickup model(s) will perform in a predictable and definable way and will produce a specific pickup tone type. As a result, the claims by all pickup manufacturers would be based in honesty and not subjective euphamisms.

By combining the above three components in the correct way means that anyone can now produce pickups that will result in these universally recognized "benchmark tones". You can now purchase pickup components, wire and even automated winding machines from eBay, Stewmac and other sources of supply.

In looking at the bigger and longer-term picture, the Chinese are already doing it in a limited way. And it won't be too much longer before they finally get a clue about how to consistently produce pickups that provide specific benchmark tones. When that happens, an entire industry of U.S. pickup manufacturers are going to be standing in the unemployment lines.

This is because these benchmark pickup tones will quickly be "commoditized" by hundreds of Chinese factories — that are fully automated and using low-cost labor — to produce pickups with consistent and predictable performance that they will sell directly on the internet, eBay, Reverb and other platforms directly to customers.