

## **TECHNICAL ADVANTAGES**

The oxide layer of the aluminum permits the manufacture of coils with numerous significant advantages over coils made with copper and their limited insulation.

### **\* High Temperature Applications**

Since the melting point of the oxide layer is far beyond the melting point of the aluminum conductor the coils can be used in continuous service of 1000 F plus (537 C). No degrading effect will occur at high temperatures. Copper however has to be pretreated to avoid oxidation and an eventual failure in its service. At 356 F (180 C) service with copper coils the insulation becomes problematic and there is virtually no insulation material available.

### **\* Superior Heat Dissipation**

Any coil with a resin insulation will have very poor heat dissipation since the flow of the heat is significantly obstructed with such insulation. Heat build up will eventually ultimately destroy the coil. Oxinal's anodized aluminum coils have an excellent heat dissipation and can transfer the heat from the center due to the nature of the oxide film faster and safer. Every turn of the coil presents an heat emitting element.

### **\* Lower Operation Temperatures**

The surface area of aluminum vs. copper with equal electrical conductivity is 27% greater. This will result in a lesser heat build up, helped by the fact that aluminum has a higher heat capacity; therefore lesser coil heat under the performance load. The superior thermal conductivity and the oxide layer heat dissipation are far better than any resin based insulation on copper coils.

**\* Space Interlayer is not necessary with Oxinal Aluminum Coils**

Since every layer on turn does firmly rest on its next turn no air space is created. The size of the finished aluminum coil is therefor reduced significantly due to the savings of no interlayer in the winding.

For expample the typical space volume is 85% to 99.5% filled whereas copper with an interlayer will create only 25% to 65%.

This significant difference affords a small coil when Oxinal Aluminum Coil is used.

**\* Weight Factors**

In todays technical environment weight for many applications is a dertermining factor of material use. The specific weight of aluminum is about one third of copper. The electrical resistance of an aluminum conductor in identical cross section is 1.61 higher than copper.

The weight of the copper coil with the same conductivity as aluminum, same number of turn and same electrical resistance will weigh twice as much as its identical counter part of aluminum.

*All suporting data herein available upon request.*