

REDUCED VOLUME AND MASS

Reduced Volume and Mass

By removing the heavy iron core and replacing it with our innovative PCB stator, Infinitum Electric can drastically reduce motor weight. Our coreless PCB stators weigh almost 90% less than equivalent stators with an iron core. With the iron removed and attractive forces eliminated from the machine (also see *Low Acoustic Noise White Paper*), the structural requirements for our machine are drastically reduced. Further, the continuous coil design in our stator optimizes coil geometry, providing maximum power density and efficiency at a fraction of the size and weight. Our current density can be more than four times higher than machines with traditional iron laminations and copper windings ($\sim 13,000 \text{ A/in}^2$ vs. $\sim 3,000 \text{ A/in}^2$), substantially reducing the copper mass for the same current rating. The table and image below show volume and mass comparison of two motors with the same rating: a 1 HP 3,600 RPM Infinitum Electric motor vs. a 1 HP 3,600 RPM NEMA Premium induction motor. Our proprietary design algorithm allows us to design and produce stators with virtually any dimension, so we can increase or decrease motor diameter and length as desired.



1 HP MOTOR	DIAMETER	LENGTH	WEIGHT
NEMA Premium Induction	6.5 in.	12 in.	32 lb.
Infinitum Electric	8 in.	2.5 in.	14 lb.