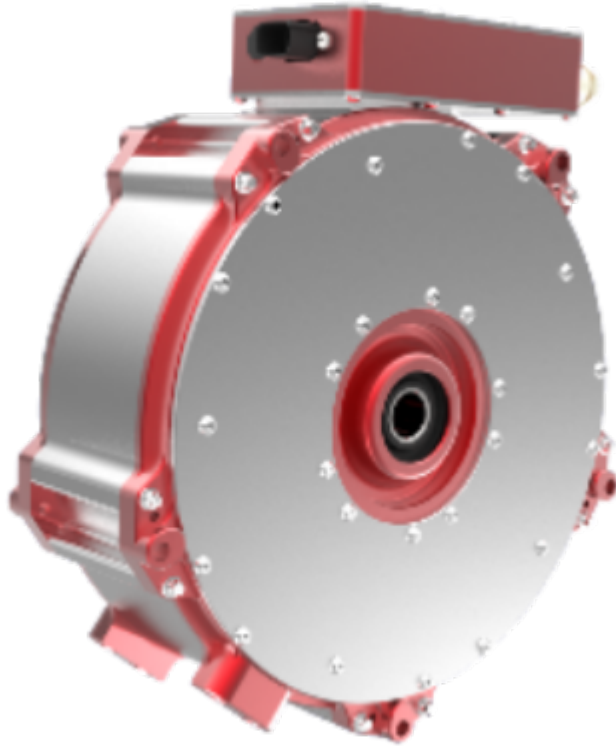


**DEMOCRATIZE
INFRASTRUCTURE**

ELECTRICITY



POTENTIAL FUTURE PRODUCTS

– SYNCHRO-SYM Technologies –

Our Mission:

Innovate For Our Clean, Efficient,

and Sustainable Energy Future!

Democratize Electricity Infrastructure Innovation as Only Provided With SYNCHRO- SYM Technologies:

The classic textbook study for all electric machine systems begins with the optimal symmetric circuit and control technology of SYNCHRO-SYM with an “active rotor and stator assembly,” which becomes the study for all other electric machine systems by deoptimizing its electromagnetic symmetry with the asymmetry of a “passive rotor assembly” with slip-induction dependent winding sets, reluctance saliencies, DC field winding or rare-earth permanent magnets (**RE-PM**). Therefore, all electric machine systems, including SYNCHRO-SYM, must follow common electric machine packaging, material, winding, electronic component, thermal management techniques with no technical or manufacturing risk that is without a traditional engineering solution. Consequentially, the introduction of competing electric motor system innovation that will impact our clean, efficient, and sustainable energy future, such as SYNCHRO-SYM, has become purely geopolitical by a global adversary’s formidable centralized control of electric motor innovation, research, development, and manufacturing that has evolved from its cartel-control of RE-PM materials used in RE-PM electric motor systems, which has seemingly become the most efficient electric motor system with unethical disregard to at least the geopolitical, environmental, and human suffering consequences of producing

RE-PMs.

As a testament to the global adversary's control over electric machine system innovation, research and development, consider the "why" of the following: 1) the cost, loss, and size of Magnetizing magneto-motive-force (MMF) are being re-introduced into RE-PM electric motor systems to leverage the coveted advantages of field weakening but ironically, elimination of the cost, loss, and size of Magnetizing MMF was the very reason for migrating to the Magnetizing MMF free RE-PM electric machine system from the more rugged, cost effective, optimized induction electric motor system, which already provided field weakening more efficiently, reliably, cost effectively and was without the geopolitical, environmental, human suffering, and expensive consequences of RE-PMs and 2) instead of applying the comparable performance of the optimized induction electric machine system with a copper conductor rotor or the [5th generation DC field wound rotor synchronous electric machine system for the 2022 BMW](#), which are proven to provide comparable performance as the RE-PM electric motor system without the geopolitical, environmental, human suffering, and expensive consequences of RE-PMs, today's solution is to reduce the amount of RE-PM materials with uncompetitively pricier RE-PMs by ironically introducing an extraneous high-speed gearbox (and a high frequency electronic electric motor controller), which actually "compounds" the complexity, cost, reliability, maintenance, noise, size, and loss of the entire system, in order to increase the operating speed and therefore, reduce the size (and amount of RE-PM material) of the RE-PM electric motor system. If the optimized induction electric motor system or the 5th generation e-drive of BMW have proven to be comparable alternatives to the RE-PM electric machine system by at least eliminating the geopolitical, environmental, and human suffering of producing RE-PMs, SYNCHRO-SYM is clearly the preferred choice with twice the power density at half the cost, half the loss, and octuple the peak torque per unit of continuous power rating while

utilizing the same materials (less RE-PMs), winding, thermal management, electronic component, packaging, and manufacturing techniques.

1) By eliminating RE-PMs in electric motor/generator systems with geopolitical, environmental, human suffering, and costly consequences, which are becoming globally evident, with the SYNCHRO-SYM replacement that uniquely provides twice the power density and octuple the peak torque at half the cost and loss, and 2) by providing the only 3D Printer Method of MOTORPRINTER, which will globally democratize electric motor manufacture, **SYNCHRO-SYM Technologies** will break the global adversary's control on electric motor innovation, development, and manufacturing by the old fashion way, with a low risk and innovative competitive alternative, such as the SYNCHRO-SYM solution, and as a result, the geopolitical, environmental, and human suffering consequences of RE-PM materials are proportionally reduced with the excess RE-PM materials available for more strategic applications without a SYNCHRO-SYM solution.

An inadequate minable supply or a global adversary's cartel-control of strategic raw materials, such as lithium (*for batteries*), cobalt, nickel, dysprosium (*for improving RE-PM operating temperature*), neodymium (*for RE-PM base material*), is becoming a distressing reality that electrification to combat climate change, such as electric vehicles, may not be achievable. In comparison, copper and electrical steel are abundant with considerably less geopolitical, environmental, and human suffering consequence. The more resourceful are pursuing two alternatives: 1) recycling and 2) using, developing, or inventing technology that minimizes the amount of or eliminates strategic materials per application. While "Innovating for our sustainable energy future," Best Electric Machine (BEM) has a patented portfolio of electric infrastructure technology, such SYNCHRO-SYM that completely eliminates RE-PMs from the electric motor/generator system

while significantly improving its price/performance and MOTORPRINTER that democratizes the non-smokestack electric motor manufacture with a small footprint distributable 3D Printer Method that for instance, could be locally placed at electric motor manufacturing or research laboratories for programmable just-in-time prototyping or production.
