



# Middle Tennessee State University

## Office of Intellectual Property and Commercialization

Seeks partner to license

### Clamshell Wheel Hub Motor for Automobile Wheel Structure

The wheel hub motor is an integral component on the wheel of an automobile. It enables a higher level of traction, improved steering, and overall enhanced vehicle performance. Wheel hub motors increase torque at the take-off of an automobile, making the power available instantly. This invention allows a 4-cylinder engine to perform like a 6-cylinder engine while maintaining fuel efficiency.



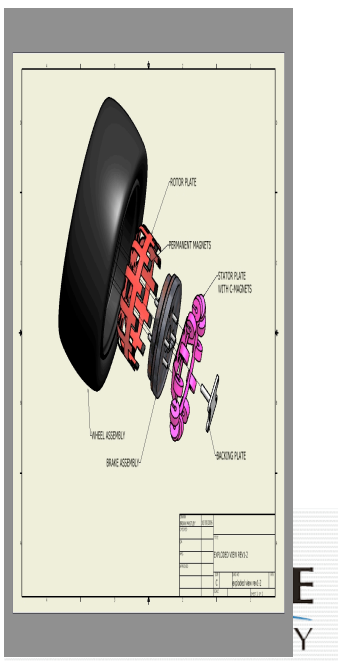
Current wheel hub motors include other wheel functions such as bearings, axle, and brakes. This improved technology will add wheel hub motor capability without modifying the existing wheel structure. Rather, it will employ the existing axle, bearings, and brakes of an automobile.

### Applications

This invention will add plug-in hybrid capability to an *existing* vehicle without extensive mechanical modification and without impacting its performance, reliability, and maintenance.

### Advantages

- Retrofit design utilizes the existing bearings, axle, and brakes without modification, thereby reducing the cost of the addition of the wheel hub motor.
- The load bearing and braking functions of the wheel as designed by the automotive company is unaffected, therefore the expense of designing and testing this mechanical system is eliminated.
- Components are mechanically simple and can be produced in high volumes for low costs.
- Imparts plug-in hybrid capability to any automobile. Target cost: \$3000.



### The Inventor

Dr. Charles Perry is Russell Chair of Excellence in Manufacturing and a Professor in the Department of Engineering Technology and Industrial Studies at Middle Tennessee State University. He holds a doctorate in Electrical Engineering from Vanderbilt University followed by a 28-year career with IBM. Prior to coming to MTSU, he became an IBM Distinguished Engineer and received the IBM Market Driven Quality

Leadership Award. He holds 33 U.S. Patents for inventions in materials, manufacturing processes and tools, and hardware.

### For more information on licensing contact:

Middle Tennessee State University  
Office of Intellectual Property and Commercialization  
615-898-5005 email: [research@mtsu.edu](mailto:research@mtsu.edu)