

Ogura Single Axis Speed Increaser

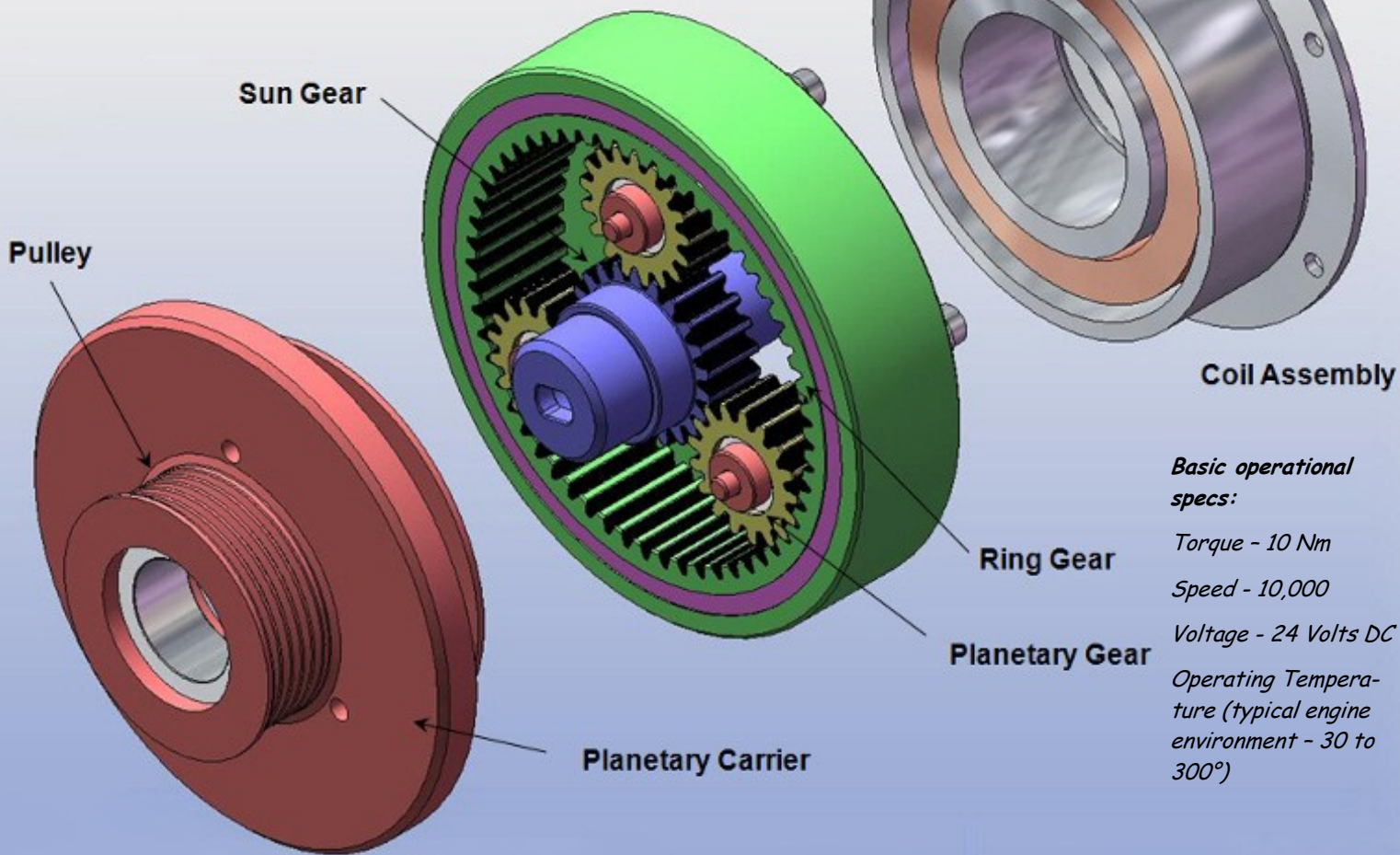
Why is this being developed?

To operate an alternator or a generator, typically a minimum speed is required. When a gas or diesel engine is driving, the engine is operating at a normal high RPM allowing the alternator/generator to operate efficiently. When the vehicle is stationary and the engine is idling, electrical demands can cause the engine to rev higher to provide the required electrical output.

By using the Ogura Single Axis Speed Increaser the engine can remain at idle and still allow the generator/alternator to run at its required minimum (higher) speed. This is ideal for recreational vehicles or buses that may have high electrical needs while the vehicle is stationary.

Other Applications

Besides alternators/generators, other engine accessories that need a higher operating speed such as superchargers, pumps or compressors may be able to use this technology to save fuel.



Basic operational specs:

Torque - 10 Nm

Speed - 10,000

Voltage - 24 Volts DC

Operating Temperature (typical engine environment - 30 to 300°)

How It Works

The increaser is made up of an electromagnetic coil, planetary gear assembly with an embedded permanent magnet ring and a planetary carrier/pulley assembly. When there is no power applied to the coil, the permanent magnet locks up the ring gear to the planetary carrier/pulley assembly. This drives at a 1:1 ratio because all components are operating at the same speed. This would be the condition when the vehicle is driving down the road.

When the vehicle is stationary and the higher speed is required for the engine accessory, the coil is engaged locking the ring gear in place. The coil flux disrupts the field of the permanent magnet creating an air gap between the ring gear and the planetary carrier. With the outer ring gear locked in place, the input pulley rotates the planetary carrier, which in turn drives the sun gear. The gear ratio provides an approximate 3 to 1 speed increase to the sun gear driving the accessory drive shaft at the required RPM.