# ELECTRIC MOTOR WITH ELECTROMAGNETIC PISTON

A powerful electric motor whose piston surrounds a coil. The motor has a mobile and fixed piston, connected to a power source, which induces a magnetic field generating attractive and repulsive movements, pushing the piston along a longitudinal axis with sufficient force for applications in industrial machinery as loading and unloading, large boats or heavy vehicles.

## Technology for Licensing

**Keywords:**

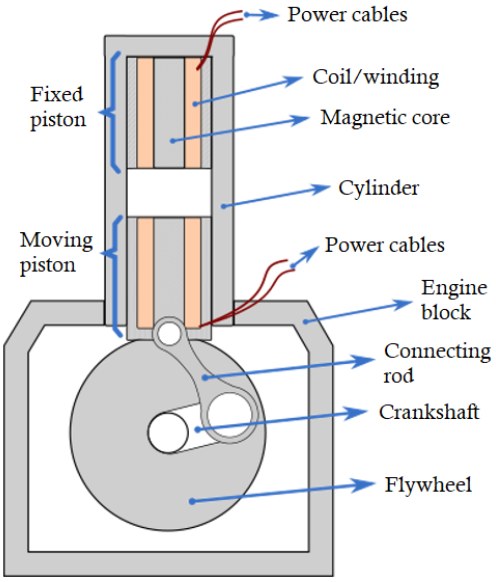
Electric motor, piston, coil, magnetic field, induction, crankshaft connecting rod, engine torque, attraction, repulsion, electromagnetic piston.

**Description:**

Electric motors have been widely studied over the years, however, researchers from the University of Granada have managed to develop an innovative system to achieve an electric motor with a high torque for power applications.

The piston is composed of a partially hollow cylinder of ferromagnetic material that encapsulates a coil inside which, at the same time, contains a solid cylinder of the same material at its center. The motor contains two pistons, at least one mobile and / or one fixed, each one with means to receive and send control signals, which by inducing a magnetic field in each piston, generates attractive and repulsive movements.

Movement control is carried out by connecting and disconnecting the current supplied to each piston to produce a change in polarity depending on the separation between the pistons and their state of movement. To know this, the system uses a series of sensors that indicate the position in order, through a control system, to be able to modify the polarity and achieve the linear movement of attraction and repulsion.




Electric motor with electromagnetic piston

## Advantages and Benefits

- Powerful motor, capable of providing greater torque in rotary movements than current electric motors
- Clean energy

  It allows the replacement of combustion engines to reduce greenhouse gas emissions.
- Eliminates the need for many typical elements of internal combustion engines (gearbox, valves, sealed piston-cylinder system, fuel tank or exhaust pipe)
- It preserves the connecting rod-crankshaft mechanism of internal combustion engines
  - Simple replacement of elements.
  - Cost savings in the manufacturing process.
- Applications:
  - Industrial machinery for cargo movement.
  - Cost savings through the electrification of internal combustion vehicles that take advantage of the current design.
  - Large vehicles such as tractors, military vehicles,large boats, aircraft or helicopters.

**Patent status:**
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**Contact:**
Oficina de Transferencia de Resultados de Investigación (OTRI) - Universidad de Granada

Lucas Montes Pérez (lumontes@ugr.es)
(+34) 958 249 390

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