Electromagnetic railgun

A disruptive artillery technology

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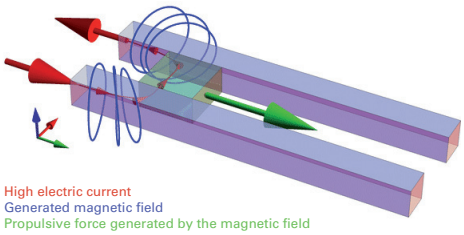
The electromagnetic railgun is an electromagnetic system designed for launching projectiles by means of electrical energy. Muzzle velocities of more than 3000 m/s have been obtained.

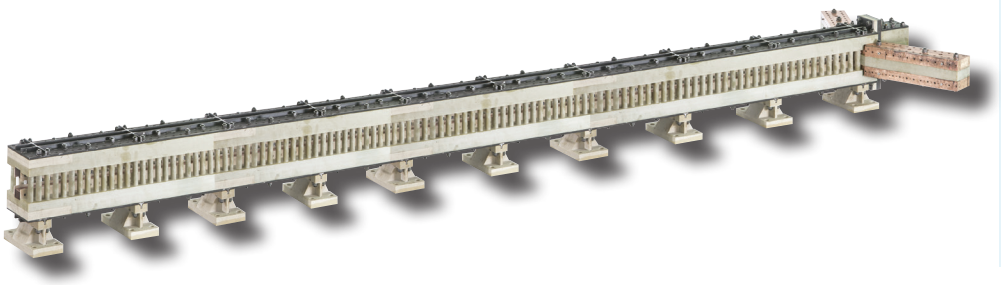
Operating mode

With a muzzle velocity between 2 and 3 km/s depending on the gun calibre and the accelerated mass, the electromagnetic launcher largely outperforms the powder gun. It is therefore considered to be a disruptive artillery technology.



Military utility:

- Very long-range artillery (more than 200 km),
- Surface warfare,
- Better armour perforation performances with higher impact velocities,
- Anti-air and anti-missile defence (especially against future hypersonic threats) due to a reduced time of flight,
- Multiple simultaneous impacts due to muzzle velocity and firing rate control,
- No pyrotechnic risk as no gunpowder is involved.



Technical features

- Projectile propulsion through electrical energy
- Reduced vulnerability without propulsive powder
- Muzzle velocity of more than 3000 m/s:
  - → Extended ranges
  - → Reduced time of flight
  - → Increased impact velocity
- Muzzle velocity and firing rate control

Reduced model on display

The operating principle of the displayed model is exactly the same as that of the full-size accelerator. It enables the launching of a projectile with a calibre of 5 x 5 mm at a velocity of 120 m/s

Dual-use applications

- Launching of microsatellites
- Testing of materials
- Impact testing of micrometeorites

References

- ETO Artillerie Électrique Navale (Naval Group, ISL, Nexter Systems, Nexter Munitions, MBDA France)
- DGA/RAPID BOSSE project

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