

Re: Naval Railgun: Barrel Design or Power Supply?

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Instead of a railgun, you should use a coilgun. The coilgun or "linear induction motor" style launcher is contactless, in that way there fewer parts moving against each other at high velocities leading friction to degrade them. If you use a plasma sheath from near the get-go in the railgun then there is less control of the output velocity. So with a coilgun it is easier to adapt it to a rapid rate-of-fire, obviating the need for explosive rounds, for example in an Aegis Phalanx type system.

The velocity of the round can be varied by adjusting the amount of power sent to it. There is probably less shock to the payload than of explosive weapons of the same velocity, because the acceleration on the payload is more constant with less impulse. Wedge it against the ground and turn it up.

There would be some problems from that with barrel wave but some gyroscopes could help with that, although they might drift the compulsators (flywheels), if used, for man-portable devices.

Basically a subsonic rapid-fire coilgun is almost silent, with perhaps the click and whine of the mechanism and capacitor voltage doubler oscillator. Also the barrel doesn't heat or powder foul. The projectiles would need to be self-rifling, or round balls for simplicity of feed, it could use modular loaders. Think modular.

Also you need to soak it in water or mild acid, dunk it in mud, freeze it, leave it on the dash of a car with its windows closed in the sun for a couple days, microwave or herf it, drop it five meters onto concrete, bury it back in tidal flat mud for a couple years, and then be able to clean it in a steam shower and use it forthwith. I guess I'm talking about an army coilgun instead of a navy railgun, not that I have anything to do with either of those things.

Really the energy storage and conversion question is the critical one, some of the switching electronics, you can cobble together the coilgun for not much money. The electrical storage problem is one that arises in many cases. I think a solution would be the nanocompulsator array,

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very many small flywheels arranged for no rotational moment of inertia beyond that of the enclosure. Another notion is the silicon technique capacitor, EMP-hard components. Also a robust little hand-crank for charging said power storage would be useful for extended recharge in the field.

It's fair to say that military research has no value, that it's destructive, and often wasteful and inefficient, and that budget cuts, in the U.S., should come first from the bloated military, and a variety of related corrupt and fraudulent programs hypocritically operating under the umbrella of security, with the light of the example of Soviet Russia militarizing itself out of existence. While that's so, research and innovative development in itself is the driver of economic growth, particularly in this small world with finite resources: research good, fire bad. Besides that, the coilgun is cheap and you can mold its bullets over a stoked campfire.

The idea, of course, is to use the research into the question for implementing the electromagnetic launch of hundred tonne pods to outer space directly from Earth, for SCRATS: Safe, Cheap, Reliable Access to Space.

Ross

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"Kibo destroyed that bigger than Dallas!"