# Electromagnetic catapult energy storage problem

What is an electromagnetic catapult?
An electromagnetic catapult,also known as the electromagnetic aircraft launch system (EMALS) when specifically referring to the system used by the United States Navy,is a type of aircraft catapult that uses a linear induction motor system,rather than the single-acting pneumatic cylinder (piston) system in conventional steam catapults.

How does China's electromagnetic catapult work?
China's electromagnetic catapult,powered by efficient capacitor banks,maintains a steady 45-second interval regardless of launch sequence,ensuring a rapid and predictable rhythm. This difference translates directly into operational capacity.

Who invented the electromagnetic catapult?
General Atomics Electromagnetic Systems(GA-EMS) developed the first operational modern electromagnetic catapult,named Electromagnetic Aircraft Launch System (EMALS),for the United States Navy. The system was installed on USS Gerald R. Ford aircraft carrier,replacing traditional steam catapults.

How many energy storage groups does a catapult have?
The massive electrical charge required is stored in three Energy Storage Groups,each comprising four heavy flywheel-generators. These groups collectively power all four catapults and cannot be electrically disconnected at the level of an individual failed unit,meaning repairs cannot proceed while other catapults remain in use.

Are electromagnetic catapults better than steam?
Electromagnetic catapults have several advantagesover their older,superheated steam -based counterparts.

Which aircraft carriers have electromagnetic catapults?
Currently,only the United States and China have successfully developed electromagnetic catapults,which are installed on the Gerald R. Ford -class aircraft carriers(currently only the lead ship CVN-78 being operational),the Type 003 aircraft carrier Fujian and the upcoming Type 076 amphibious assault ship Sichuan (51).

OverviewHistorySystems under developmentShips with electromagnetic catapultExternal linksDeveloped in the 1950s, steam catapults have proven exceptionally reliable. Carriers equipped with four steam catapults have been able to use at least one of them at 99.5% of the time. These have, however, several drawbacks. One group of Navy engineers wrote: "The foremost deficiency is that the catapult operates without feedback control. With no feedback, there often occurs large transients in tow forces that can damage or reduce the life of the airframe." The steam system is ...

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