NTL-CDDA-04b Lorath Casimir Dynamo Disk Array

A scalable generator based on technology reverse engineered from the Occhestan Republic CDDA put into production by the Lorath Matriarchy's New Tur'lista House. As of YE 37 this technology is largely only used by the Lorath Self Defense Force however civilian applications have been considered.

About

The Casimir Dynamo Disk Array is a Lorath Matriarchy produced scalable non-volatile generator that generates electricity by exploiting magnetic induction, driven by casimir field forces. Due to the nature of the generator's construction damage to the unit merely causes the dynamo to slow down or cease working providing an attractive alternative to many power generation means as it is extremely unlikely that the destruction of the generator will cause collateral damage.

Compared to the original Occhestian Republic design, the modern unit is more rugged in design featuring simplified construction where possible, as well as a larger volume. Due to their construction modern units posses a lower overall efficiency in both size, and energy generated. Benefits over the Occhestian design include, lower price per unit, better reliability in a variety of situations, and larger damage tolerances allowing for operation in states that would have disabled the original design.

History

The original concept and design was studied and put into production by Occhestan separatists that had taken the research with them when they left Lor to form the Occhestan Republic in the northern section of the sector. These designs were later seized by Matriarchy forces during the systemic purge of the separatist colonies carried out by the Lorath Matriarchy in YE 32.

In the aftermath of the purge the Matriarchy found itself with multiple examples of captured technology in their possession as well as schematics that had been secured in the seizure of Occhestian information assets. This captured technology allowed for New Tur'lista House to begin the process of carefully reverse engineering and replicating the device.

Half a decade after the initial seizure of Occhestian assets the design is being introduced for a variety of applications within the LSDF. The concept has been re-applied with some minor changes for power generation use by the Lorath Matriarchy allowing them an increased variety of options for power generation.

Technical Information

The general shape of the unit is similar to a short cylinder occasionally with a slight bulge to the design depending on its intended application. The largest units usually measure around 30 centimetres in diameter, and between 8 and 10 centimetres in thickness with the intention that multiple units are installed in parallel when greater power needs are required as the negligible waste heat allows a potentially unlimited number to be closely packed to function as a single generator. On the opposite end of the scale the components can be created on the nanometre scale allowing their installation in microscopic machinery providing a clean, efficient, and reliable power source that may be more attractive to radioisotope batteries.

Largely the same in function as the original unit, the CDDA generates a charge by producing asymmetric negative field pressure on a magnetic disk in a superconductive housing causing it to spin, and in turn generate a current. While the core function remains the same the design differs with the Matriarchy produced version is notable for being more rugged in construction than its Occhestian predecessor lending to a larger volume per unit resulting in a lower output per volume than the original model. The reinforced and simplified construction of the LM-CDDA results in a unit that is capable of operating with up to 40% of the unit damaged albeit at drastically reduced efficiency.

Similarly to the Occhestian Republic the Matriarchy has produced a variant of the technology using monopoles referred to as an Exotic Casimir Disk Dynamo Array, to improve unit efficiency making the device better suited for military applications. This ECDDA version is much more expensive, compact, sleek, and powerful due to the much higher spin velocity and resulting charge. Construction of this model requires specialist equipment as well as extensive infrastructure to produce compared to its more modest cousin further limiting its numbers.

Differing from the original Occhestian design, is the use of naturally produced monopoles harvested from deposits in Lorath controlled territory for use in the ECDDA version. The decision was put into place after it became apparent that the Occhestian iterations proved less stable than intended due to an flaw in the Occhestian process of constructing artificial monopoles which left them volatile and prone to energetically decaying should the unit be damaged or handled poorly making them unsuitable for the desired applications in the LSDF.

In spite of the results of Occhestian produced exotic matter, the Matriarchy has decided to quietly pursue research directed toward fixing the process which should allow artificial monopoles to be created in a less volatile state. There by cutting the cost of retrieving the resource from hostile environments albeit at a reduced production capacity.

All versions are not suitable for powering weapons systems actively, however they provide a reliable constant, relatively emissionless power source and can be used to reliably fill capacitor banks between engagements, or extend the life of capacitors in combat by supplementing additional power to draining reserves. Similarly the unit is not efficient for the purposes of actively powering a starship or other high demand systems, instead they are better used as backup power sources useful for charging capacitor banks or provide start-up power for more energetic power sources.

OOC Notes

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