QNC

The QNC (Quantum/Nucleonic Cell) is a novel powersource which exploits a unique property of the element Hafnium/Lutetium-178; By applying a carefully managed pulse of low-level microwaves and x-rays, the actual half-life of the particle can be reduced to about 7 minutes, thereby triggering an enormous release of controlled harness-able ionizing radiation (a process known as Induced Gamma Emission (IGE). Importantly, when the trigger is no longer presented, the material returns to its inert state and can even chemically recover lost electrons from surrounding materials, provided the mass is not entirely depleted.

The penetration of the trigger can be very carefully managed electronically and used in two ways. Firstly, a slow bleed of energy over an extremely long duration of time (which can be recovered while the QNC is offline). Second, a high-energy release which in terms of usable energy is only slightly less than the usable outputs given from aetheric and antimatter applications (both of which have very significant losses due to entropy).

Components

The following parts are critical in every QNC/IGE-Engine:

1. Core (ring of high density weaved hafnium)
2. Triggers (Magnetron Cathode & Classic high-potential cathode)
3. Starter (long-life palladium/lead capacitor: powers Triggers)
4. “Hardwire” (direct link between starter capacitor & triggers, severable in an emergency)
5. Covering & Radionic isolator weave (Palladium micro-weave with embedded radiometric monitoring system)
6. Heatsink (Polycrystalline nano-filament)
7. Electrodes and secondary capacitor (Germanium MOS capacitor w/ Hafnium dioxide & silicone dioxide filaments)
8. User-servicable Casing (High density thin titanium-carbid with titanium-chromium-vanadium-aluminum oxide finnish)
9. External Turbine or engine system, if used.

History

The first primitive prototypes of the new cell/reactor technology were produced in YE 29 as a repeat of blue-prints reverse-engineered from the Maras - a Sourcian technology which was deemed infeasible for use in deep-space due to the low volumes of Hafnium in extreme north-east space and the lack of deep-mining expertise (the majority usually found some 40 to 300 miles deep in dense veins on most planetoids). The original technology was very inefficient and unsafe - a mere proof of concept that left the United Manufacturing Cooperative with a goal in mind.

The first effective prototype went online January 1st, YE 30. It is 8,000 cubic meters in size and weighs

120 tonnes. It is currently situated on Hici'emi III underneath the main building at United Manufacturing Cooperative headquarters. It provides power to the building and surrounding structures for lighting, air conditioning and manufacturing facilities. It is estimated it will last a further 300 years of full operational capacity. The blue-prints are a very closely guarded secret and for this reason, the data-vault at the main building is stored beneath the reactor and contains no wired or wireless communication systems - built to survive even an antimatter attack from starship grade weaponry.

After countless man-hours and complete re-designs of the system, it was finally perfected and made safe for all applications. The Isomer devices which will see production on a per-purchase basis range enormously in size: from smaller than a human thumb to the size of starships for all purposes.

It is one of the first projects to come full circle from the United Outer Colonies' United Manufacturing Cooperative and is expected revolutionize the energy industry and narrow the gap between civilians and the military for the first time.

Availability

United Manufacturing Cooperative are the only retailer of these devices at this time. In order to buy one to standard or on commission, please make a communications inquiry or state your requirements on the Public Communications Network. You may do so anonymously if privacy is important to you, or you may make a direct communication if you are in range.

Entry level Performance

Cheap Hafnium - Low energy, long-life-times

- Portable Devices power-pack: 50 KS
- Economic Vehicle Engine 100 KS
- Household Generator: 500 KS
- Starship backup power: 800 KS
- Starship Basic: 1200 KS

"Military" Performance

High quality Hafnium - Big energy, long lives

- Ultra-portable cybernetic unit (1 cubic inch): 200 KS
- High-Performance Vehicle Engine: 1000 KS
- High-Performance Jet Engine: 1000 KS
- Industrial Generator: 2000 KS
- Powered Armor: 3000 KS
- Small Starship: 9000 KS
- Medium Starship: 12500 KS
- Large Starship: 58000 KS

Piracy

The Algorithmic controller chip is directly linked to the devices' serial number. Any attempt to modify the black-box controller chip will result in its destruction via a quantum mechanism, leaving the device unable to operate and in the process inform headquarters of the tampering with the given unit. The algorithm used took 100 years of current-generation computing to initialize and 2 years of bleeding edge computing to optimize - it would be impossible to “fill in the gaps” and make the device usable again.

Performance Outline

As an engine (Jet & Rotary)

The level of ionizing radiation is substantial and can easily heat un-reactive materials creating an enormous thermoelectrical gain against the already significant number of usable electrons meaning the cell is capable of also acting as an engine, depending on how it is configured. Theoretically, a 65 ounce high-density Hafnium core with an 800 cubic inch body could provide enough jet-thrust (heating ambient air to create plasma) to keep a heavy goods aircraft airborne for several weeks or a fighter airborne for months at a time (barring component and pilot fatigue) and low-demand systems such as satellites indefinitely (due to the enormous reliability of the system).

A basic QNC with engine-turbine mechanism of 400 cubic inches is capable of generating 110,00 BreakHorsePower @ 1000 Torques on demand at maximum output for a functional life of six weeks consistent drive (though in testing, the vehicle applied did not survive post 450Mph, unable to maintain grip for aerodynamic reasons, the drive-train and tires destroyed in 25 minutes) - far beyond what modern military ground vehicles are capable of by well over 100,000 BHP excess. Locked at 1000BHP/100T, the vehicle was far more manageable and had an estimated life-time of 10 months. Further performance reduction (40-200BHP/10-60T) could grant the vehicle a life-time in the span of two to three years.

Reactor potential

The massive efficiency of the system (by making use of electrons immediately as they leave the isotope to generate electricity) means that on full demand, the system rivals the output of military-grade aetheric generators and anti-atomic devices of similar weight and size. a device the size of a human heart with a high-quality high-density military-grade QNC device could power most Power-Armor on the market for approximately one week of full combat performance or more.

Isotope Recovery

Low-isotope Hafnium is an effective sponge for radiation - although the process is extremely slow, the core will still re-accumulate for up to one year of low-charge before becoming completely inert. As such, on the provision that the Hafnium core is not entirely depleted, it can re-accumulate its' charge, provided

it is left in an environment saturated with a high level of radiation for an extended period of time (2 to 3 weeks). By rising the surface-area of the core, this time can be reduced by around 80%.

Hard figures

- Some figures:
- Best Batteries - 300 Wh/Kg
- Fuel Cells (Al) - 4,000 Wh/kg
    - Economic Isomer Nucleonic - 800,000 Wh/Kg (300 year lifetime)
    - Performance Isomer Nucleonic - 800,000,000 Wh/Kg (30 year lifetime)
    - Military Isomer Nucleonic - 80,000,000,000 Wh/Kg (3 year lifetime)
- Fusion - 90,000,000,000 Wh/Kg
- Anti-matter 90,000,000,000 Wh/Kg (@ Military Efficiency ratings) (1.5 year lifetime)
- Aether - WUT? Wh/Kg

Applications

Civilian:

The QNC has the potential to either be used as a turbine engine, combustion mechanism for a jet-engine (by heating air gasses to plasmic temperatures) or as a direct electrical core - all of which would last for months at a time or potentially years if the Hafnium core is dense enough. The lack of dangerous material involved also means that there is no risk of fallout or contamination of a local environment unless the potential energy is used to such effect while the system is active: If the system is destroyed, the material is still usable but is not dangerous and will not contaminate an environment - urban or otherwise because Hafnium-178 does not have a standard-Rad/Hour release which is dangerous to humans, plants or animals, even if ingested (but may be dangerous to some macro-phages). This also makes the QNC desirable for implants and cybernetics as the host would not be at any risk whatsoever, since the QNC isolates the user from the core indefinitely. The high efficiency and availability of Hafnium on a number of major planetoids and the natural recovery capability of the material means that provided a core isn’t entirely depleted back to a non-ionic state, its’ nucleonic strong force is still strong enough to very gradually recover provided the level of ionizing radiation in the isolated environment of the system – Low-charge material can be recycled and is very cost-effective.

Unfortunately, it also has the potential to “upset” existing economies and will be extremely undesirable for large energy companies, due to the independence it would theoretically grant civilians. However, the removable Hafnium Core would be user serviceable and replaceable - a depleted core could be exchanged for a new one which is then used to collect radiation from harmful or natural environments which are over-saturated - an economy could be forged around this need.

Military

The release trigger event for a Hafnium core generates no unusual quantum-logical operational behavior

(and thus is undetected by WARMS like systems, since it presents no 'interesting' behavior, allowing systems which use it to creep right by WARMS based detection systems until the last minute) and can be very very tightly controlled, making QNCs ideal for stealth operation. The small size of the system and light weight also makes it extremely desirable as a backup mechanism, should a primary reactor fail - or as a stealth mechanism, taking the primary generator offline.

Images

Casing

Naked (Unsafe)

Exploded view (What were you thinking?)

OOC Information

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- No approval information was found in the forum search.