

Lt. Cmdr. Carson Gallagher Discusses Starship Engines

This is the third part of “**The Fourth Wall**,” where we talk directly to the people who use the Sci-Fi Tech found in the ***Dreamscape Warriors Novels & Books***. In this interview, Multi-Award-Winning author Kurt Springs talks to a Finnian Chief Engineer on the Battle Transport D.F. Cú Chulainn.

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Kurt Springs interviews Chief Engineer Lt. Cmdr. Gallagher...

Author: I have the pleasure today of introducing Lieutenant Commander Carson Gallagher. He holds the position of Chief Engineer aboard the Finnian Battle Transport D.F. Cú Chulainn. He will explain the engines and power plants common in the ***Dreamscape Warriors Universe***.

Lt. Cmdr. Gallagher: *Dia dhuit.*

Author: *Dia is Muire duit.* For those who don't know, Finnian is based on Irish Gaelic. The standard greeting begins with *Dia dhuit*, which means, “God be with you.” The response is “*Dia is Muire duit*,” which is “God and Mary be with you.” Right?

Gallagher: (Laughs) Legend has it that once the Finnian adopted the Gaelic, the president of the Earth Government asked if we couldn't have picked an easier language, like ancient Sumerian.

Author: (Laughing) Perhaps we need to leave linguistics to another interview. As in many science fiction universes, the main source of power relies on matter-antimatter annihilation.

Gallagher: Correct.

Author: However, there is an important difference in how antimatter is stored on a ship.

Gallagher: Not always; at some point in every civilization's exploration of the stars, antimatter had to be stored in a magnetic bottle to prevent it from coming into contact with matter, at least until we wanted it to.

Author: That's because matter and antimatter cancel each other out violently.

Gallagher: (nods) The greatest fear of anyone on a star ship was loss of containment. If the electromagnetic bottle shuts off, the ship was lost in an instant.

Author: That problem was solved with the development of combined fuels: matter and antimatter in a combined state.

Gallagher: Combined and stable, at least to a large degree.

Author: It is my understanding that human astrophysicists hypothesize that in the early universe, matter and antimatter were together in a stable state. It was only when the universe had sufficiently cooled that they separated.

Gallagher: Humans and many others came up with that hypothesis independently. However, it had enormous implications.

Other civilization found ways to make use of that hypothesis. The results were Neodreleum and Neodregen before that.

Author: Can you explain what those are?

Gallagher: Of course. All atoms can have an antimatter counterpart. The easiest to obtain and use are the simplest: hydrogen and helium, and their opposites, antihydrogen and antihelium. Hydrogen and antihydrogen in a combined state have the name Neodregen. Helium and antihelium are called Neodreleum.

Author: How are they obtained?

Gallagher: (Knowing smile) Very carefully. All joking aside, antimatter is produced in high-energy environments. The process of combining it with matter requires a special kind of cooling. The first hints that this was possible were found in neutron stars, especially magnetars—neutron stars that produce jets of energy and have a strong magnetic field. In fact, production facilities are often around the various types of neutron stars.

Author: Let's jump to the practical matters. How do starships use Neodreleum?

Gallagher: In principle, engines powered by matter-antimatter annihilation send matter and antimatter into a combustion chamber. The energy released provides not only thrust but is also absorbed by Thermal Light Radiation Generators called TLR-Gs.

This provides power to the ship's systems, especially for creating an interdimensional warp to circumvent the light-speed limit.

Author: How does the addition of combined fuels change the power plant?

Gallagher: There is only one storage chamber, where the Neodreleum is stored. No need for a magnetic bottle. Particles of the combined matter are drawn to a separation chamber, where a special laser separates them into helium and antihelium. They are then drawn separately to the combustion chamber, where they recombine and produce energy.

Author: Someone is bound to ask. What happens if they come together in the separation chamber?

Gallagher: That's something we must plan for. In a well-maintained powerplant, it should be rare. We have TLR-Gs to catch the energy, so it isn't wasted. However, when the rate of separation chamber recombination exceeds 1%, the ship goes into space dock for a complete overhaul of the power plant and related systems.

Author: In one of my novels, someone had to traverse part of the engine room blocked by an active flow.

Gallagher: That only happens during extreme situations. When a ship sustains damage to its power regulation systems, the energy must be rerouted. The idea is, you have a place to route energy while you extricate the ship from a dangerous situation, before you shut things down to make repairs. Not ideal, but it is designed

to buy the ship time rather than forcing critical systems to shut down in an emergency.

Author: In this case, far from ideal. They were in the gravity well of a brown dwarf.

Gallagher: (wincing) That meant someone had to get past the flow of energy to effect repairs. With some rerouting, the flow can be pushed back, but it isn't easy. Some less- critical systems would have had to be shut off, such as life support. They would need to focus on keeping the ship from being destroyed and slowing the pull with thrusters.

Author: Thank you for sharing this with my Super Fans.

Gallagher: My pleasure.