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Modeling the Removal of Xenon from Lithium Hydrate with Aspen HYSYS PHILLIP EFTHIMION, CHARLES GENTILE, Princeton PLasma Phy Lab — The Laser Inertial Fusion Engine (LIFE) project mission is to provide a long-term, carbon-free source of sustainable energy, in the form of electricity. A conceptual xenon removal system has been modeled with the aid of Aspen HYSYS, a chemical process simulator. Aspen HYSYS provides excellent capability to model chemical flow processes, which generates outputs which includes specific variables such as temperature, pressure, and molar flow. The system is designed to strip out hydrogen isotopes deuterium and tritium. The base design bubbles plasma exhaust laden with x filled with liquid helium. The system separates the xenon from the hydrogen, deuterium, and tritium with a lithium hydrate and a lithium bubbler. After the removal of the hydrogen and its isotopes, the xenon is then purified by way of the process of cryogenic distillation. The pure hydrogen, deuterium, and tritium are then sent to the isotope separation system (ISS). The removal of xenon is an integral part of the laser inertial fusion engine and Aspen HYSYS is an excellent tool to calculate how to create pure xenon.

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