

Organoid LSS (Life Support System)

Onboard Iromakuanhe spacecraft, life support is just as much of an engineering problem as with any other species' design, and judicious use of organoid technology is used to solve it. For such a purpose, the LSS was designed as a scalable decentralized life support processor, to suit the crew's needs for hospitable atmospheric composition, pressure, and temperature. Because of the nature of its design, the LSS is propagated as a set of dense membranes, processing organs, and sensory organs in arrays along the main neural conduits of the ship in question, functioning relatively independently of other systems while retaining an element of controllability from the ship's NI.

The main component of the LSS is the rebreather organ, essentially a well-calibrated cross between plants' aerobic reactions and animals' respiratory systems. A series of multichambered lung-like organs draw in air from vents and porous membranes throughout the LSS junctures and conduits, often having one such array of lungs per a certain volume (which is set depending on the size of rooms and expected crew manifest - some rooms will have one lung each, while vast VANDR bays may have many in one room). These lungs respire carbon dioxide and metabolize it with help from the ship's energy supplies. Afterwards, it exhales the scrubbed oxygen, while pumping the waste carbons into the ship's circulatory systems for sugar-chaining for food synthesis. Organs that chemically detect levels of CO₂ and O₂ in the air help accomplish this according to proper specifications.

Auxiliary systems include the toxin-isolation subsystems and the temperature control subsystems. Toxin isolation is specialized, relying on a number of olfactory sensors that "sniff" for unusual compounds, often specially engineered to pickup hazardous chemicals with low ppm and/or that are hard to detect through smell. Each area protected by toxin-isolation uses backup pump-lungs that can cycle the atmosphere of the room very quickly, using filtering membranes to bind the toxic particles within these emergency pumps and keep them from the vital parts of the ship - before later being secreted and filtered out for jettisoning into space. On the other hand, the temperature control subsystem is rather simple in function, merely using careful secretion of water vapor, a ship's-energy-powered heater system, and sometimes organic coolant valves that can help bleed off heat from air in the system. Using those methods, temperature control basically heats or warms the fresh air before it's cycled back into the crew environment.

OOO Notes

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<https://stararmy.com/roleplay-forum/index.php?threads/iromakuanhe-iromakuanhe-type-arcology-common-tech.3638/>

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