Artificial Photosynthetic Life Support System

With the need for a better life support system if Abwehr was to colonize the stars, Kaiserlich F+E gathered its greatest minds to create a system. Using an artificial version of basic photosynthesis that is normally found in plants and various microbes, the APLSS produces air, salt, and military rations while filtering carbon dioxide, wastewater, and solid waste. This is done using a series of conduits, chambers, and two specifically made devices. These devices simulate the parts of a plant used for their particular jobs. The first device is known as an Artificial Thylakoid (AT) and is responsible for the production of oxygen and the filtration of carbon dioxide. The Root Filtration System, or RFS, is responsible for the filtration of wastes. First of all, water designated for the AT is pumped into it. The AT separates the oxygen and hydrogen from water and sends them to separate tanks. The hydrogen goes into a chamber, where through a process of carbon fixation, is combined with carbon dioxide to form carbohydrates. From there, the carbohydrates are combined with various other elements to form glucose before pausing in a tank of their own. The RFS separates waste water and solid waste for there own separate chambers. Wastewater is then filtered to separate water, urea, and salt. Both cleansed thoroughly, water and salt then travel to separate destinations: the salt ending up with the glucose and the water in water storage. Urea is then mixed with the solid waste and with the help of artificial bacteria, breaks the solid matter down into nitrogen, ammonia, methane, and various other gases. From there, gases found in Abwehran atmosphere are pumped into the same chamber the oxygen is held. There, the gases are carefully mixed into the right proportions before being released into the ship. Waste gases and solid wastes that can't be broken down or used are jettisoned into space. In their chamber, glucose and salt are combined with various vitamins and minerals to produce Military Rations. Stored into numerous containers, the Rations are transported to the ship's emergency storage units. From there, the rations either are placed in the escape pods or kept in storage.

The amount of air, filtered water, and rations are depended mostly upon the size of the vessel it is equipped to, but on average it should produce the following results[1)]:

- Breathable Air: 60 liters per second
- Filtered Water: 30 liters per second
- Rations: 100 units per hour at full production capacity

1)

Note: this is for a vessel designated Cruiser size