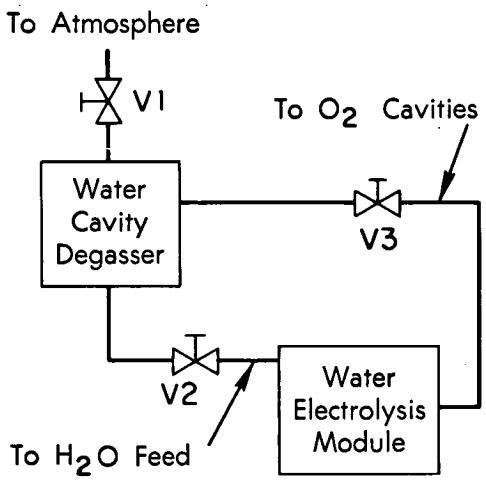
NASA TECH BRIEF
Ames Research Center

Water Cavity Degasser for Electrolysis Cells

Gases dissolved in the static water-feed system for a water electrolysis module tend to accumulate within the water cavities of the module. For long-term operation of an electrolysis module, it is necessary to



remove accumulated gases from the water cavities without loss of electrolyte while the module is operating under pressure.

The water cavity degasser shown in the diagram is simply a cylindrical container made of plastic thick enough to withstand the operating pressures of the electrolysis module. The internal volume of the container is about 150 ml; it has three tubing connections as indicated in the diagram.

The water cavity degasser is connected to a water electrolysis module; during operation, the cavity degasser accepts a mixture of electrolyte and accumulated gases, separates the gas from the electrolyte, and returns the electrolyte to the module. The operation of the degasser depends on the natural separation of a gas from a liquid in a gravitational field.

When the electrolysis module is in operation, the module oxygen pressure is higher than the feed-water cavity pressure which, in turn, is higher than atmospheric pressure. The following procedure can be used for degassing: Open V1 and then open V2 to allow a mixture of accumulated gases and electrolyte to flow into the degasser. The gases will rise to the surface of the electrolyte and escape to the atmosphere. Continue bleeding through V2 until the degasser is completely full of liquid. Now, close V1 and V2, and pressurize the degasser by opening V3. Open V2, and allow the electrolyte to flow back into the electrolysis module. When the liquid level reaches the bottom of the degasser, close V2 and V3. Finally, open V1 to depressurize the degasser and then close V1.

Notes:

1. The degassing procedure can easily be automated and performed at predetermined time intervals.
2. The degasser is applicable to other electrochemical devices which use liquid electrolytes.
3. No additional documentation is available. Specific questions, however, may be directed to:

   Technology Utilization Officer
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   Reference: B72-10246

Patent status:

No patent action is contemplated by NASA.

Source: Franz H. Schubert
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