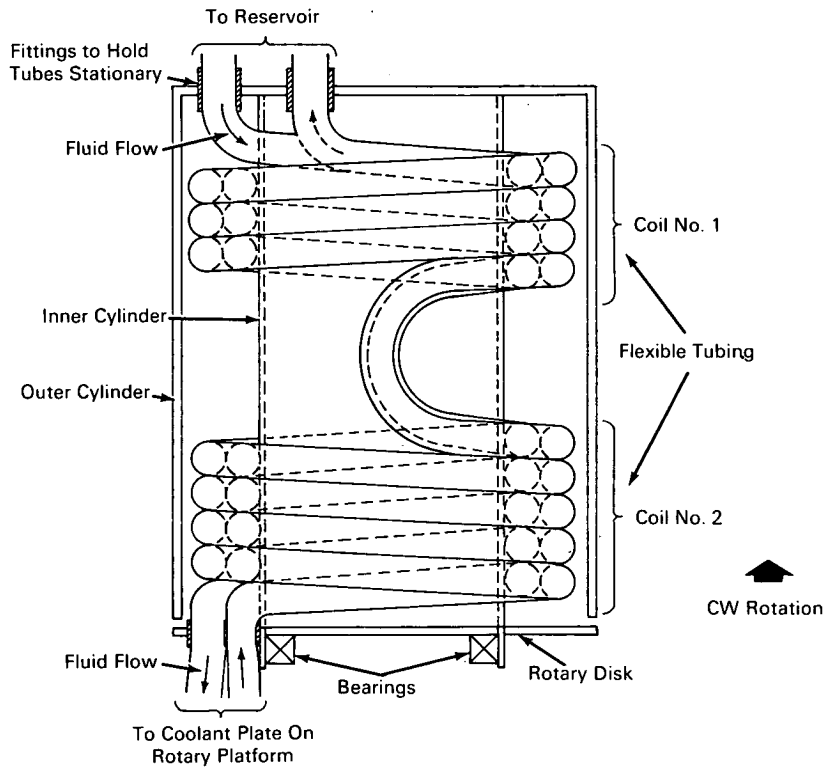
NASA TECH BRIEF

Rotational Fluid Coupling Eliminates Hose Entanglements



The problem:

To design a rotational fluid coupling mechanism to circulate a fluid between a stationary reservoir and a rotating platform. The rotational fluid coupling mechanism allows a temperature controlled fluid to flow unobstructedly from a stationary heat exchanger to a coolant plate on a rotating platform. The device must resolve all hose entanglement problems and eliminate high pressure seals.

The solution:

A coupling mechanism that consists of two concentric cylinders containing one or more flexible tubes that are wrapped in such manner that the tubing from one coil transfers to the other as a function of platform rotation.

How it's done:

In the rotational fluid coupling mechanism the flexible tubes are wrapped around the inner cylinder

(continued overleaf)

such that coil No. 1 transfers to coil No. 2 when the lower disk is rotated in a clockwise direction; coil No. 2 is transferred to coil No. 1 when the lower disk is rotated in the counterclockwise direction. The device controls and positions the flexible tubing such that it eliminates tubing entanglement, does not interfere with other equipment, and eliminates additional fluid seals.

Notes:

1. A similar device is being used in conjunction with the solar paddles on the OGO Satellite to eliminate the use of slip rings and to prevent cable entanglement. This device, however, is carrying electrical signals rather than fluids.
2. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Manned Spacecraft Center
   Houston, Texas 77058
   Reference: B66-10585

Patent status:

No patent action is contemplated by NASA.

Source: P. B. Aubol
of TRW, Inc.
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