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NASA TECH BRIEF

Battery-Package Design Provides for Cell Cooling and Constraint

A new lightweight battery-package design provides for even cooling of individual alkaline (KOH) cells, constraint against cell expansion, and convenient replacement of cells. The battery package also provides for venting of the cells and includes instrumentation to measure cell temperature, pressure, and voltage.

The package consists of a magnesium alloy case which houses 28 1-volt cells measuring 1.75 × 2.81 × 7.25 inches. A catalytically cured silicone elastomer is used as an adhesive to hold the cells in the case. This adhesive is inert to the alkaline electrolyte, is compatible with the magnesium alloy battery case, has high thermal conductivity, good flexibility, low outgassing, low viscosity for assembly with thin bond lines, and high shear and tensile strengths, but low peel strength to permit removal and replacement of individual cells. The temperature of the battery is controlled by a cell supporting plate which is maintained at a temperature between 60° and 90°F. Heat-transfer fins are provided between cell faces to maintain the cells at a uniform temperature (small temperature gradients). Cooling of the battery is effected by conduction of heat from the bottom surfaces of the cells to the supporting plate.

Note:

Design details and summary of battery packaging concepts and evaluation may be obtained from:

Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas 77058
Reference: B68-10398

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: S. Gross
of The Boeing Company
under contract to
Manned Spacecraft Center
(MSC-11839)

Category 05