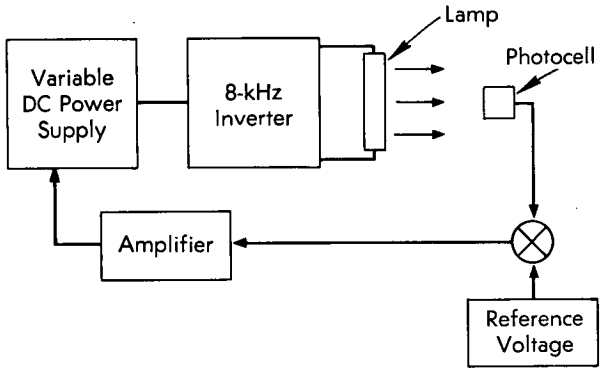
NASA TECH BRIEF

Ames Research Center

Illumination Control System

The problem:

The experiment on the growth of Arabidopsis that is to be performed during space flight requires exposure to a constant intensity of light for 21 days.



Wide-spectrum fluorescent lamps are to be used in this experiment, but since it is known that their luminous output decreases continuously, it is necessary to provide an illumination control system.

The solution:

The luminous output is monitored by a photocell which controls the power supplied to the lamp.

How it's done:

A variable DC supply powers an 8-kHz inverter which operates the lamp. The light output is measured by a photocell and its output is compared to a reference voltage corresponding to the specified light output. An error signal generated in this way is amplified and used to control the output of the DC power supply. Consequently, the voltage to the lamp is controlled so that the light output remains at a fixed value. As the lamp output decreases with use, the supply voltage is automatically increased to bring the light output back to normal.

Notes:

1. Arabidopsis is a small genus of herbs of the mustard family.
2. No additional documentation is available. Specific questions, however, may be directed to:

   Technology Utilization Officer
   Ames Research Center
   Moffett Field, California 94035
   Reference: B

Patent status:

No patent action is contemplated by NASA.

Source: Carl Beckman of
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Category 02