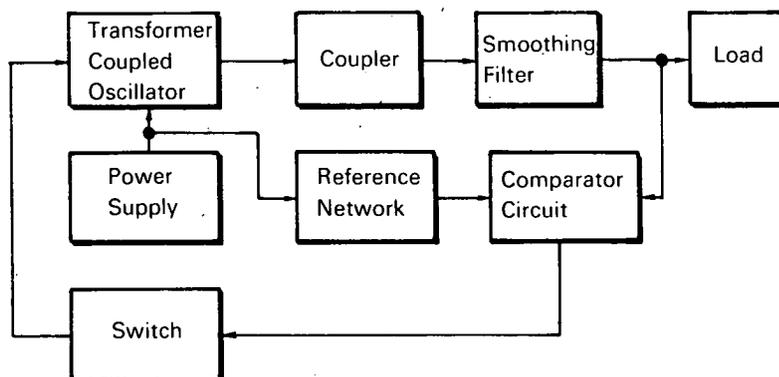


NASA TECH BRIEF



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Regulated DC-to-DC Converter Features Low Power Drain



The problem:

In the close regulation of dc power for the operation of critical electronic equipment, the equipment is normally isolated from the power supply by a dc-to-dc converter. In prior art, such converters employed transformer coupling circuits using relatively large magnetic cores, plus pulse width control circuitry for regulation, each of which consumes appreciable power.

The solution:

A regulated dc-to-dc converter that requires negligible standby power and whose main operating circuitry consumes power intermittently, according to load conditions, rather than constantly.

How it's done:

The transformer-coupled oscillator receives a voltage from the power supply in accordance with the switch as controlled by the voltage level at the load. Thus, the switch functions to release the transformer-coupled oscillator only when the load voltage drops below a predetermined value. The comparator circuit, a differential amplifier, compares the voltage output from the reference network. In this way, the comparator circuit enables the switch as the load demands it to

provide additional energy by way of the transformer-coupled oscillator. The switching rate of the oscillator thus functions to automatically compensate for variations either in the input voltage or the load demands.

Notes:

1. This circuitry has been satisfactory in several NASA space experiments as rocket, balloon, and spacecraft applications, and should find use wherever such conversion must be made in limited power situations.
2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Goddard Space Flight Center
Greenbelt, Maryland 20771
Reference: B68-10017

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: Joseph Thornwall
(GSC-03429)

Category 01