Circuit checks "swamp-cooler" water level

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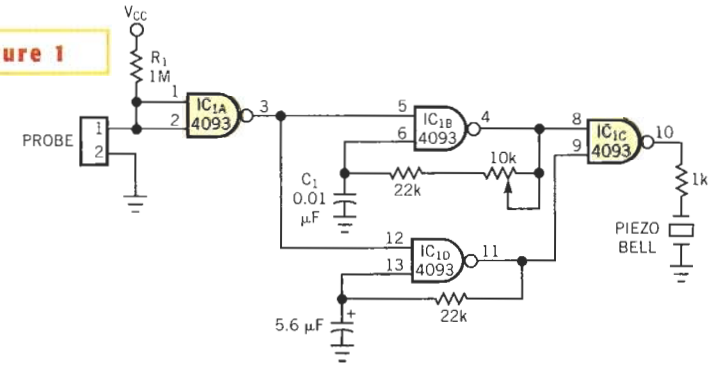
A "SWAMP COOLER" is an easy way to obtain effective air conditioning, especially in hot and dry climates, if a water source is readily available. Although most units are very reliable, the storage-reservoir control usually uses a single level-detector component. Failure of this component can lead to serious water damage. The circuit of **Figure 1** provides a simple, inexpensive backup alarm signal if the water level exceeds the preset height. The circuit uses a single Schmitt-trigger IC to detect the water level, using the conductivity of the water to drop the input level of IC_{1A}. A 1- to 10-MΩ resistor is suitable for R_1. You might have to experiment to determine a suitable value, depending on the conductivity of the water supply.



Detect water level in a swamp-cooler reservoir with this simple circuit.

The highest practical vale of R_1 provides the widest range. The NAND gates IC_{1B} and IC_{1D} implement gated oscillators to create a pulsed tone to drive the piezoelectric-bell audible alarm. Current consumption in the off state is lower than 10 µA, thus allowing the use of a simple battery to drive the circuit. A button-cell lithium watch battery is sufficient. The small physical size and wiring simplicity of the circuit allow you to simply glue the unit to the side of the cooler. Use a short piece of twin-lead, 300Ω transmission line for the electrodes.

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