Single Resistor Controls Wien Bridge Oscillator Frequency

By James Wong

Frequency control can be added to the conventional Wien bridge circuit by adding an op amp inverter (A1 in the diagram). The low power OP-221 dual works well in this circuit. Center frequency ω_O is $1/R_1 C_1$ multiplied by a variable term $1/\sqrt{\alpha}$. The inverter gain is $1/\alpha$, where α is nominally unity.

The center frequency is given by

$$\omega_O = \frac{1}{R_1 C_1 \sqrt{\alpha}}$$

This circuit adds tuning capability to the Wien bridge oscillator circuit.

A1, A2: 1/2 OP-221