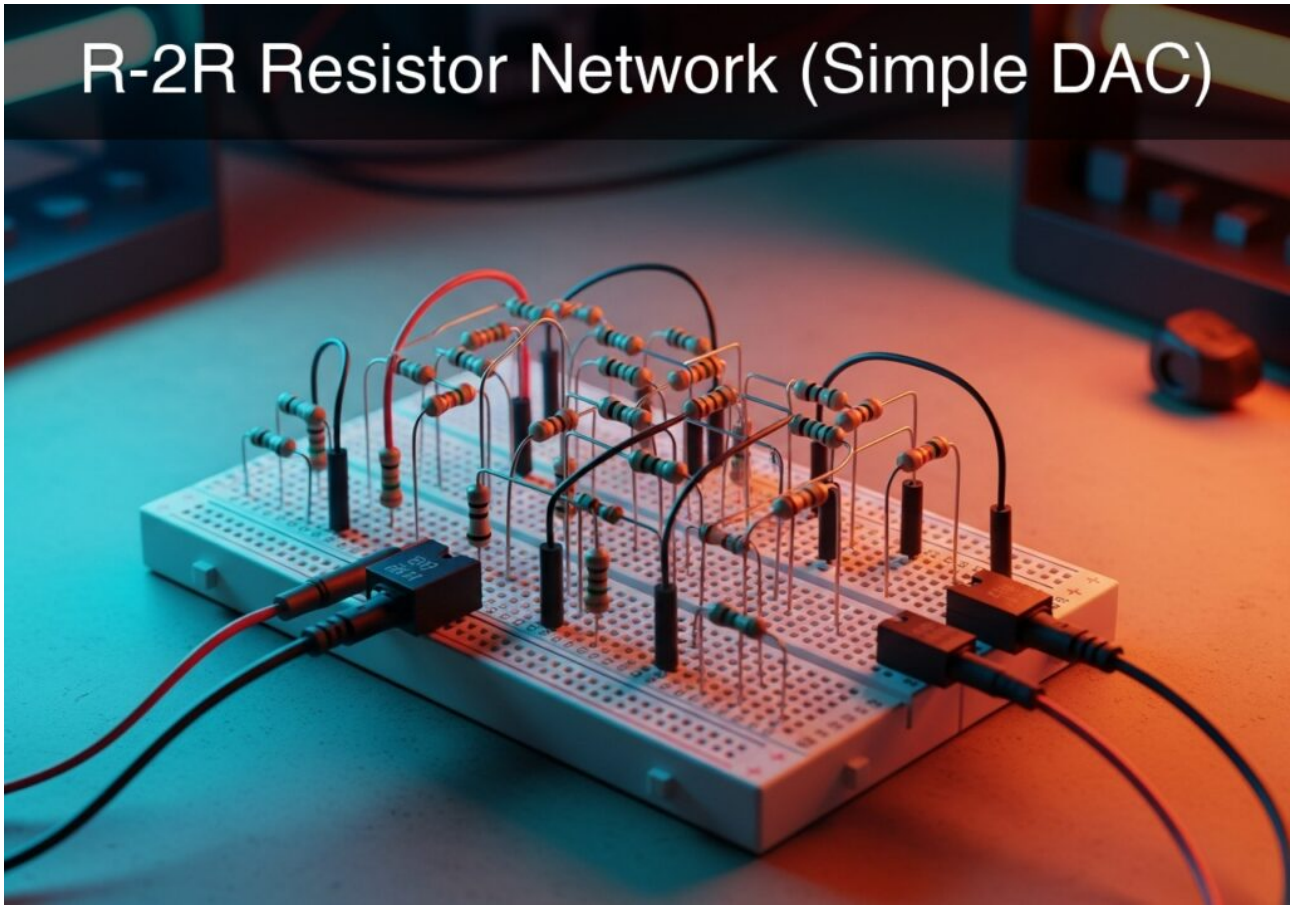
Practical case: R-2R Resistor Network (Simple DAC)

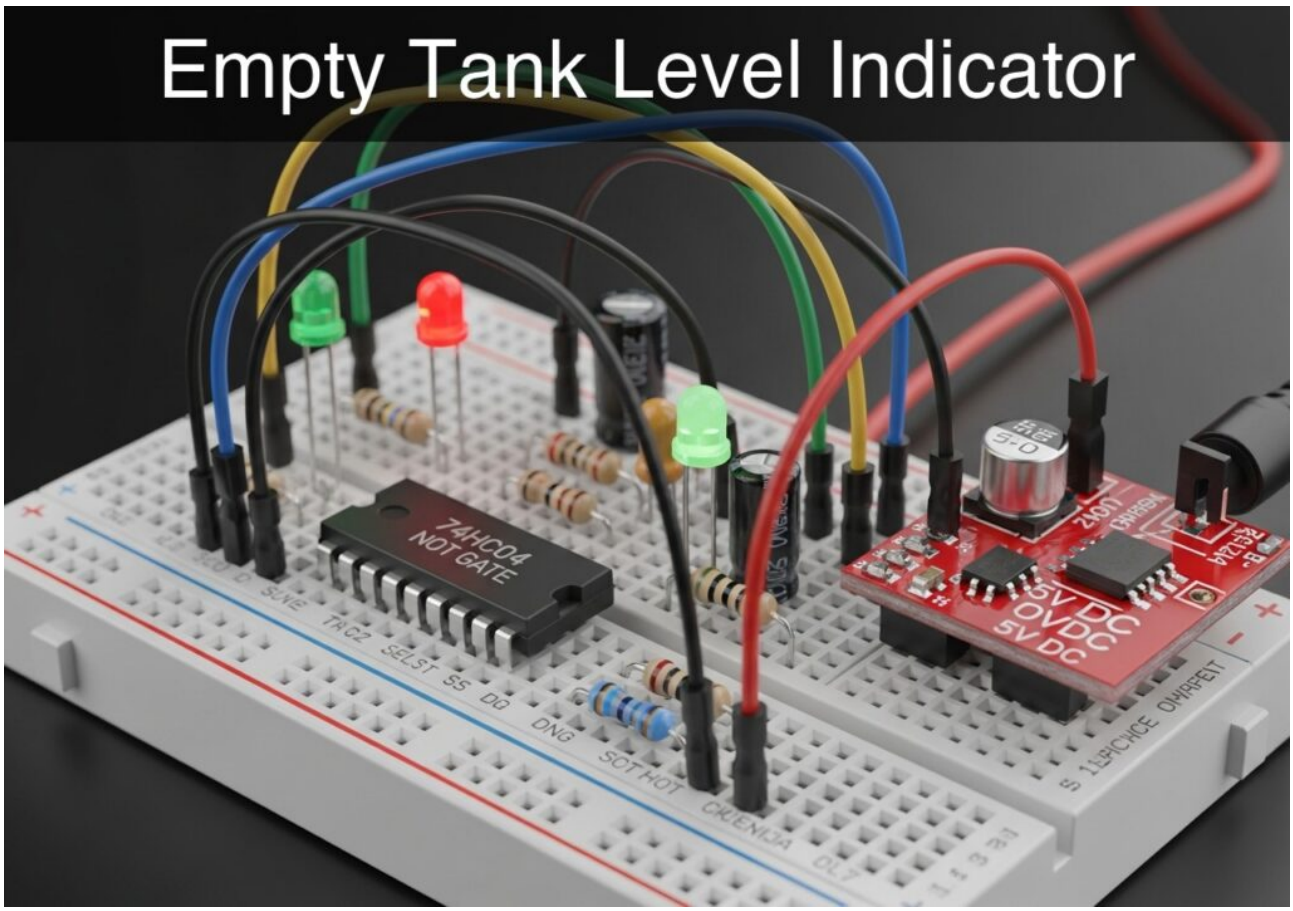


Master Analog Electronics by building a 4-bit DAC using a Resistor ladder. Create precise voltage steps from binary signals for audio synthesis and control.

Practical case: Unbalanced Wheatstone Bridge

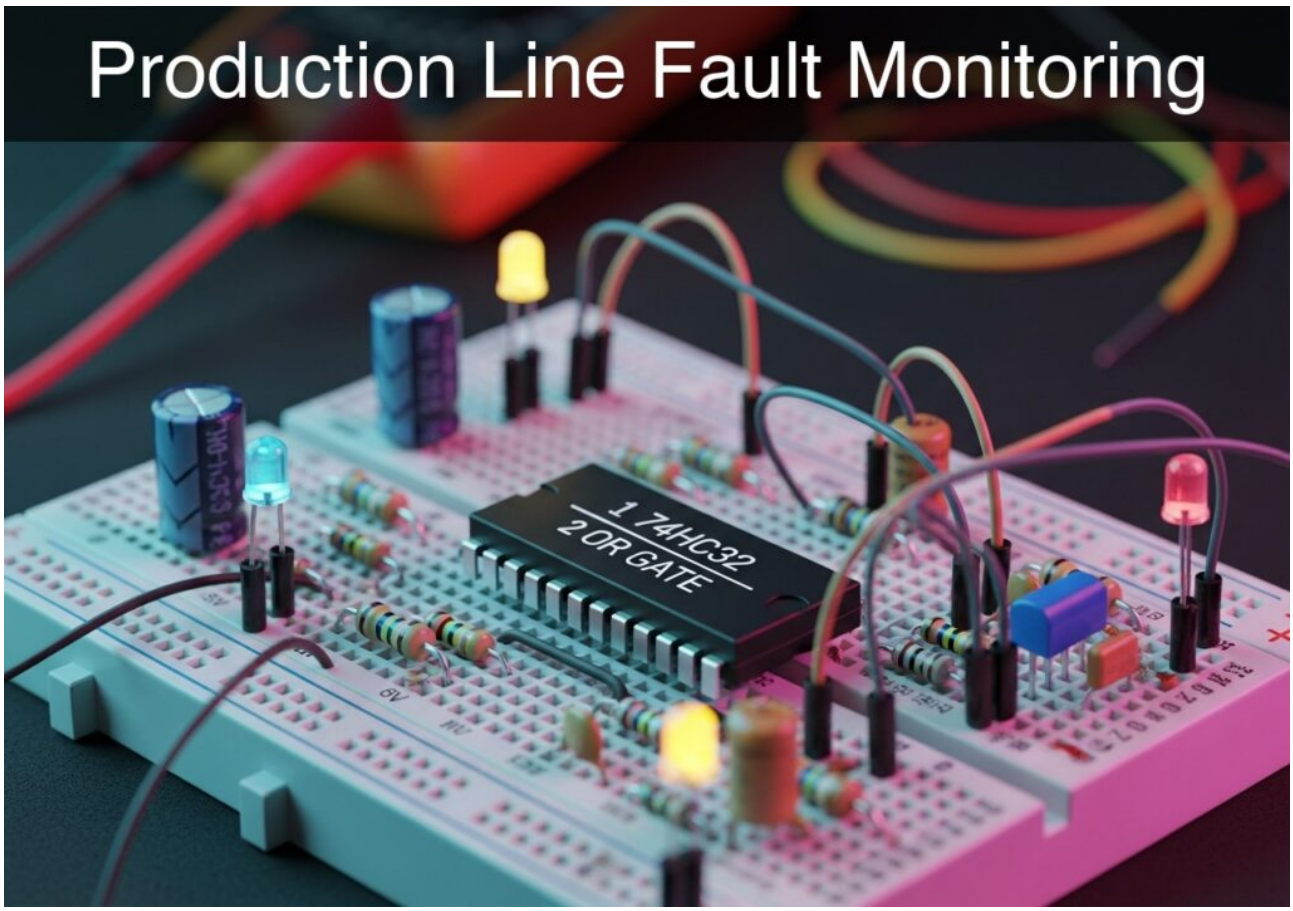
Master Analog Electronics by building a Wheatstone bridge with a Resistor sensor. Measure precise differential voltage changes and calibrate zero-point offsets.

Practical case: Empty Tank Level Indicator



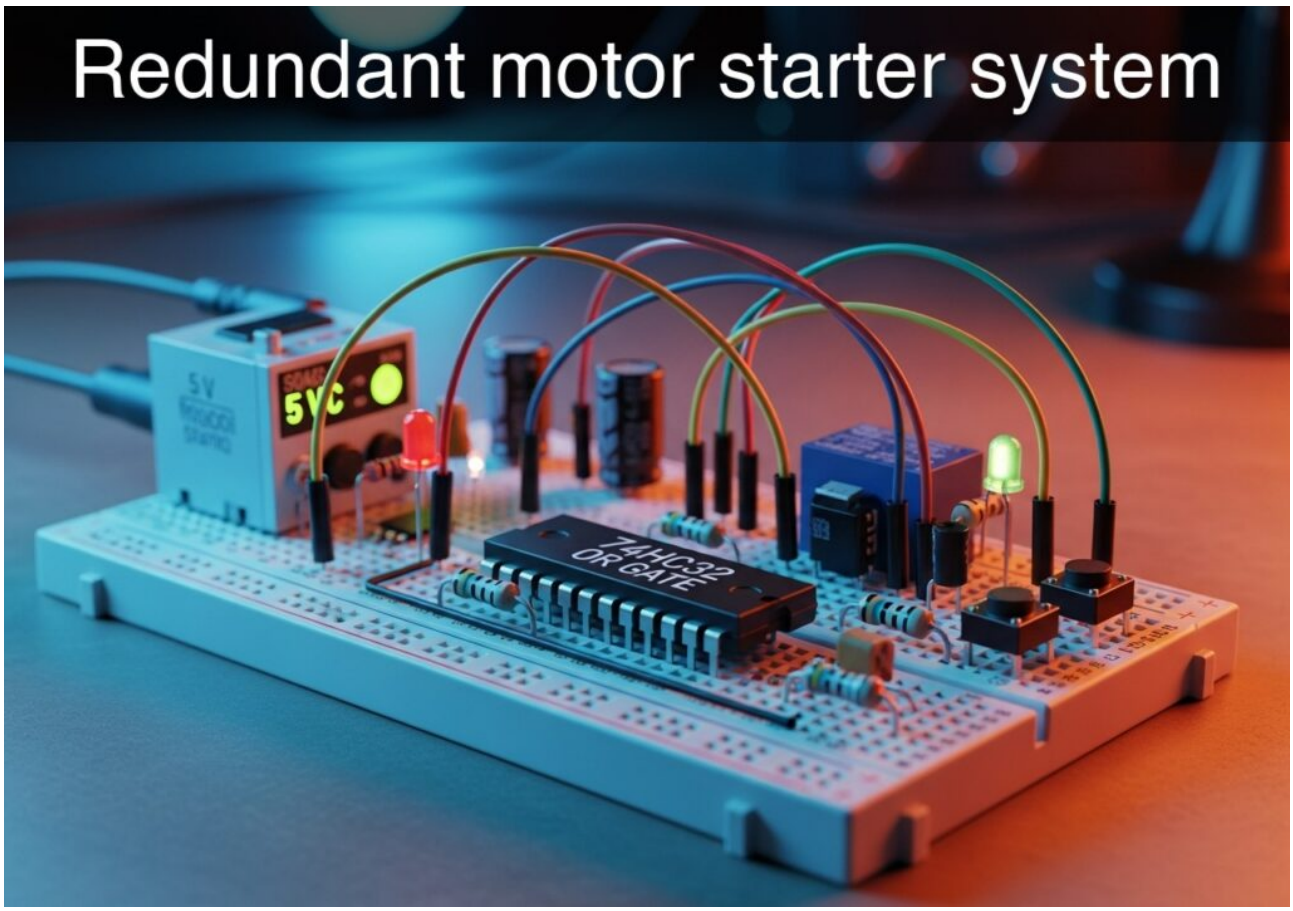
Master Digital Electronics by building a water level alarm with a NOT gate. Design a circuit that lights an LED when tanks empty, preventing pump damage.

Practical case: Production Line Fault Monitoring



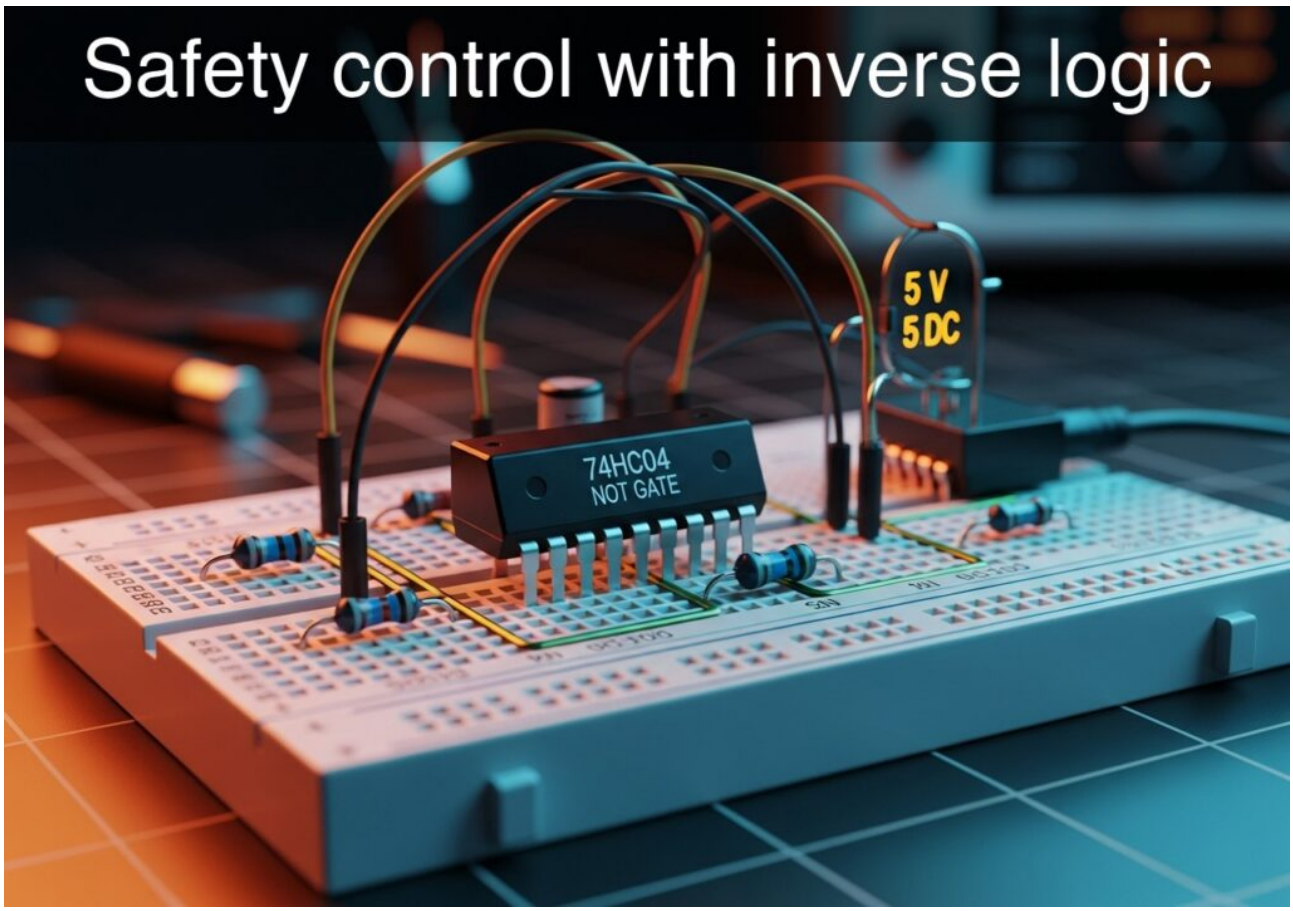
Master Digital Electronics by building a safety circuit with an OR gate. Stop a conveyor belt instantly when temperature or jam sensors detect faults.

Practical case: Redundant motor starter system



Master Digital Electronics by building a dual-start motor control circuit. Use an OR gate to trigger a relay and drive heavy loads from two distinct locations.

Practical case: Safety control with inverse logic



Master Digital Electronics by building an emergency stop circuit. Use a NOT gate to invert sensor signals and instantly halt a motor when a limit is reached.