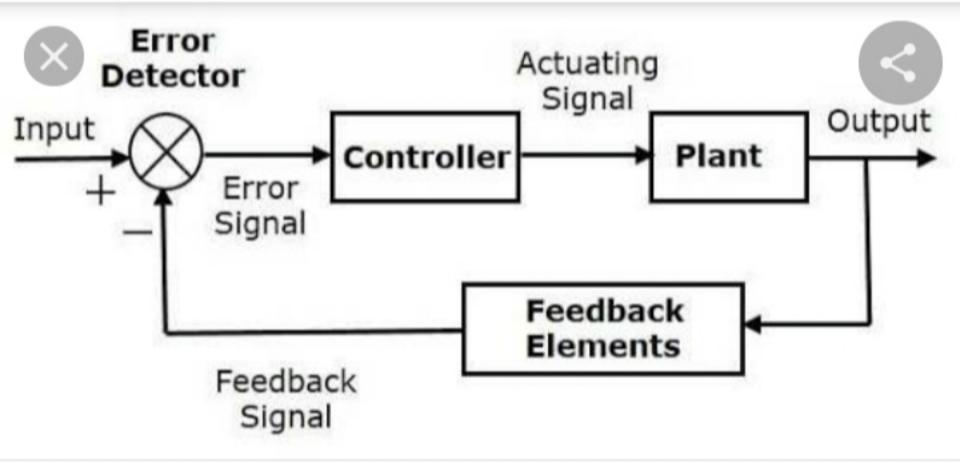
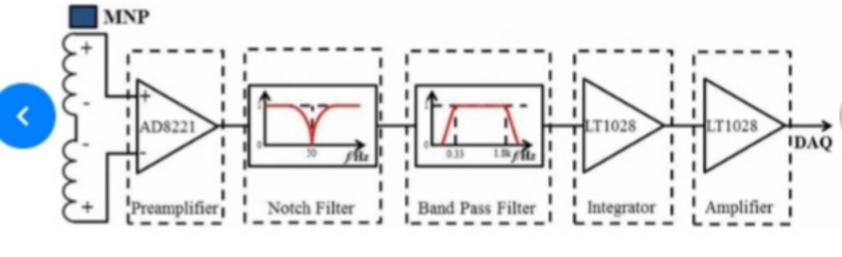
IPCD MOD 1 Lecture notes

Introduction to Process Control, controlled variables - these are the variables which quantify the performance or quality of the final product, which are also called output variables. manipulated variables - these input variables are adjusted dynamically to keep the controlled variables at their set-points.



A **control system evaluation** problem is conducted as a proof of implementation to demonstrate the functionality and effectiveness of the integrated evaluation approach with the use of MCDM techniques.

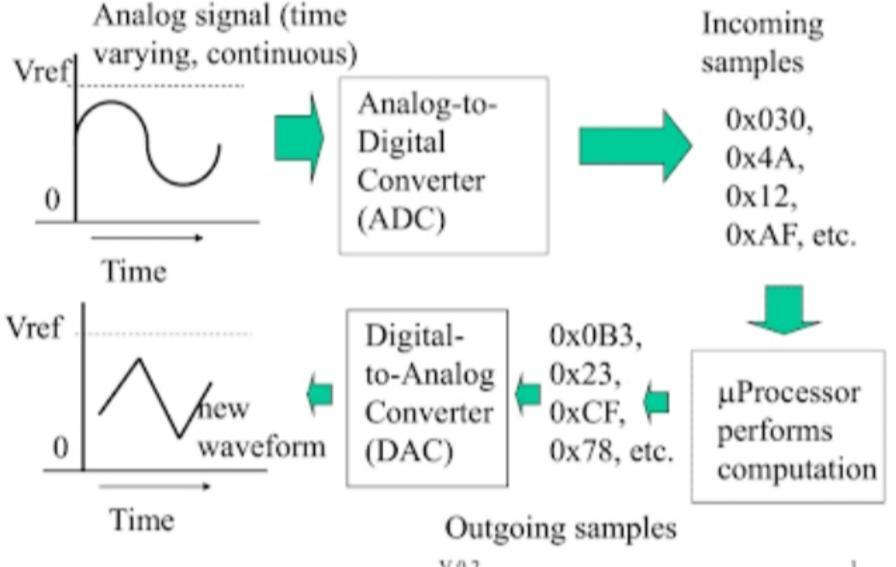


Analog signal processing for the measurement of timevarying magnetization.



Digital Signal Processing

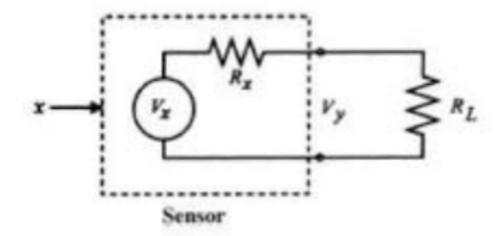




V 0.2

PRINCIPLES OF ANALOG SIGNAL CONDITIONING

- <
- Figure shows such an element modeled as a voltage Vx and a resistance Rx. Now suppose a load, RL, is connected across the output of the element as shown in Figure.
- This could be the input resistance of an amplifier, for example



PRINCIPLES OF ANALOG SIGNAL CONDITIONING

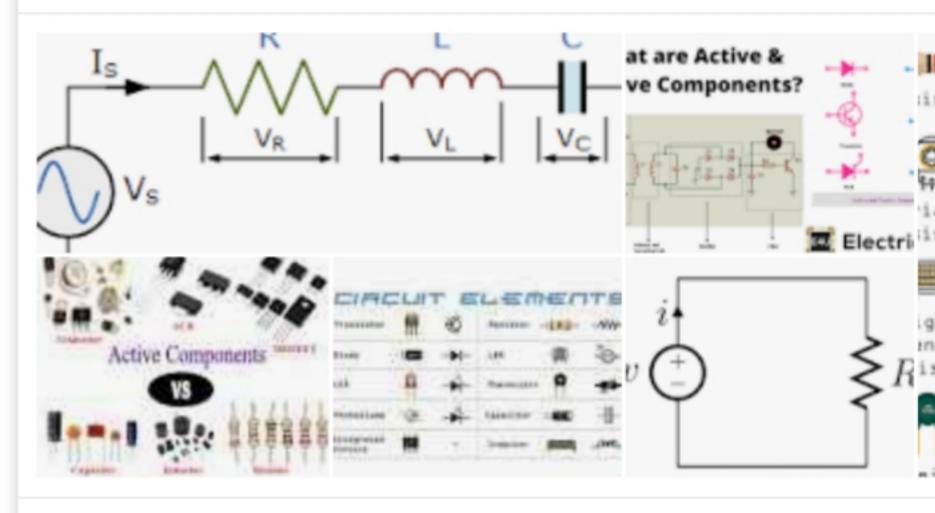


 A current will flow, and voltage will be dropped across Rx. It is easy to calculate that the loaded output voltage will thus be given by

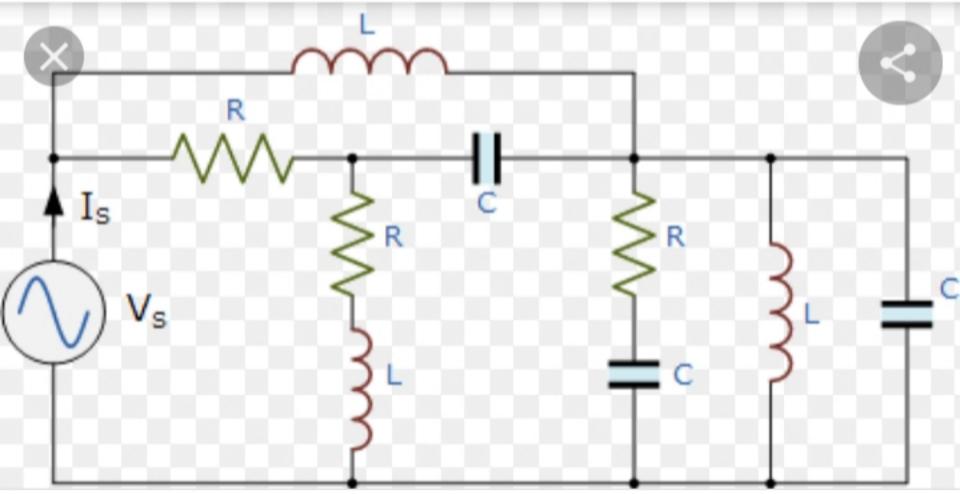
$$V_y = V_x \left(1 - \frac{R_x}{R_L + R_x} \right)$$

- The voltage that appears across the load is reduced by the voltage dropped across the internal resistance.
- This equation shows how the effects of loading can be reduced. Clearly, the objective will be to make RL much larger than Rx—that is RL>>Rx, . The following example shows how the effects of loading can compromise our measurements.

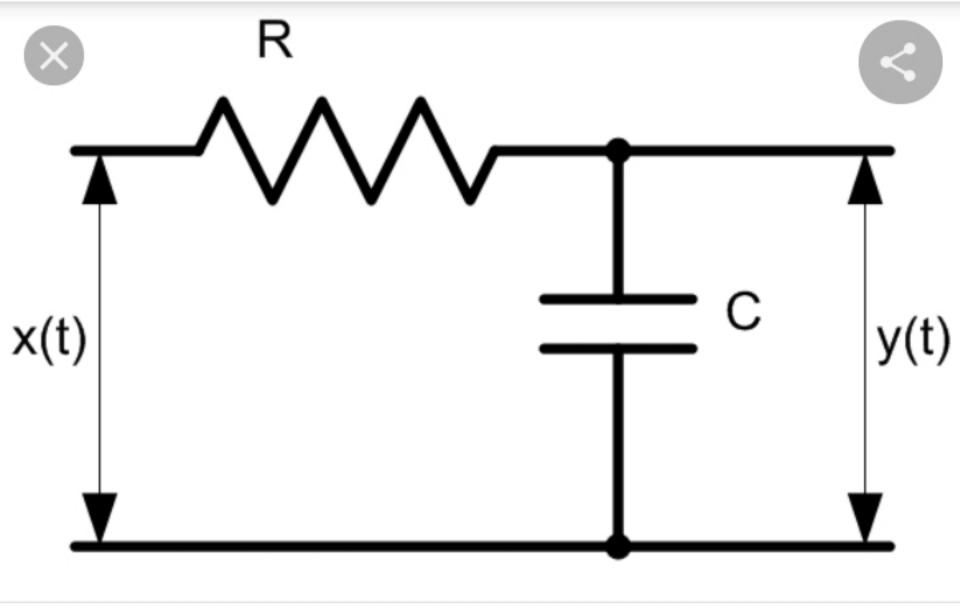
Passive circuit

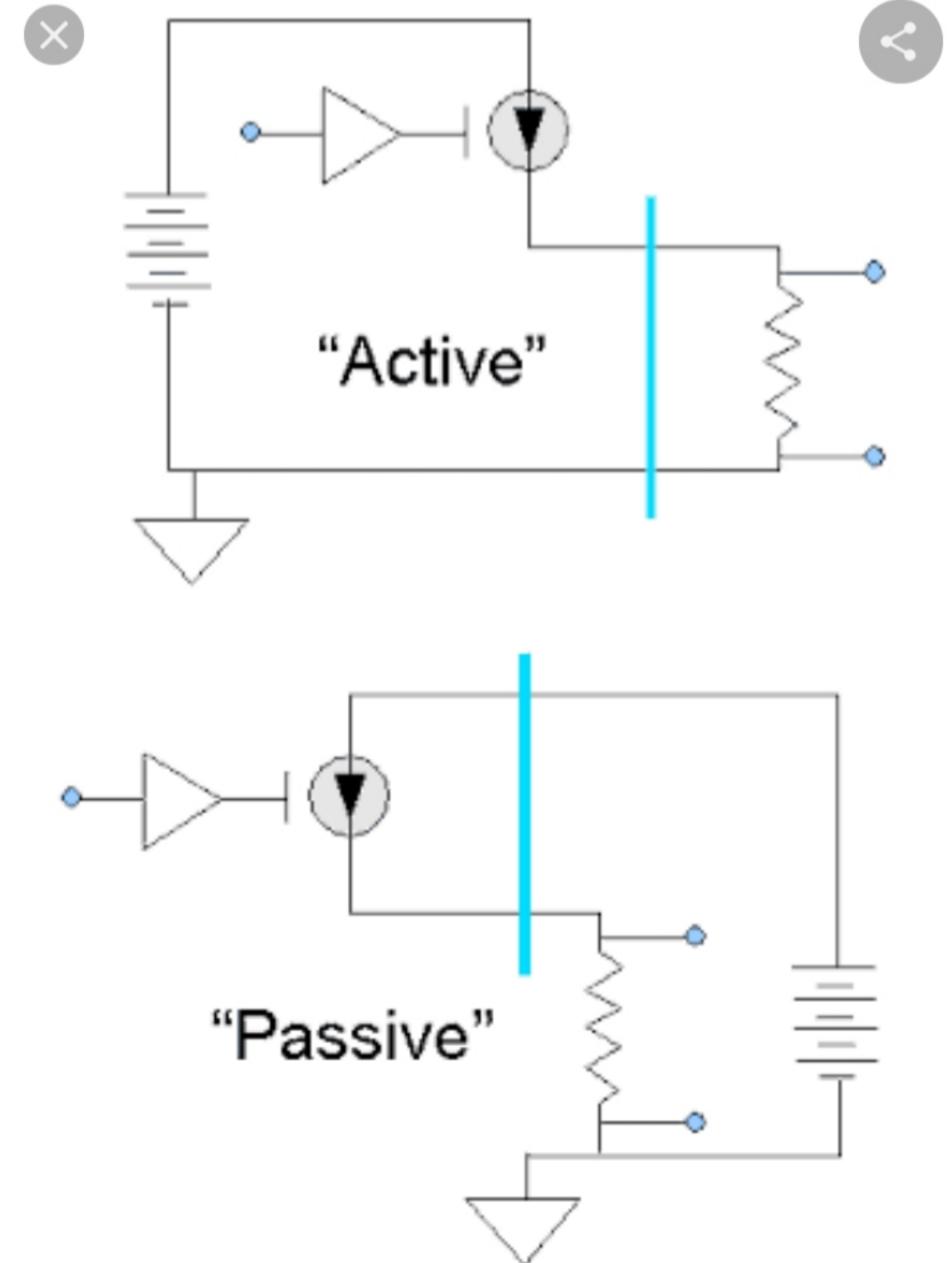


Passive Components. A **passive** component is an electronic component which can only receive energy, which it can either dissipate, absorb or store it in an

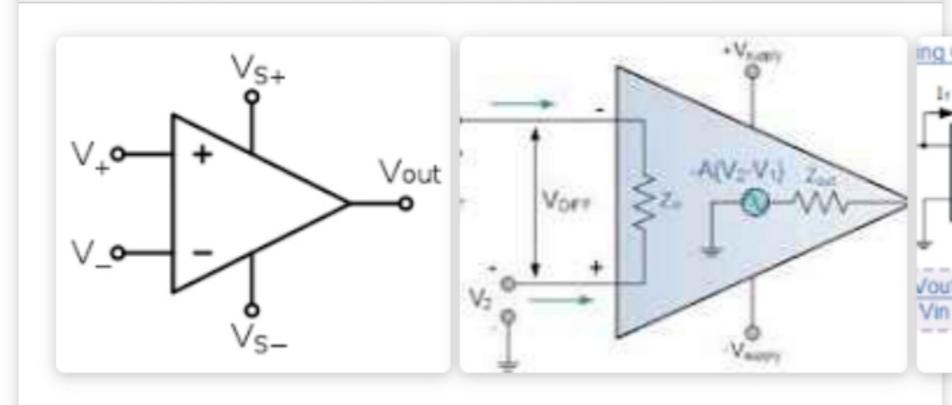


Passive integrator

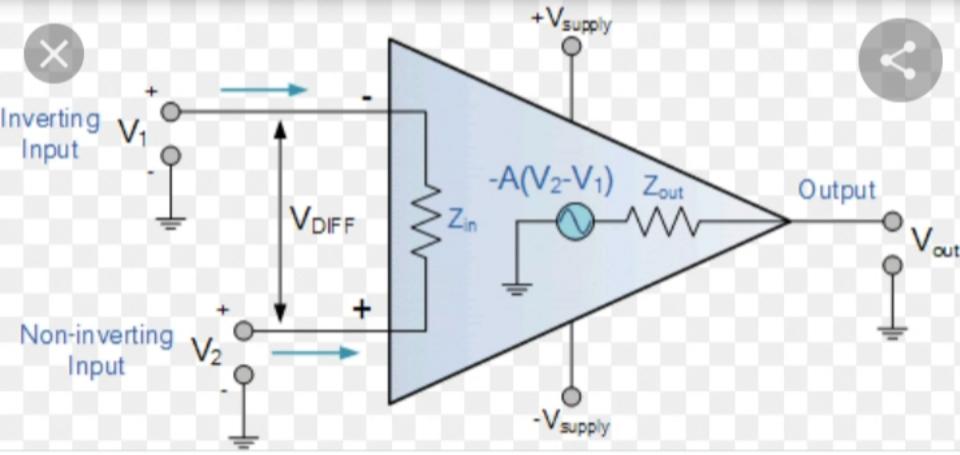


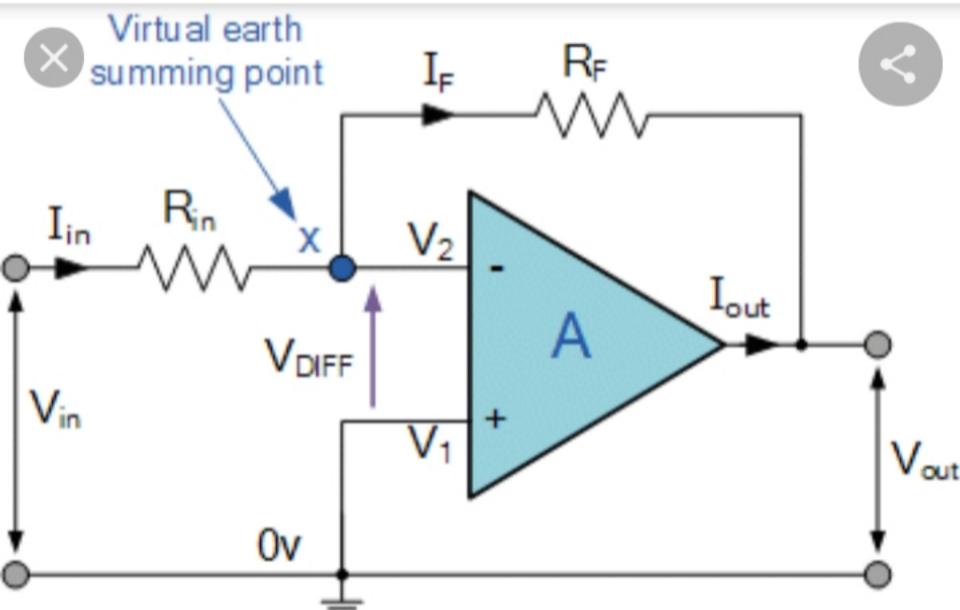






An operational amplifier is a DC-coupled high-gain electronic voltage amplifier with a differential input and, usually, a single-ended output. In this configuration, an op amp produces an output potential that is typically 100,000 times larger than the potential difference between its input





An instrumentation amplifier is a differential op-amp circuit providing high input impedances with ease of gain adjustment through the variation of a single resistor.

