Application of thevenin theorem essay sample

Law

Application

There are some applications of Thevenin's Theorem in our daily lives. Thevenin's Theorem is very useful to reduce a network with several voltage sources and resistors to an equivalent circuit composed a single voltage source and a single resistance connected to a load only. It is used in simplifying and analysing complex linear networks power systems and circuits where one particular where a particular load resistor, RL in the circuit is subject to change, and recalculation of the circuit is necessary with each trial value of load resistance to determine voltage across it and current through it. This show that Thevenin's theorem is important to apply in analysing DC circuits so that we no need to analyse the circuits all over again when got a variable load.

Source modelling is also important application of Thevenin's Theorem. An active source such as a battery is often characterized by its Thevenin equivalent circuit. An ideal voltage source provides a constant voltage irrespective of the current drawn by the load, while an ideal current source supplies a constant current regardless of the load voltage. Internal resistances and source resistances cause practical voltage and current sources not ideal. The load voltage will approach a source voltage, Vs as RL increase. The closer the voltage source get to be ideal as if the internal resistance, RS of the source is zero or smaller than RL. In general, the load voltage decreases as RL decreases. Same as the voltage source, the load current will increases as the load resistance increases too.

Besides that, resistance measurement using the Wheatstone bridge provides an example of the usefulness of the Thevenin's Theorem too. The bridge

circuit is able to simplify to an equivalent circuit from the load resistor by using the Thevenin's theorem. It makes us easy to measure an unknown resistance in the complicated Wheatstone Bridge (Resistance Bridge) circuit. Other than that, Thevenin's Theorem also do contributes in circuit design in which the Thevenin's equivalent circuits of active networks consisting of transistors, voltage sources such as batteries. Also, Thevenin's theorem is used to determine the variable load power. The Thevenin equivalent is useful in finding the maximum power a linear circuit can deliver to a load. Maximum power is transferred to the load when the load resistance equals the Thevenin resistance as seen from the load (RL = RTH).