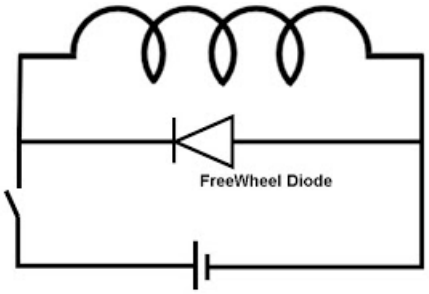
Freewheeling or Flyback Diode Working and their Functions

A Flyback diode is also called as freewheeling diode. It is also called by many other names like snubber diode, suppressor diode, catch diode or clamp diode, commutating diode. Here, catch diode is used to eliminate flyback, when the abrupt voltage spike is witnessed across the inductive load when the supply current abruptly reduced. It helps the circuit from damaging. It will get prevented from buying new circuit. Freewheeling diode is simplified form where voltage source is **connected to an inductor** with a switch.

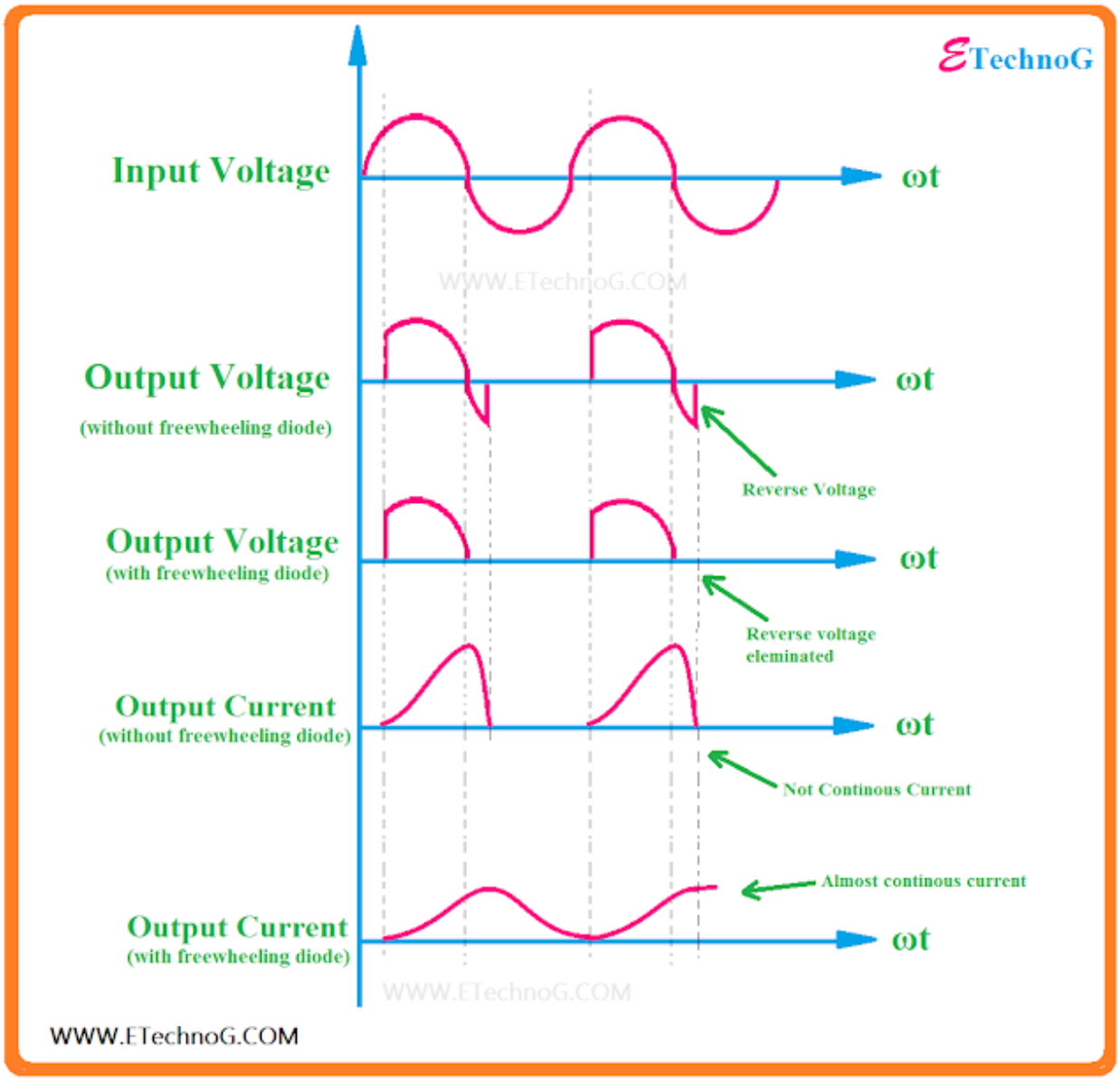
Design of the Freewheeling Diode

In the below diagram a freewheeling diode is placed across the inductor. An ideal flyback diode will have a very large peak forward current; capacity which helps in handling the voltage transients from burning out the diode, **inductor's power supply** is suited for reverse breakdown voltage and low forward voltage drop. Voltage surges can be 10times to the voltage of power source which depends on the equipment involved and the application. It is understood that not to underestimate the energy which contain within an energized inductor.



In flywheel application **Schottky diodes** are used for switching power converters, because they will have **lowest forward drop i.e. 0.2V**. These are also responding quickly in reverse bias in the case of the inductor is being re-energized. While transferring the energy from inductor to a capacitor it dissipates less energy

https://www.elprocus.com/freewheeling-or-flyback-diode-circuit-working-functions/#:~:text=Freewheel%20diode%20or%20Flyback%20diodes,turned%20off%20to%20the%20devices.&text=The%20voltage%20spike%20will%20be,bias%20to%20the%20supply%20voltage.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Input Voltage
ωt
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Output Voltage
(without freewheeling diode)
ωt
Reverse Voltage
Output Voltage
(with freewheeling diode)
ωt
Reverse voltage
eleminated
Output Current
(without freewheeling diode)
ωt
Not Continous Current
Almost continous current
Output Current
(with freewheeling diode)
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