











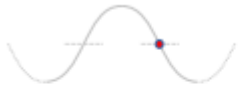

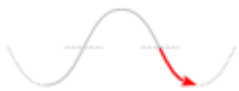



# Inductor EMF Vs. Current Flow

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# Interpreting Voltage & Current Waveforms

Current	Inductor voltage	Comments
		<p>The current increase and its rate of change <math>\frac{di}{dt}</math> increase too (acceleration).</p> <p>The emf voltage of the inductor increases, but its rate of change <math>\frac{dv}{dt}</math> slow down (deceleration).</p>
		<p>Inflection point<sup>1</sup> of the increasing current curve: The current rate of change <math>\frac{di}{dt}</math> is at its maximum<sup>2</sup> and emf voltage of the inductor reach a maximum <u>positive</u> voltage. <math>\frac{dv}{dt}=0</math></p>
		<p>The current increase but its rate of change <math>\frac{di}{dt}</math> now slow down (deceleration).</p> <p>The emf voltage of the inductor start to decreases, but its rate of change <math>\frac{dv}{dt}</math> increases (acceleration).</p>
		<p>The current value reach a maximum amplitude, but the rate of change of the current <math>\frac{di}{dt}=0</math></p> <p>The emf voltage of the inductor = 0 (The waveform have a zero crossing)</p>
		<p>The current start to decrease and its rate of change <math>\frac{di}{dt}</math> increase (acceleration).</p> <p>The emf voltage of the inductor decreases, and its rate of change <math>\frac{dv}{dt}</math> slow down (deceleration).</p>

		<p>Inflection point of the decreasing current curve: The current rate of change <math>\frac{di}{dt}</math> is at its maximum and emf voltage of the inductor reach a maximum <u>negative</u> voltage.</p>
		<p>The current decrease and its rate of change <math>\frac{di}{dt}</math> now slow down (deceleration). The emf voltage of the inductor start to increases, and its rate of change <math>\frac{dv}{dt}</math> increases too (acceleration).</p>
		<p>The current value reach a minimum value (but maximum amplitude), the rate of change of the current <math>\frac{di}{dt} = 0</math>. The emf voltage of the inductor = 0 (The waveform have a zero crossing)</p>