Rectifier Tables: Monophasic Controlled

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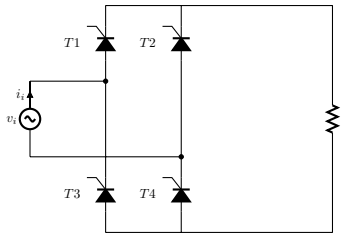
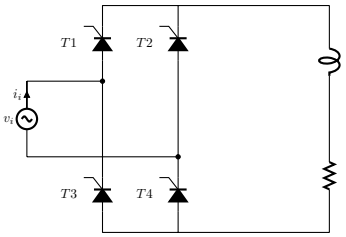
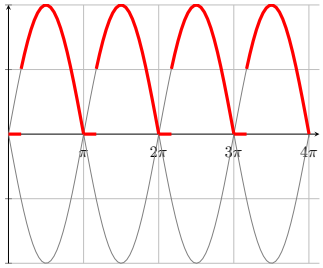
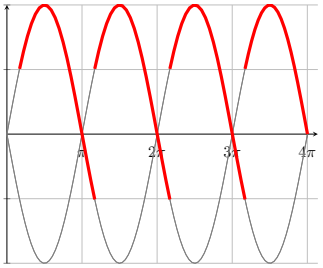
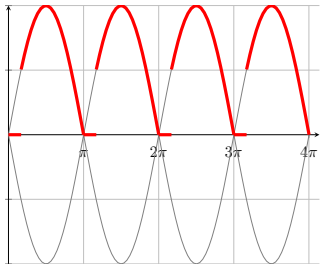
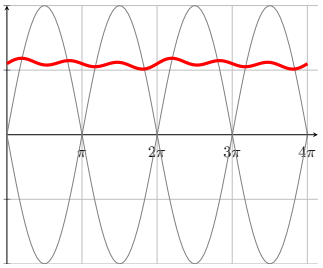
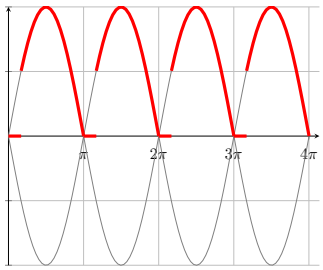
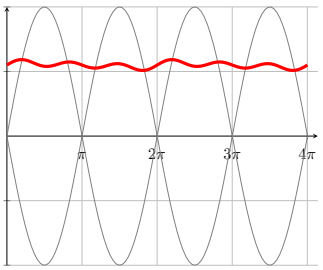
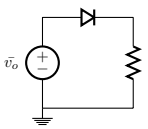
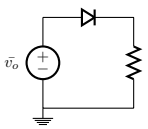
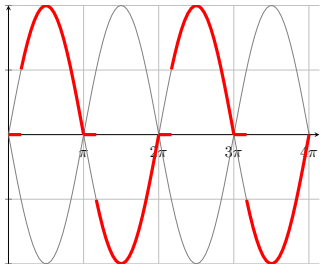
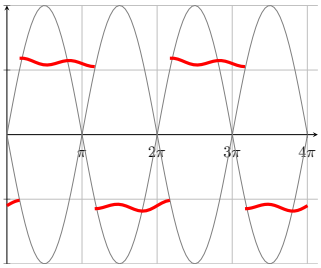
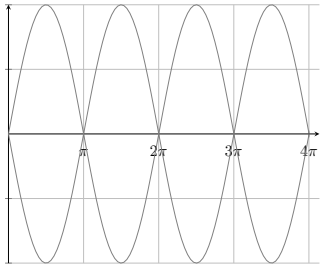
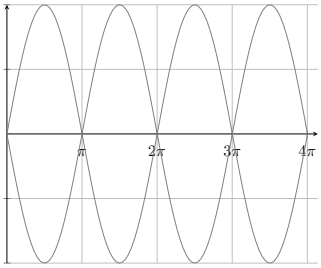
1.1 Monophasic Controlled Full Wave Rectifier, R vs RL load

What	Controlled FWR R load	Controlled FWR RL load
Circuit Diagram		
v_o		
$\bar{v_o}(\alpha)$	$\bar{v_o} = \frac{V_i}{\pi}(\cos(\alpha) + 1)$	$\bar{v_o} = \frac{2V_i}{\pi}\cos(\alpha)$
v_R		
Thyristor table		
$i_o(t)$		
$\bar{i_o}$	 $\bar{i_o} = \frac{\bar{v_o}}{R} = \frac{\frac{V_i}{\pi}(\cos(\alpha) + 1)}{R}$	 $\bar{i_o} = \frac{\bar{v_o}}{R} = \frac{\frac{2V_i}{\pi}\cos(\alpha)}{R}$

$i_i(t)$		
$v_{T1}(t)$		
Power		$P = V_{1\ \mathrm{RMS}} I_{1\ \mathrm{RMS}} \cos(\varphi_1)$ $P = V_{ip} I_o \frac{2\sqrt{2}}{\pi} \cos(\alpha)$
Apparent Power		$S = V_{\mathrm{RMS}} I_{\mathrm{RMS}}$ $S = \frac{V_{ip}}{\sqrt{2}} I_o$
Power factor		$\mathrm{PF} = \frac{2\sqrt{2}}{\pi} \cos(\alpha)$