

Rectifier Tables: Monophasic Controlled

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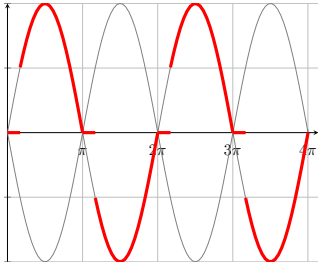
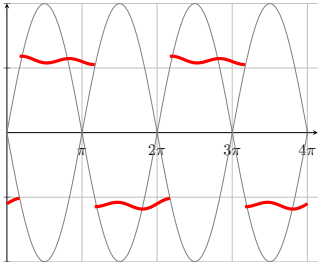
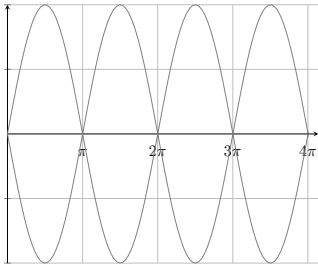
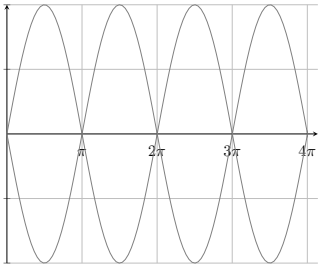
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1 Rectifier Tables

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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	$\bar{i}_o = \frac{\bar{v}_o}{R} = \frac{V_i}{\pi} \frac{(\cos(\alpha) + 1)}{R}$	$\bar{i}_o = \frac{\bar{v}_o}{R} = \frac{2V_i}{\pi} \frac{\cos(\alpha)}{R}$

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