



¿Qué cambia el convertidor CA/CA?

Valor eficaz



**Controladores de
CA/CA**

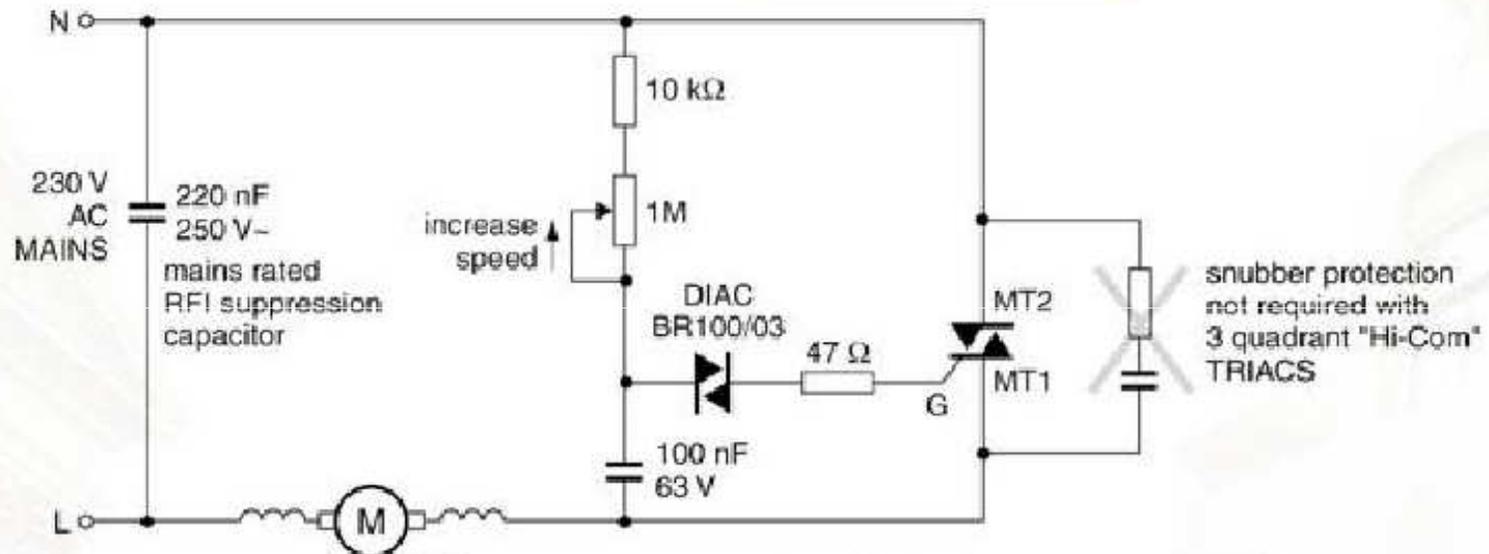
Frecuencia y Valor eficaz



Cicloconvertidores

Aplicaciones

Vacuum Cleaner



SUGGESTED 3 QUADRANT TRIACS

BTA212(X)-B (12A)
BTA216(X)-B (16A)
BTA225 (25A)- for 100/110 V MAINS

ISOLATED "X PACK" CAN BE CLAMPED TO THE MOTOR FRAME FOR HEATSINKING

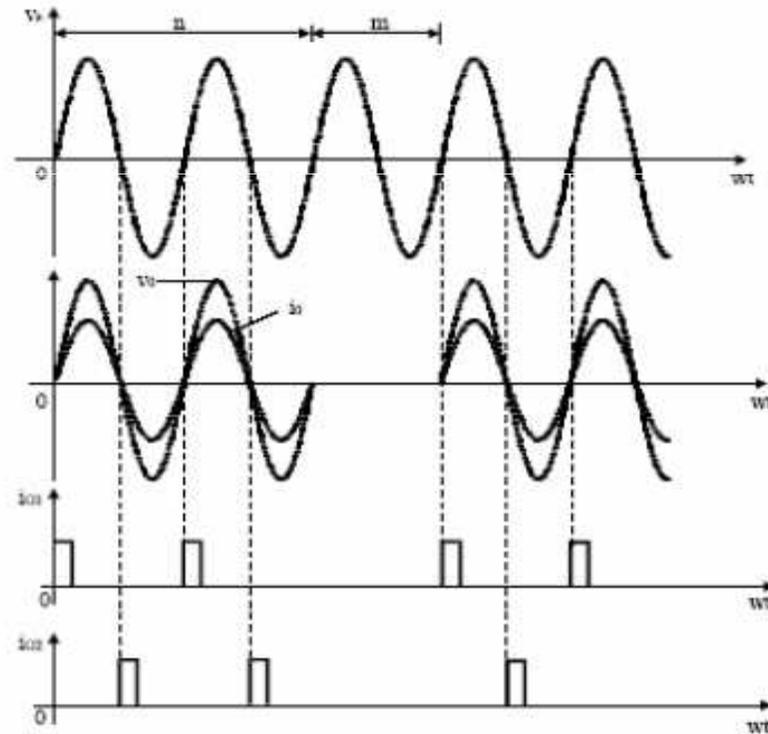
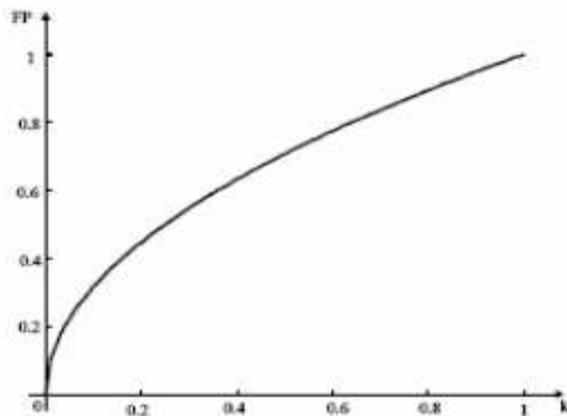
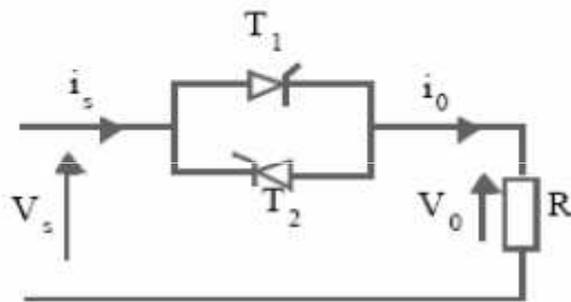
Controladores de Alterna

Existen tres técnicas para implementarlos:

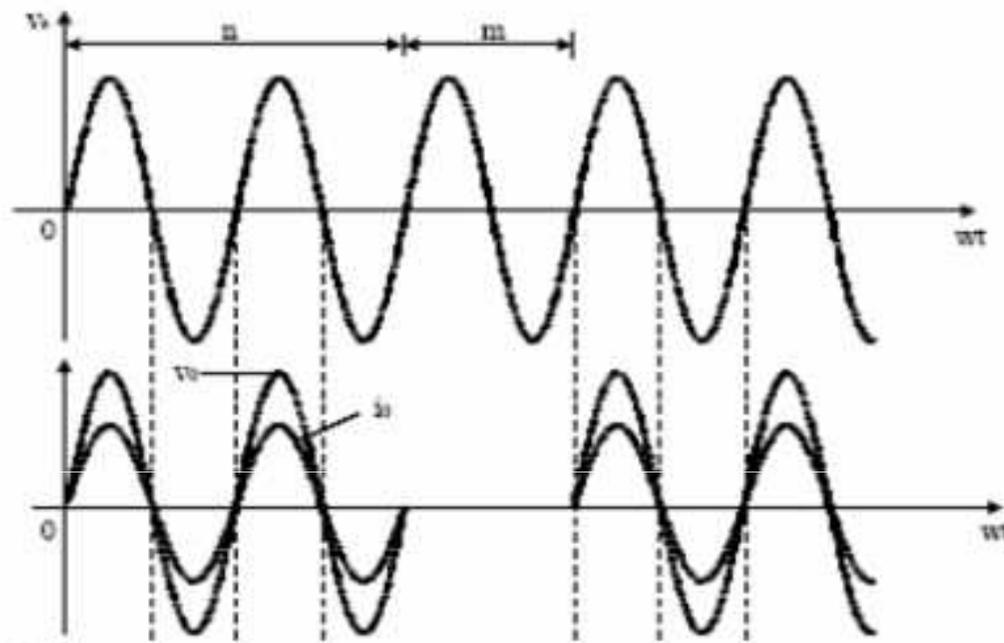
- Control *on-off* o de encendido-apagado
- Control de fase
- Control de amplitud

Control on/off (I)

OBJETIVO: Que la tensión de entrada se traspase a la carga **SÓLO durante unos ciclos.**



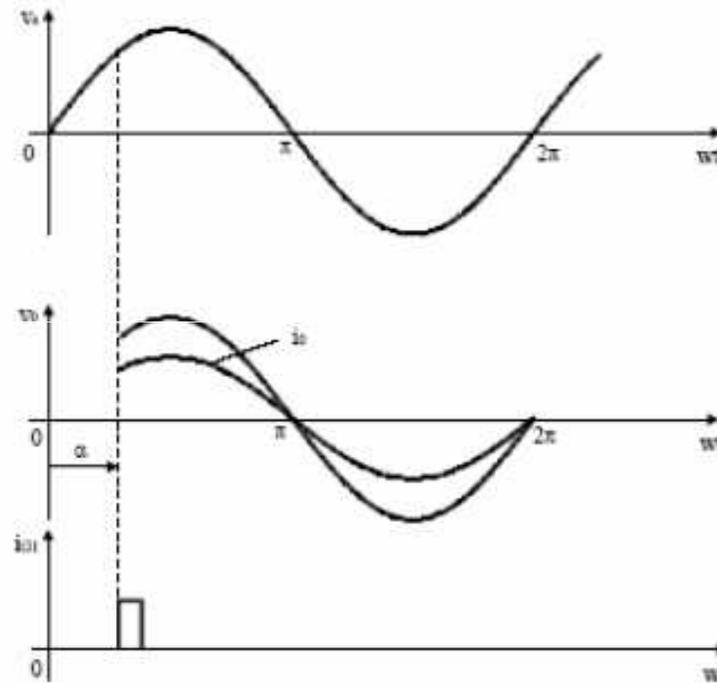
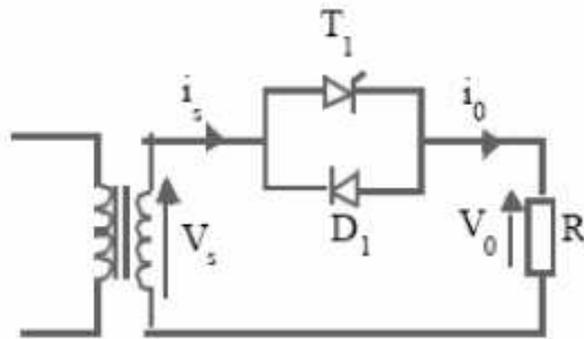
Control on/off (II)



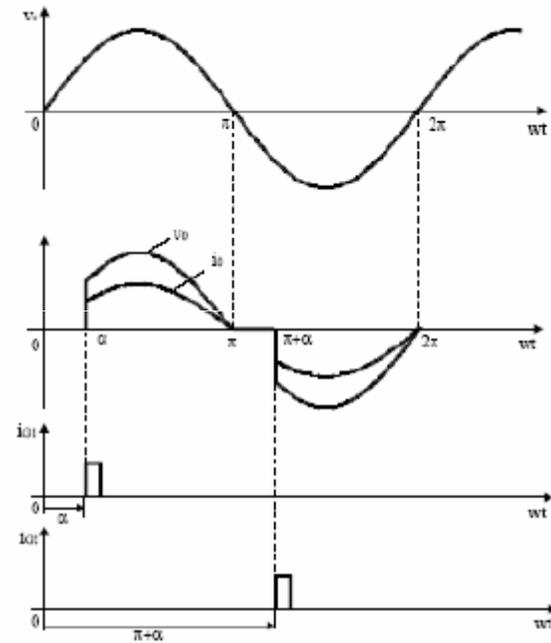
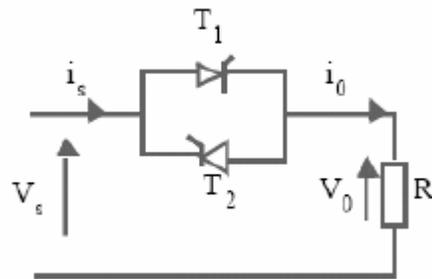
Durante n ciclos la carga está conectada a la fuente
 m ciclos la carga está desconectada de la fuente

$$V_o = V_s \cdot \sqrt{\frac{n}{m+n}}$$

Control de Fase Unidireccional

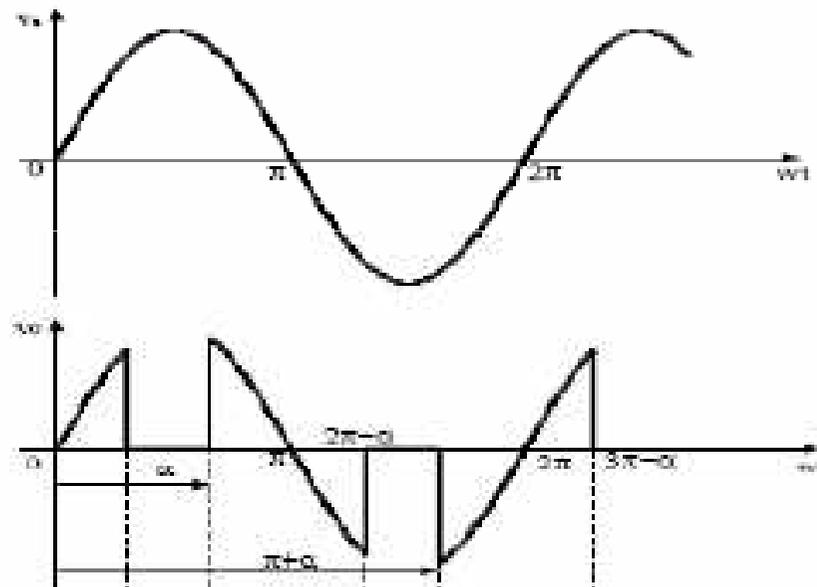


Control de Fase Bidireccional



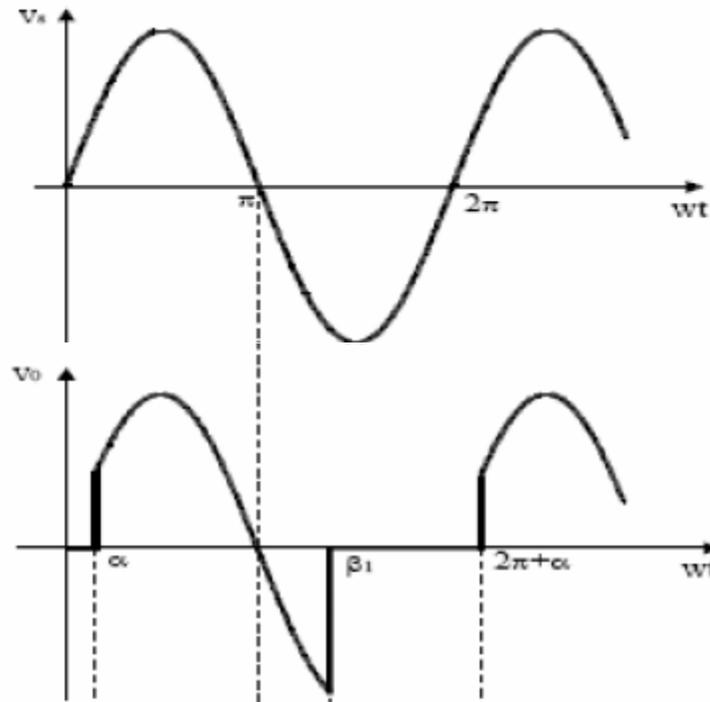
Control de Fase Bidireccional

L pura y $\alpha = 2\pi/3$

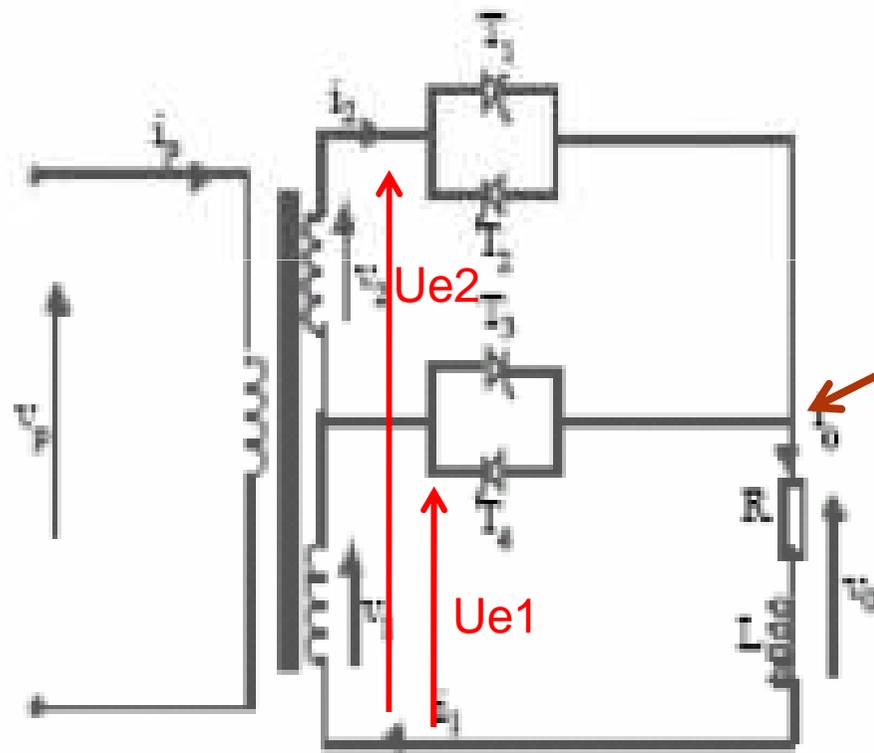


Control de Fase Unidireccional

Carga RL pura y $\alpha = \pi/6$

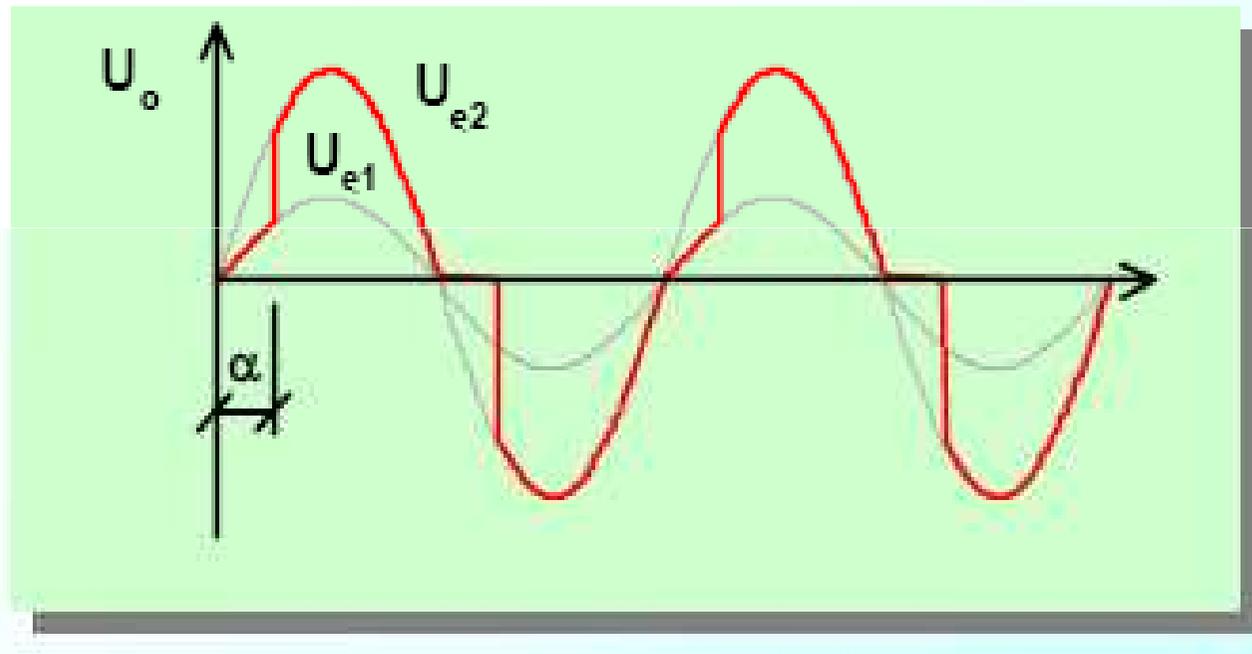


Control de Amplitud (I)

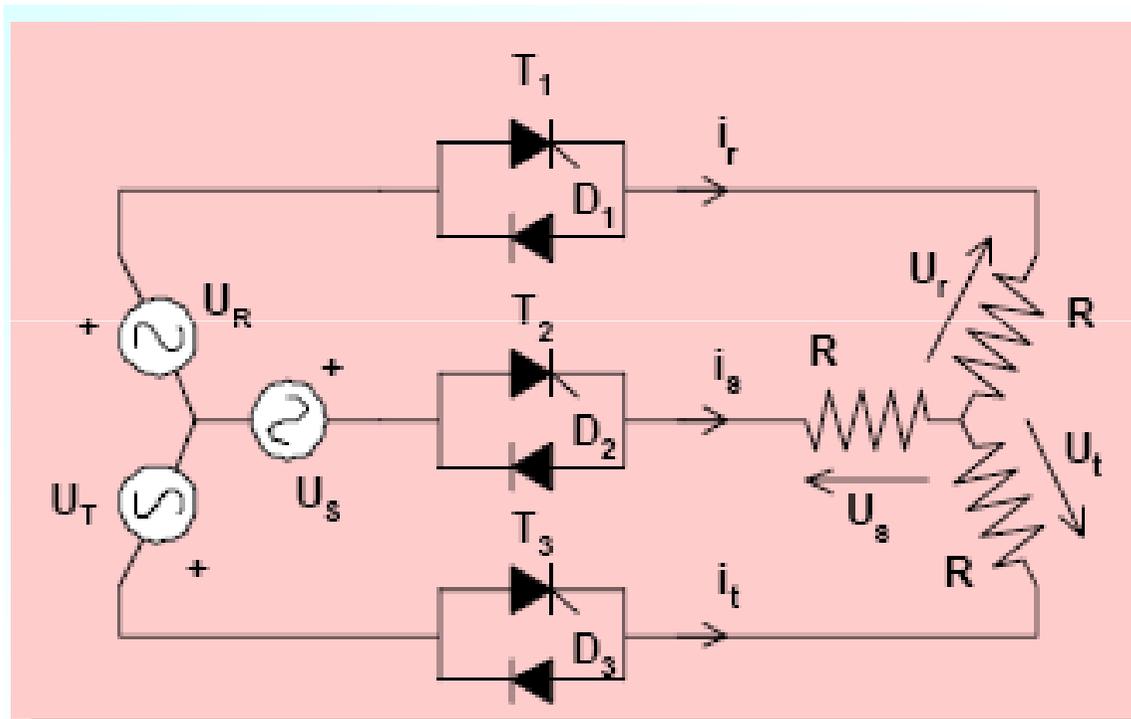


El valor de la tensión depende del par que esté conduciendo

Control de Amplitud (II)

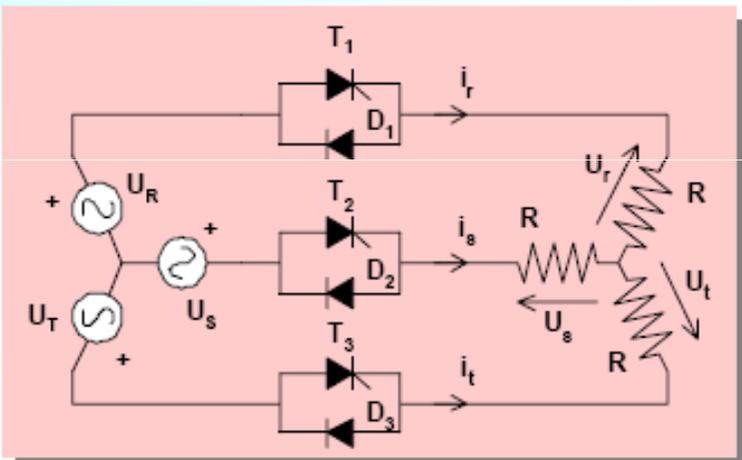


Convertidores Trifásicos (I)

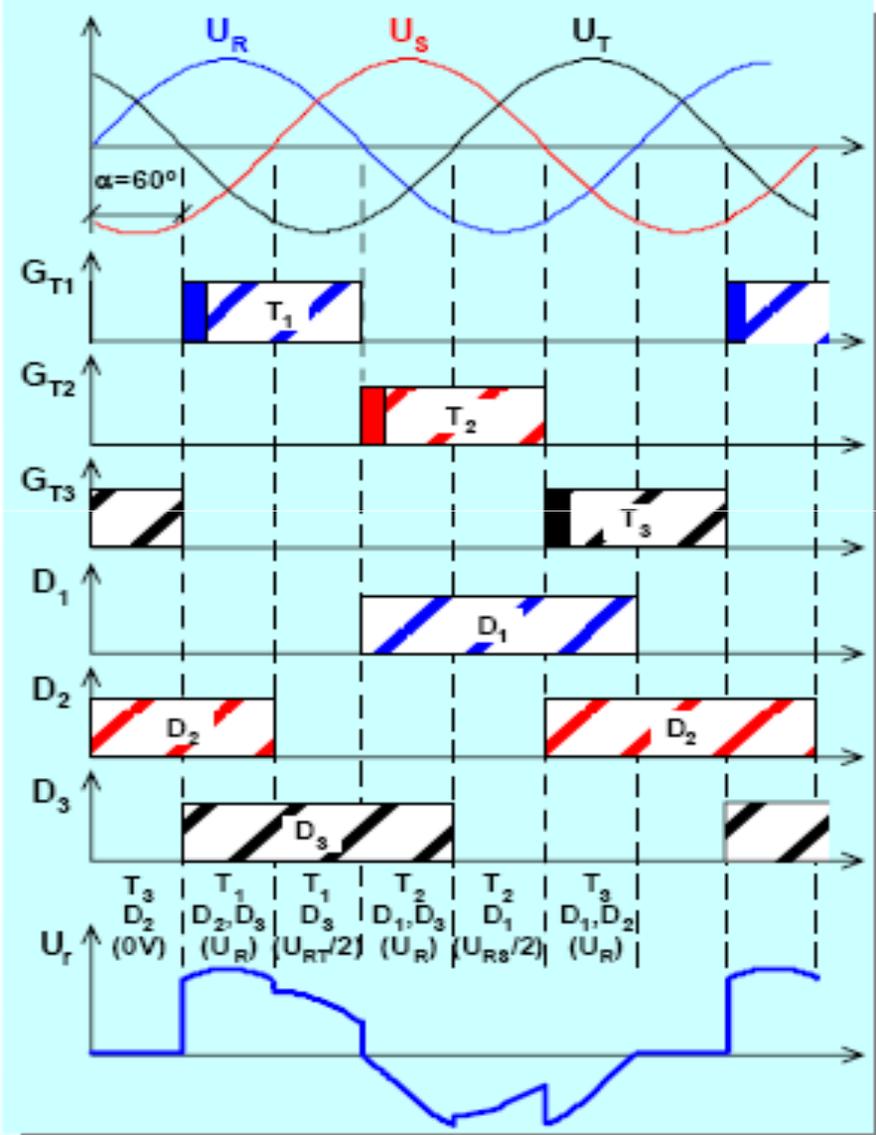


Unidireccional

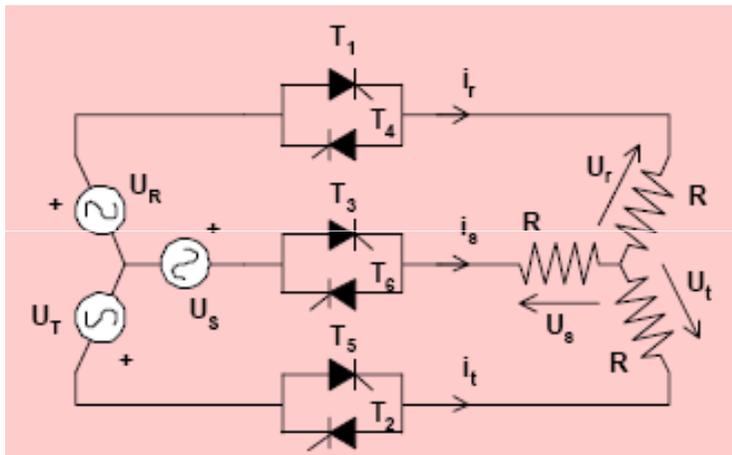
Convertidores Trifásicos (II)



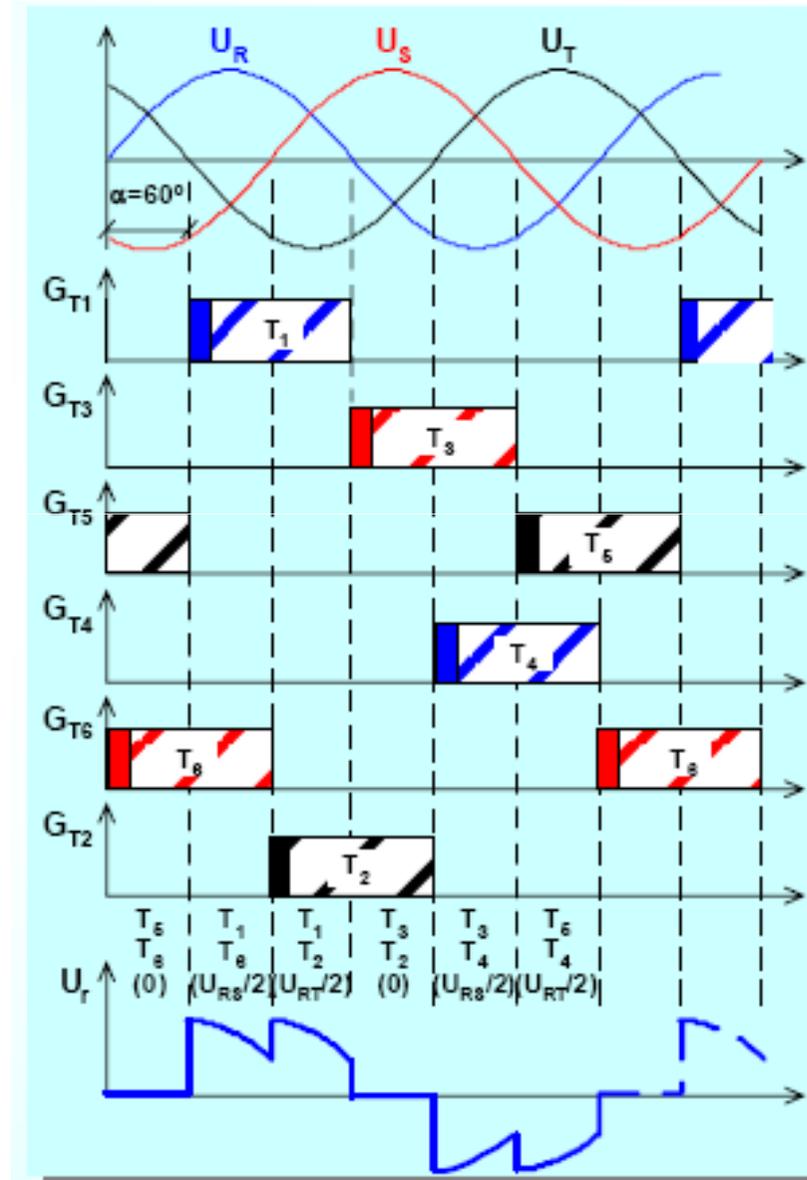
Unidireccional



Convertidores Trifásicos (III)



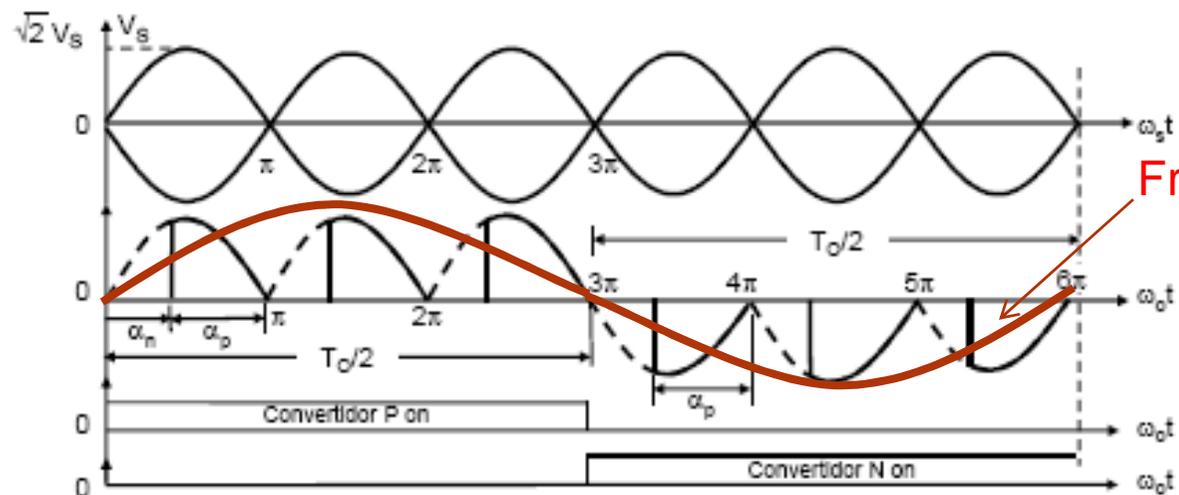
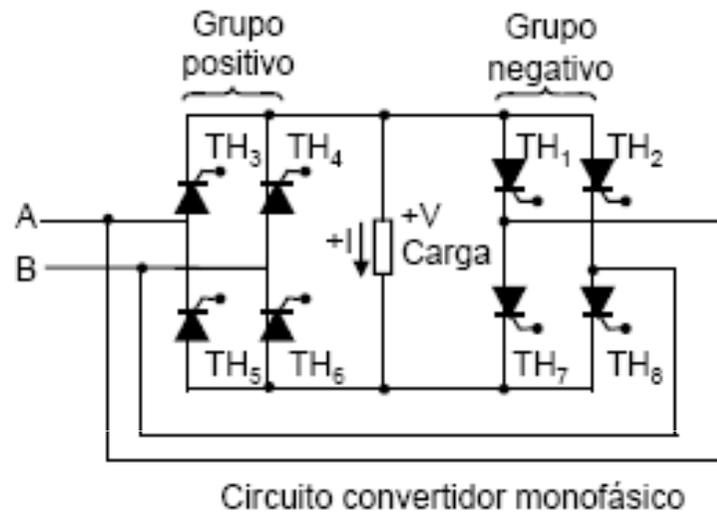
Bidireccional



Cicloconvertidores

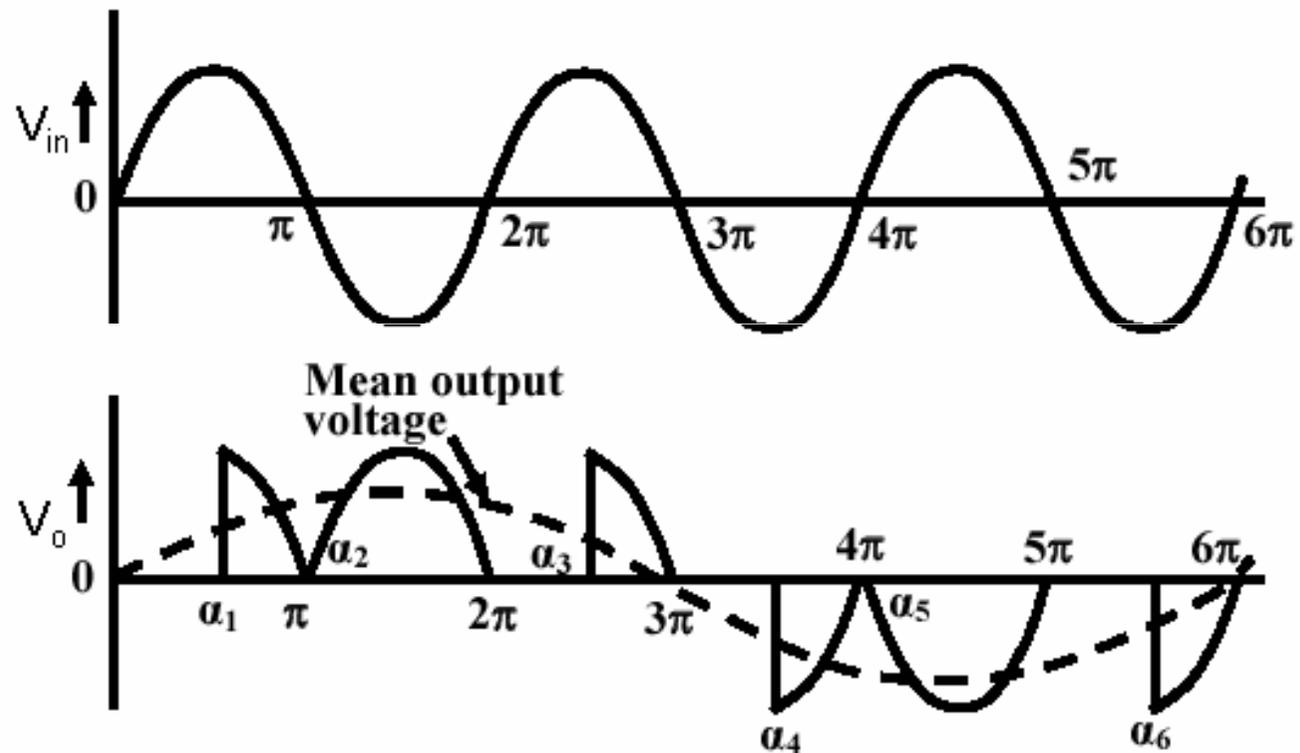
- Permiten obtener una señal alterna a la salida con **DISTINTA** frecuencia de la señal de entrada
- La frecuencia de salida siempre es **MENOR** que la de la entrada.

Cicloconvertidores (I)

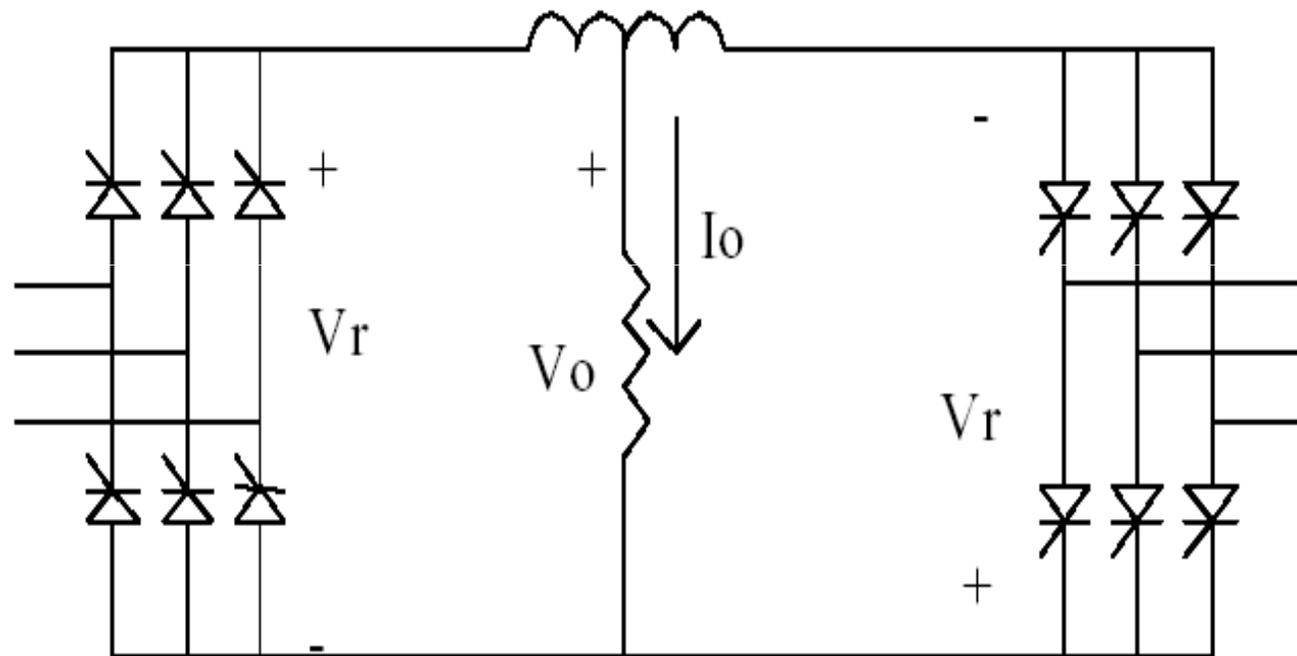


Formas de onda de un circuito convertidor monofásico con ángulo de disparo fijo.

Cicloconvertidores: Control Sinusoidal

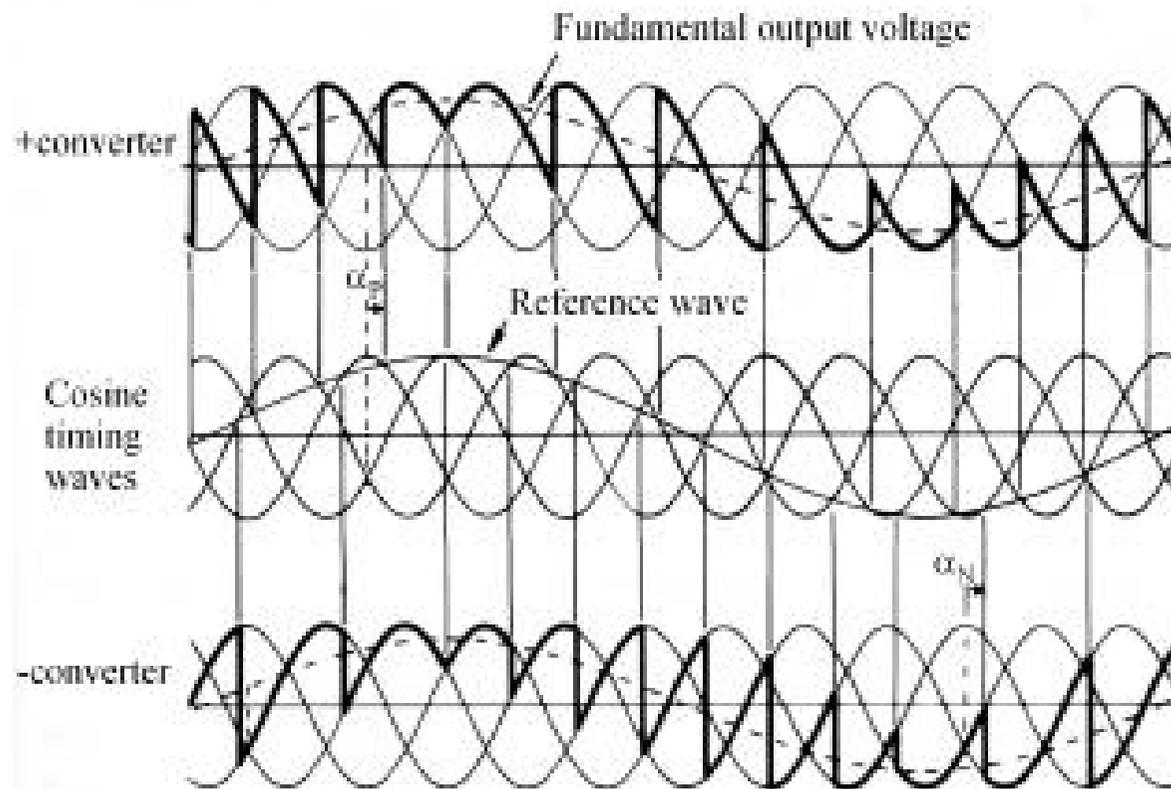


Cicloconvertidores (III)

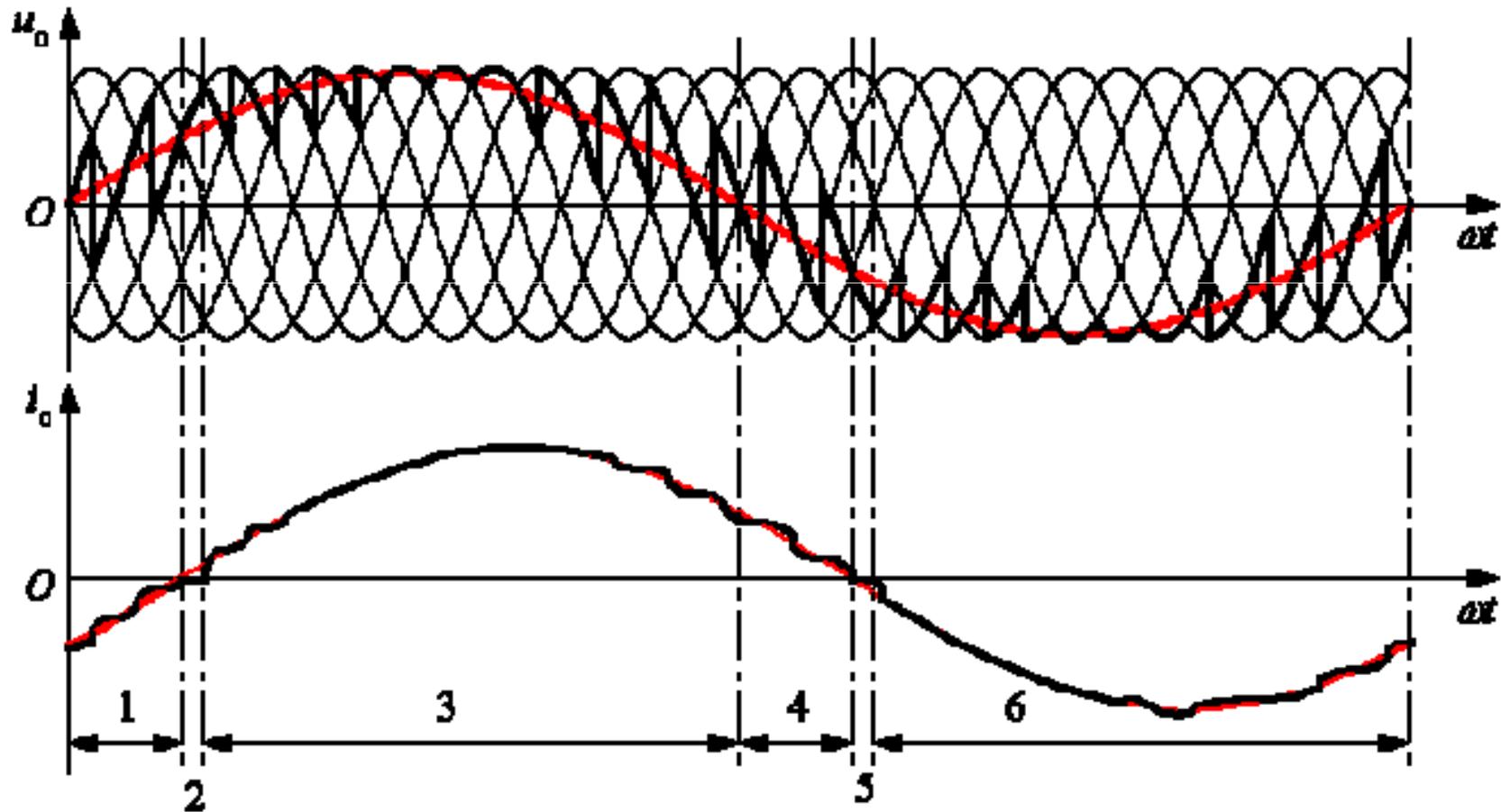


Cicloconvertor con entrada trifásica y salida monofásica.

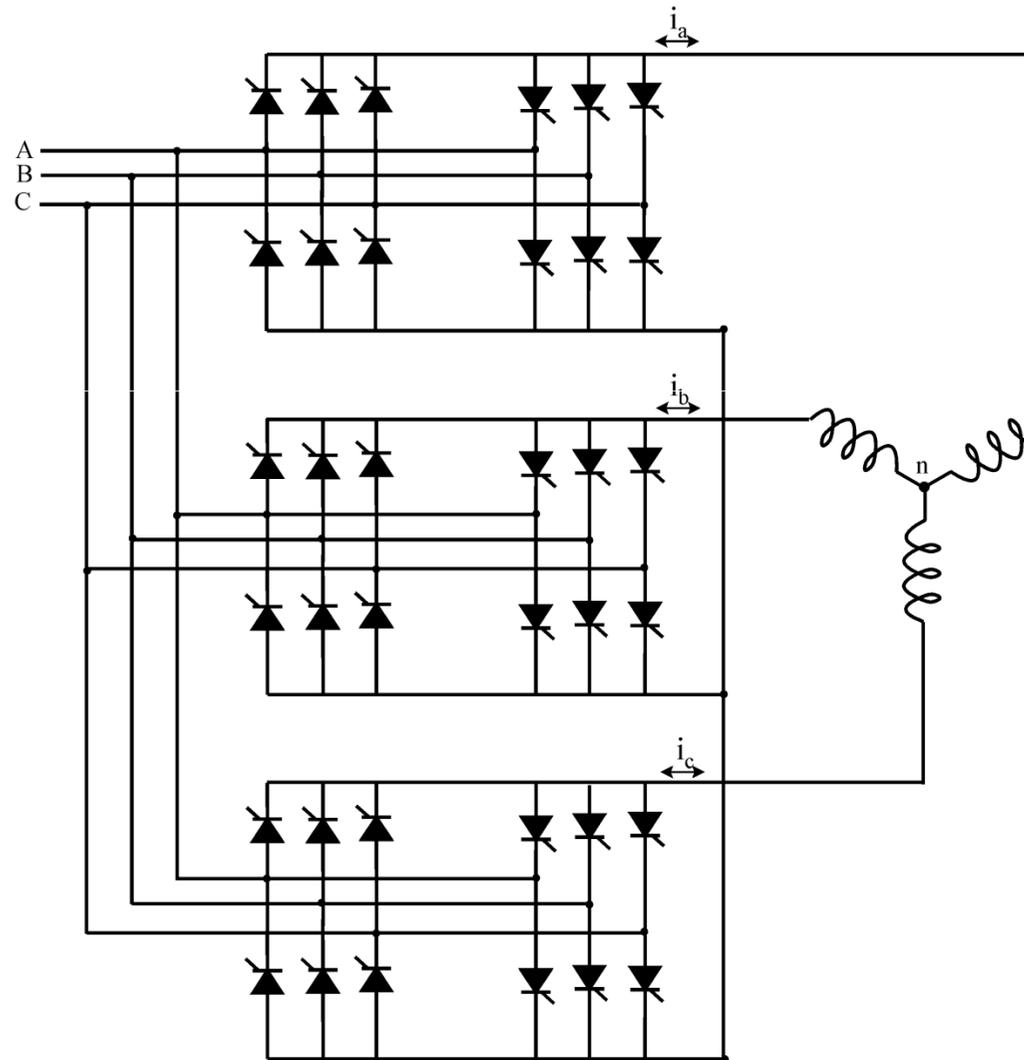
Cicloconvertidores (IV)



Cicloconvertidores (V)



Cicloconvertidor: Trifásica-Trifásica



Cicloconvertidores: Problemas

AC-AC

CICLOCONVERTIDORES

Inconvenientes

- ↓ **Caros**
- ↓ **Mal factor de potencia**
- ↓ **Restricciones en la conversión de frecuencias**

AC-DC-AC

RECTIFICADOR – ETAPA DC - INVERSOR