MICROINVERSORES DC/DC - DC/AC

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#LaUISqueQueremos

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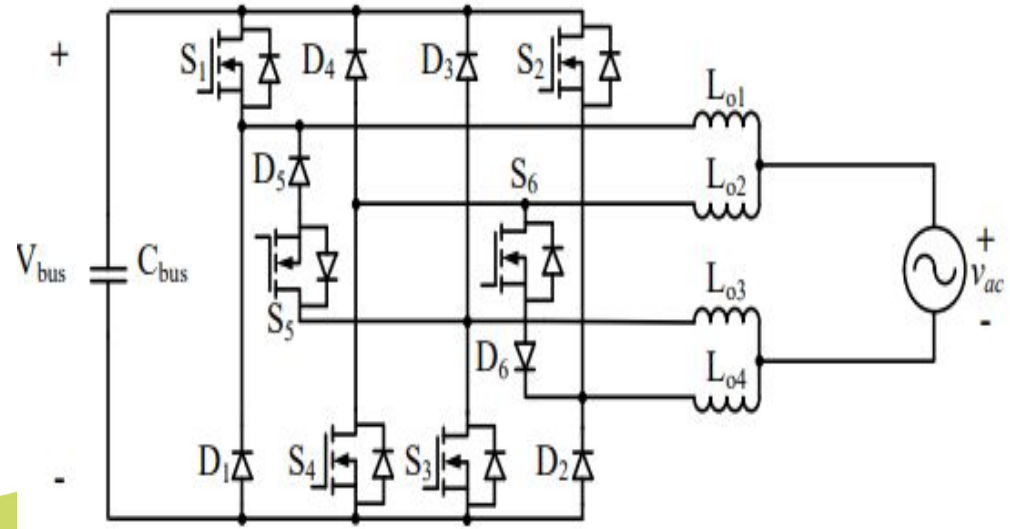
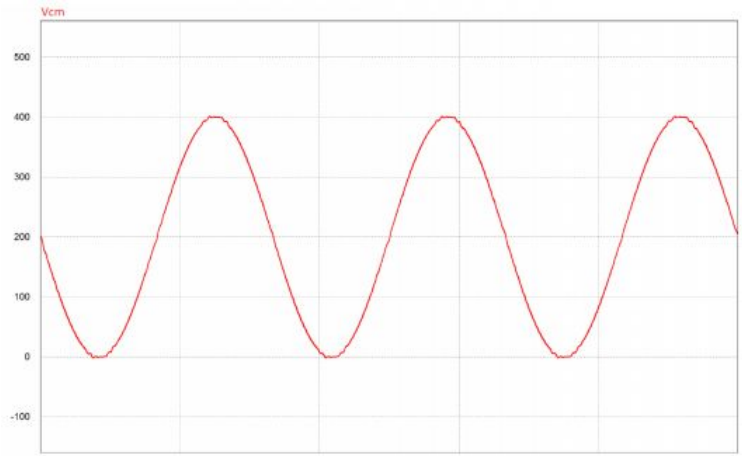
Patrimonio educativo y cultural

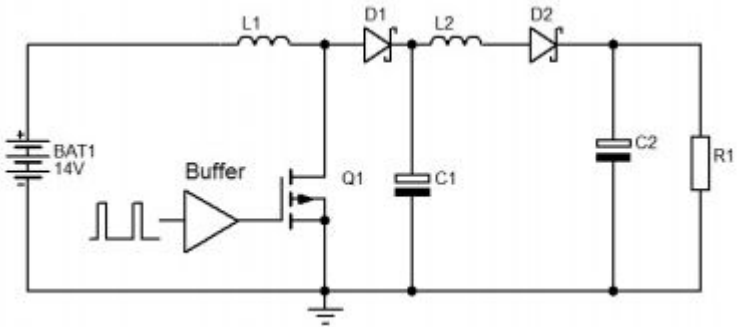
SHREC Inverter

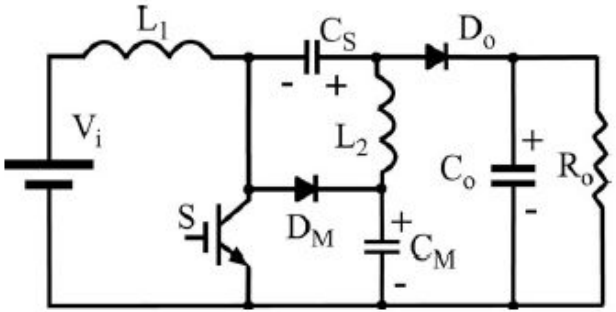
Inversor	Eficiencia %	# Switch	# Diodos	# L	Ruido CM	Corrientes fuga	$
SHREC	98.67	6	2	2	Mejor	Bajo	HIGH





DC/DC





$$\frac{V_o}{V_i} = \frac{1+D}{1-D} \qquad D = \frac{V_o - V_i}{V_o - V_i}$$

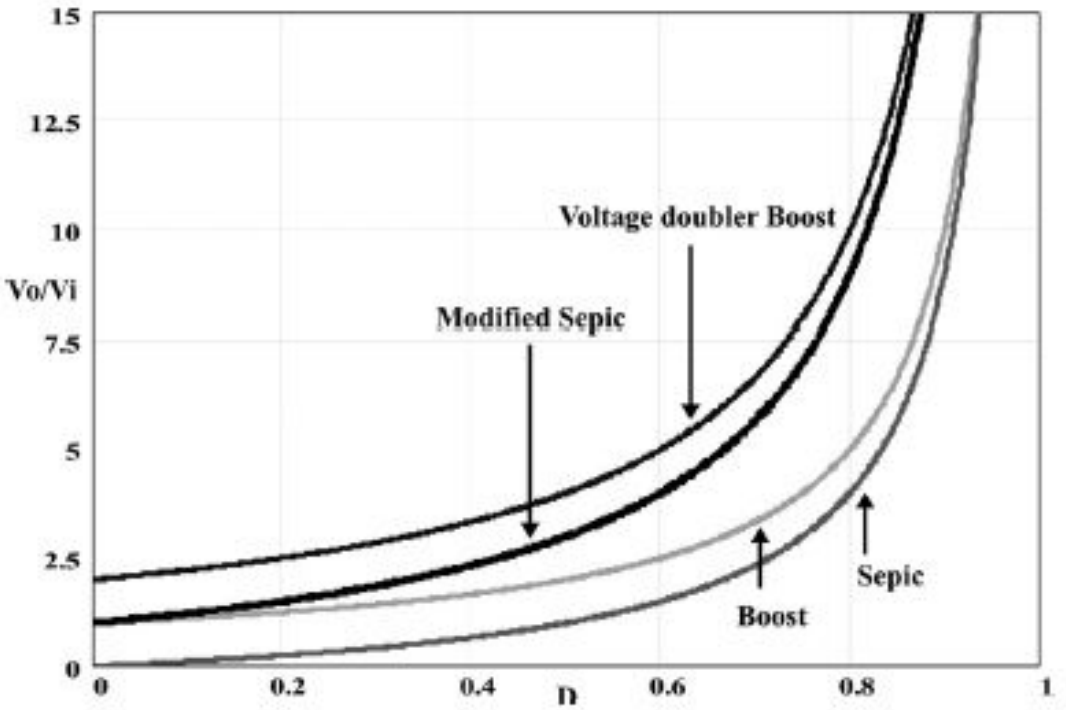
Eficiencia: 92-96%

Rizado:

SMagnetically coupled coils boost

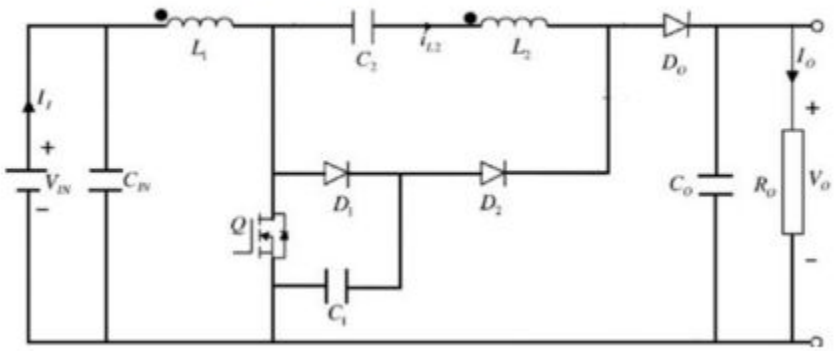
Modified SEPIC converter without magnetic coupling

Gain vs D



Switched Capacitor (SC) Configuration

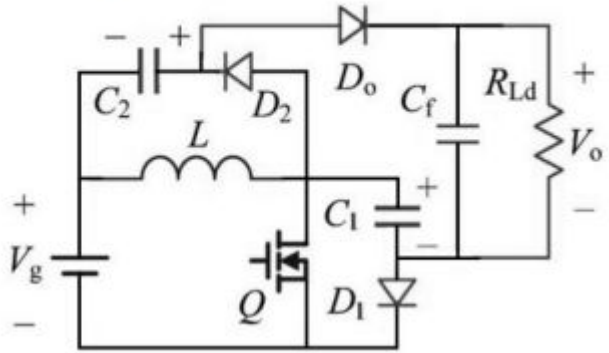
$$Gain, G_v = \frac{V_0}{V_s} = \frac{2+n}{1-D} \quad (1)$$



Coupled inductor based boost converter

Inductor and switched capacitor (ISC) Configuration

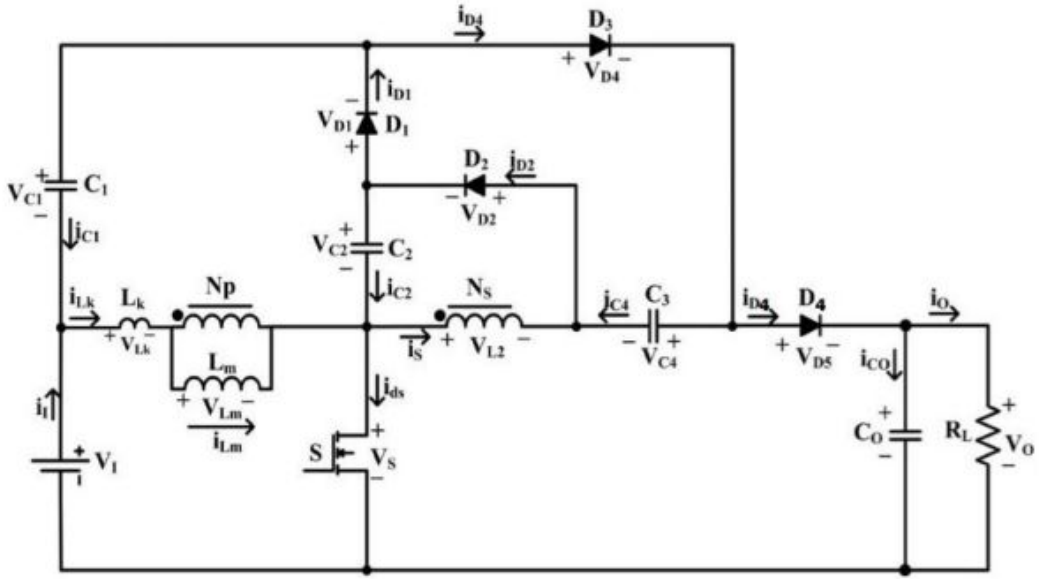
$$Gain, G_v = \frac{V_0}{V_s} = \frac{2}{1-D}$$



Inductor and switched capacitor based converter

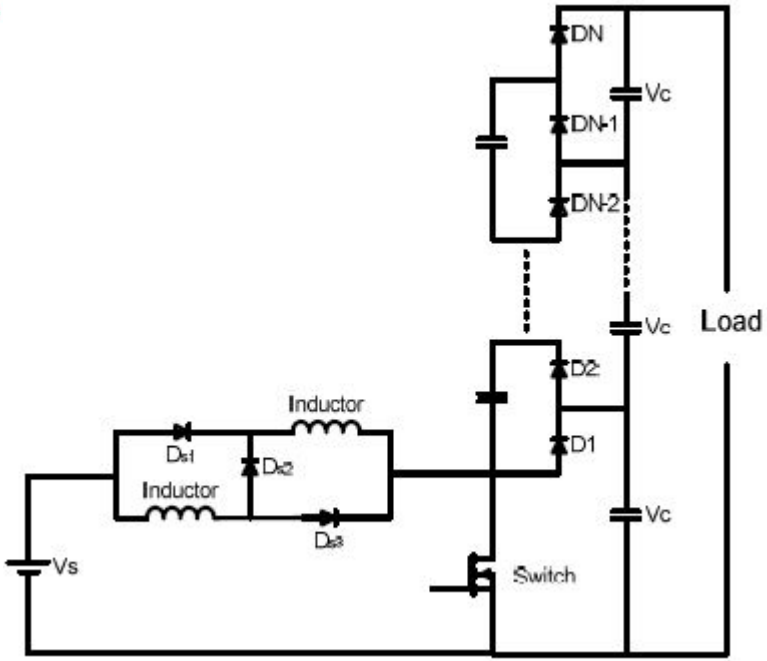
ICoupled inductor and switched capacitor (CISC) Configuration

$$Gain, G_v = \frac{V_0}{V_s} = \frac{2+n+nD}{1-D} \qquad (3)$$

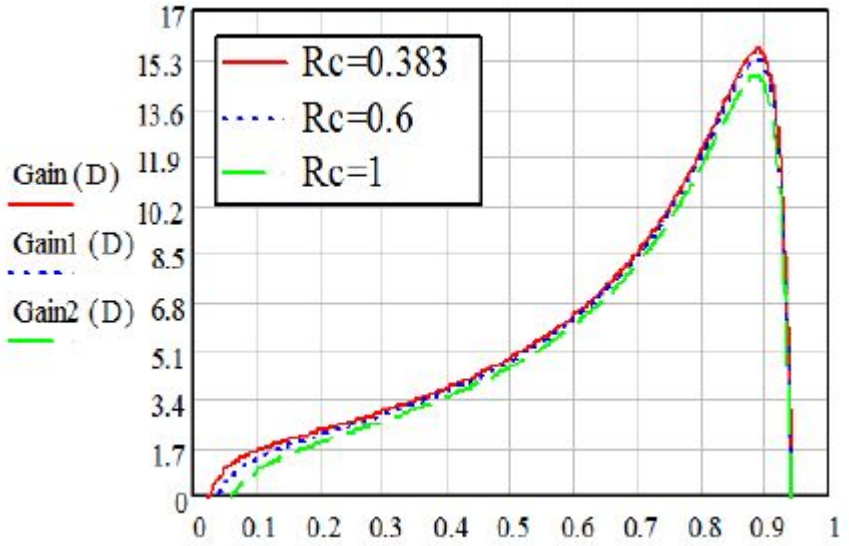


Coupled inductor and switched capacitor based converter

Topologies	Duty cycle (%)	Output Voltage (V_0)	Output Power (W)	Efficiency (%)	Switch off-state Voltage (V)	Switching Stress
SC	50	382.5	271	38.48	234	Very high
CI	50	398.2	297.4	88.98	250	Voltage spikes
ISC	87.5	376.9	266.5	85.83	190	High
CISC	37	387.7	282	89.25	40	Less

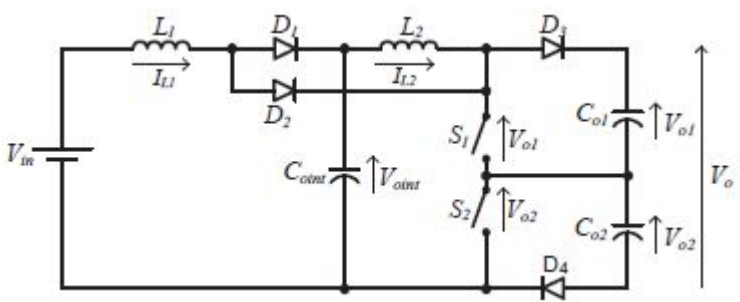


SIMLBC Converter



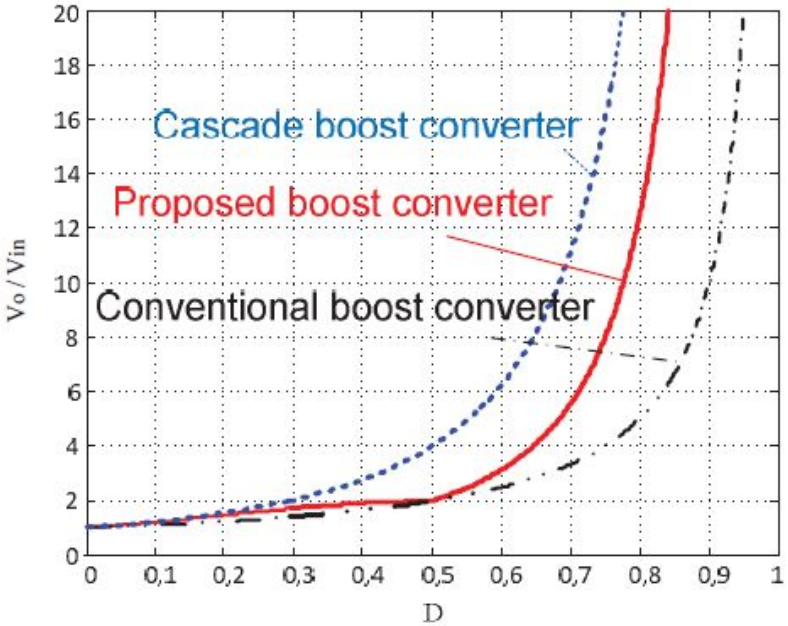
Ganancia vs D

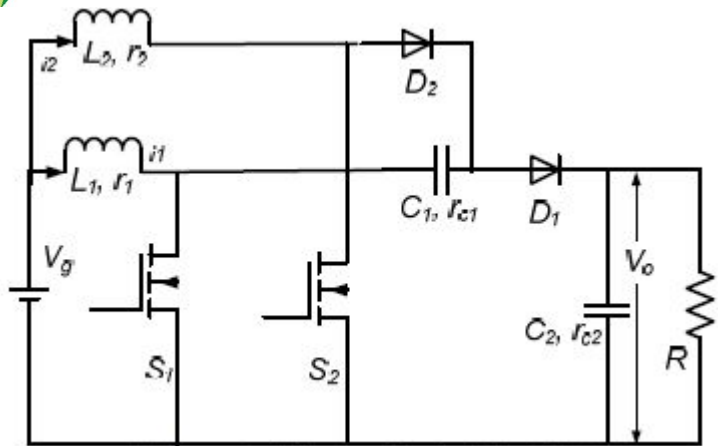
Propuesto por João Bosco RF. Cabral, Tiago Lemes da Silva, Sérgio Vidal Garcia Oliveira, Yales Rômulo de Novaes



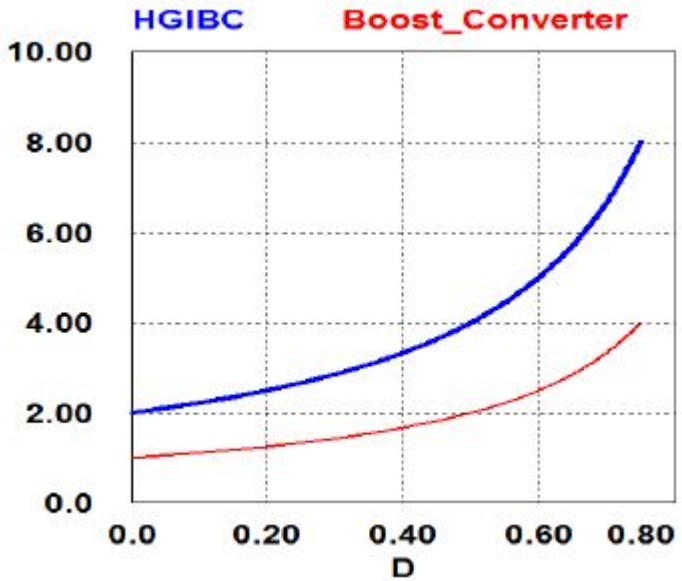
$$\frac{V_{oint}}{V_{in}} = \frac{1}{2(1-D)}$$

Ganancia vs D

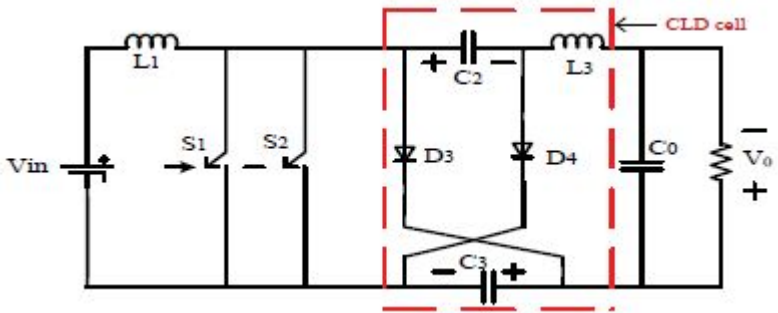




HGIBC Converter

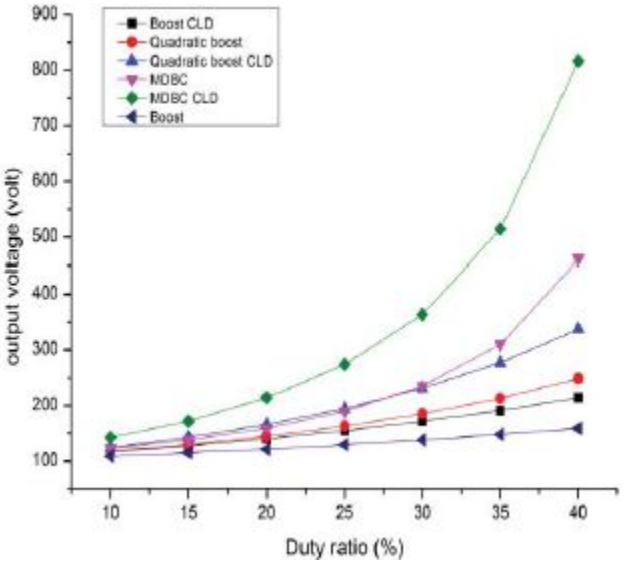


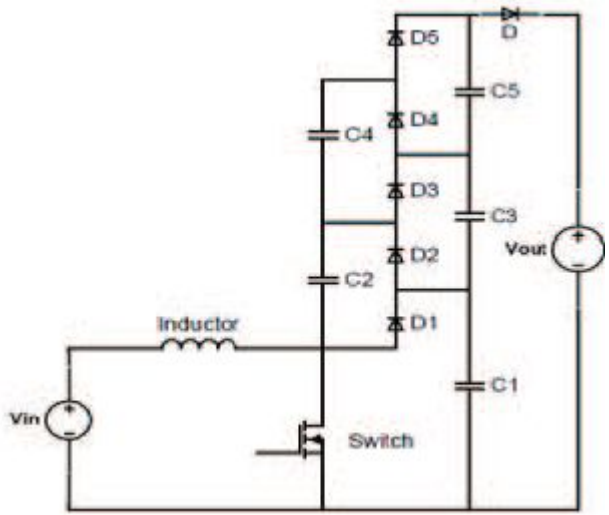
$$\frac{v_0}{V_g} = \frac{2}{(1-D)}$$



HGIBC Converter

$$V_0 = \frac{V_{in}(1+2D)}{(1-2D)}$$





MLBC Converter

$$V_o = \frac{NV_{in}}{(1-D)}$$