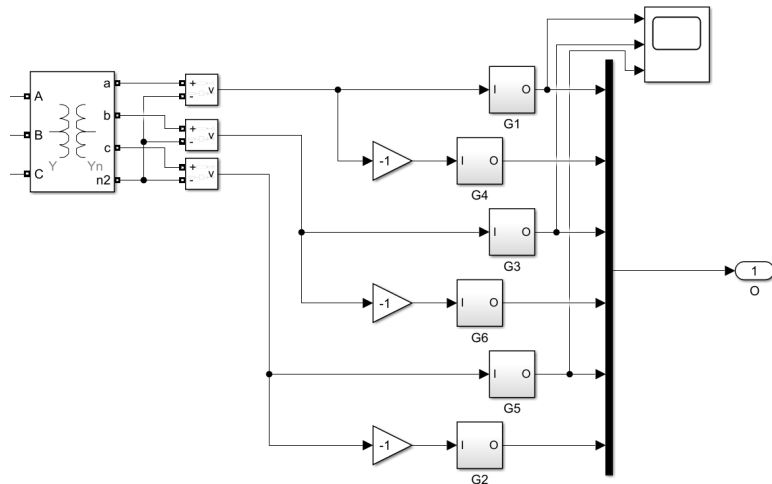
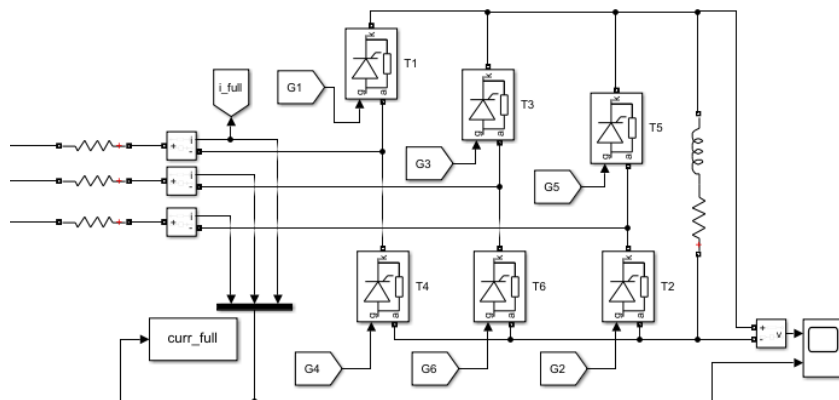


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19EE10039  
**EXPERIMENT-5**

Part A: Triggering circuit



Part B: Full controlled Converter



Qs1

Load resistance=44 ohm

Qs2

Avg dc o/p voltage(vDC)=220v

vLL=220v

$v_{DC} = \frac{3\sqrt{2}}{\pi} v_{LL} \cos(\alpha)$

$\alpha = 42.24^\circ$

Qs3

DC avg voltage=219.8v

AC 3 phase current=5.05A

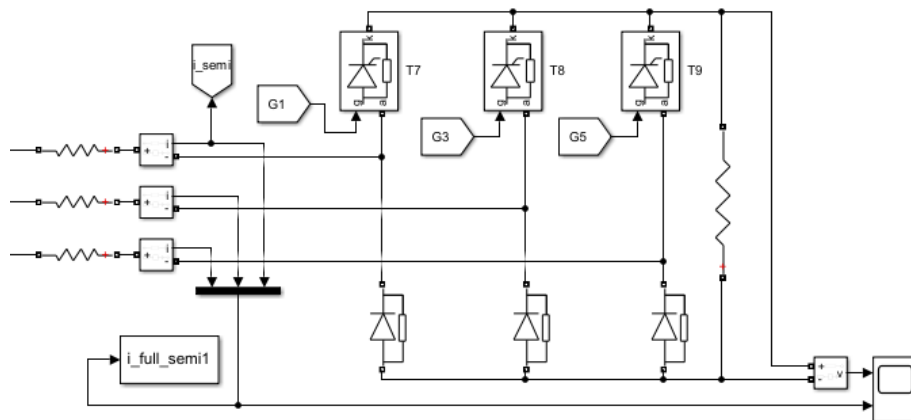
Qs5

On adding source inductance

DC avg voltage=216.8v

AC 3 phase current=4.97A

### Part C: Semi controlled Converter



Qs1

$v_{LL}=220\text{v}$

$v_{DC}=3\sqrt{2}/\pi * v_{LL} (1+\cos(\alpha))$

$\alpha=30^\circ$

$v_{DC}=277.2\text{v}$

$R_{load}=55.44\ \Omega$

Qs3

Load voltage= 277.1v

Ac 3 phase current=5.45A

### Part D:

Parameter	Full-controlled Converter	Semi-controlled Converter
AC side currents (RMS)	4.08	4.08
Fundamental component of the AC side currents (RMS)	3.89	3.86
THD (%) of the AC side currents	31.13	34.10
Input power factor	0.922	0.913
Fundamental active power (W)	2025.60	2009.41

Fundamental reactive power (VAr)	542.7	538.4
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