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1 Grids

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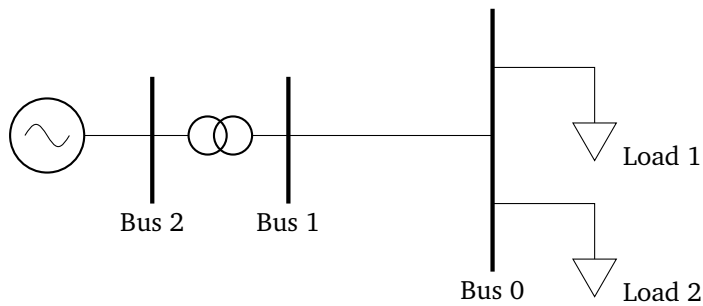


Figure 1.1: Single line network with two loads



Figure 1.2: SMIB model

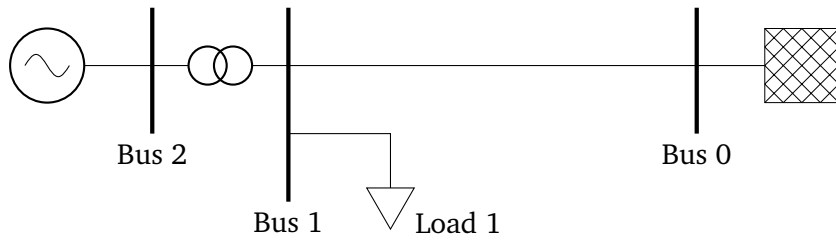


Figure 1.3: SMIB model with additional load

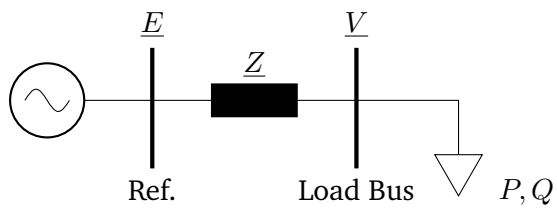


Figure 1.4: SMIB model with additional load

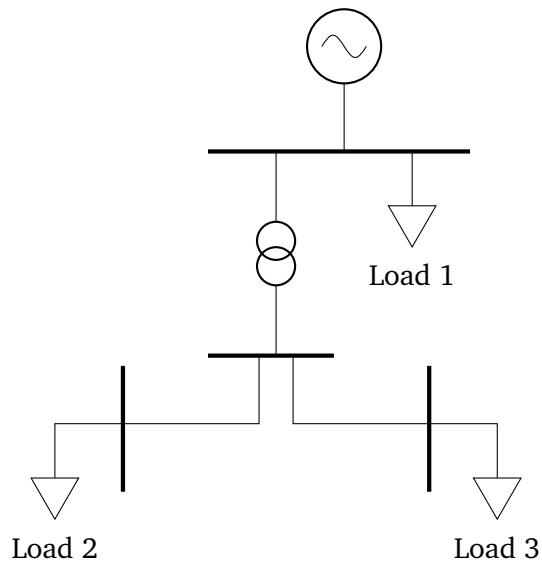


Figure 1.5: Random network with three loads on multiple voltage levels

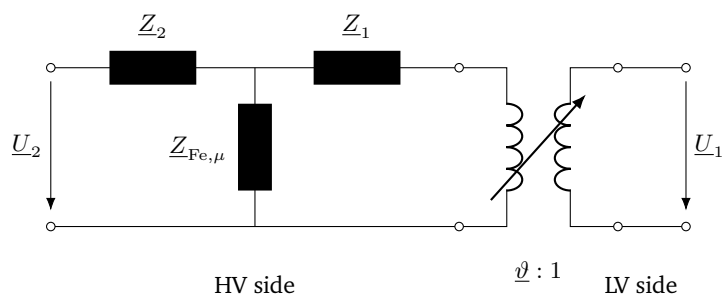


Figure 1.6: Complete transformer circuit

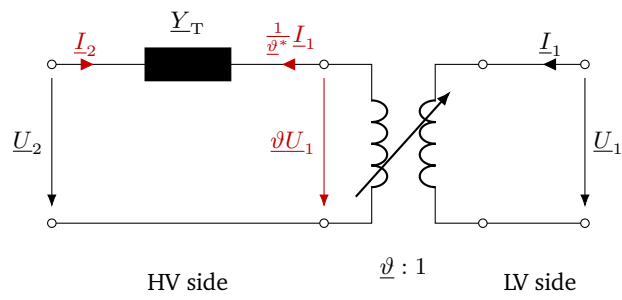


Figure 1.7: Reduced transformer circuit; based on Ilyas calculation

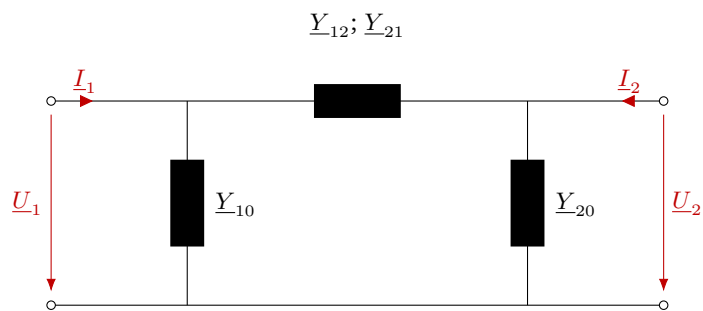


Figure 1.8: Transformer Pi circuit

2 Control Blocks

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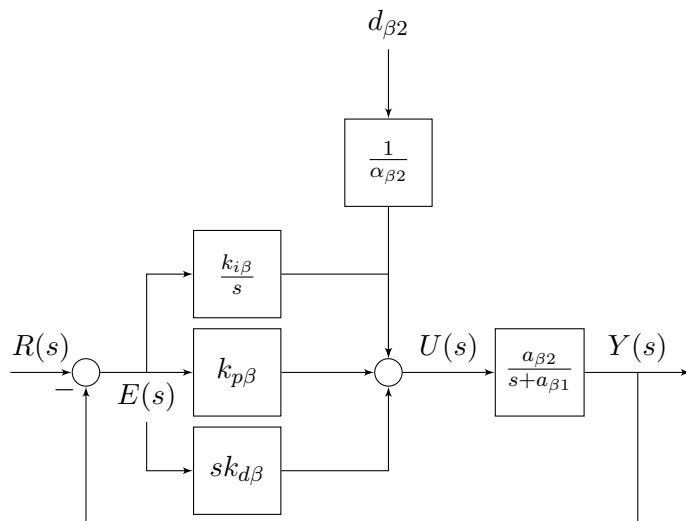


Figure 2.1: Example: Control block diagram

3 Others

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NoseCurve
+ results + ps_sim - p_vector - phi_vector - loadmodel
+ run_calculation() + reset_sim_parameters() + plot_nose_curve() + get_max_loadings()

Figure 3.1: Class NoseCurve Diagram

NoseCurve
+ results: dict[DataFrame]
+ ps_sim: diffpssi.PowerSystemSimulation
- p_vector: list
- phi_vector: list
- loadmodel: callable
+ run_calculation(bus: list[str]): dict[pd.DataFrame]
+ reset_sim_parameters(): None
+ plot_nose_curve(busses: list[str], size: tuple = (12, 6), title: bool = True, save_path: str = None): None
+ get_max_loadings(busses: list[str]): dict[dict[DataFrame]]

Figure 3.2: Class NoseCurve Diagram Complete

OLTC Transformer	
+ from_bus:	dict[DataFrame]
+ from_bus_id:	dict[DataFrame]
+ from_bus_name:	dict[DataFrame]
+ from_voltage:	dict[DataFrame]
+ measure_bus:	dict[DataFrame]
+ name:	diffpssi.PowerSystemSimulation
+ run_calculation(bus: list[str]):	dict[pd.DataFrame]

Figure 3.3: Class OLTC Transformer Diagram Complete

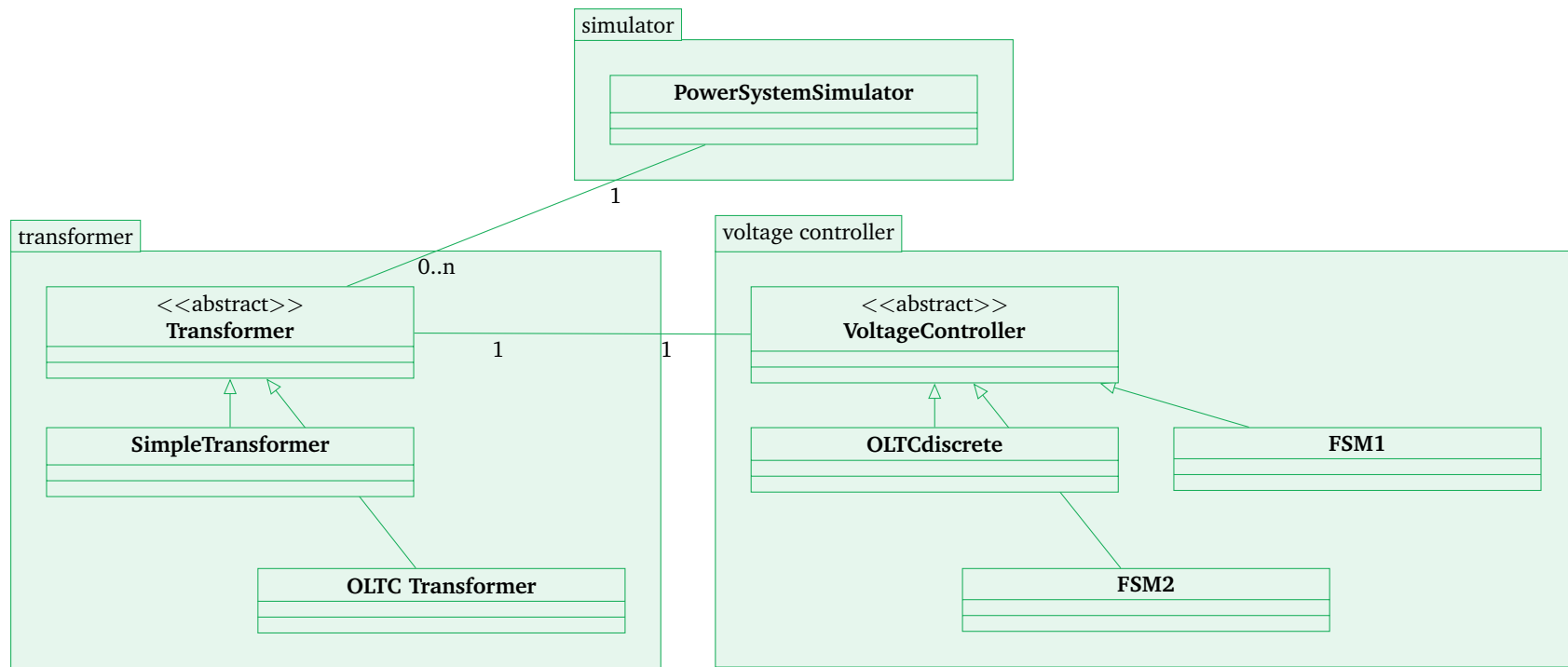


Figure 3.4: Software Structure idea