ECE 404-TD / 504-TD

ST: T&D APPLICATIONS OF VOLTAGE SOURCE CONVERTERS

SESSION no. 38

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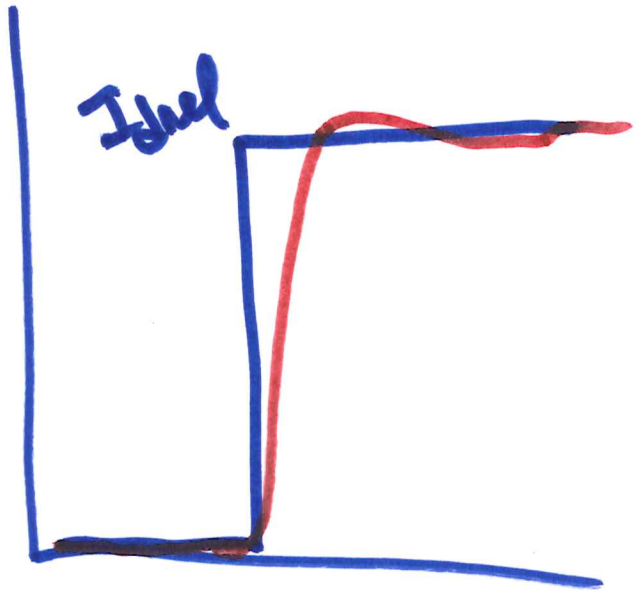

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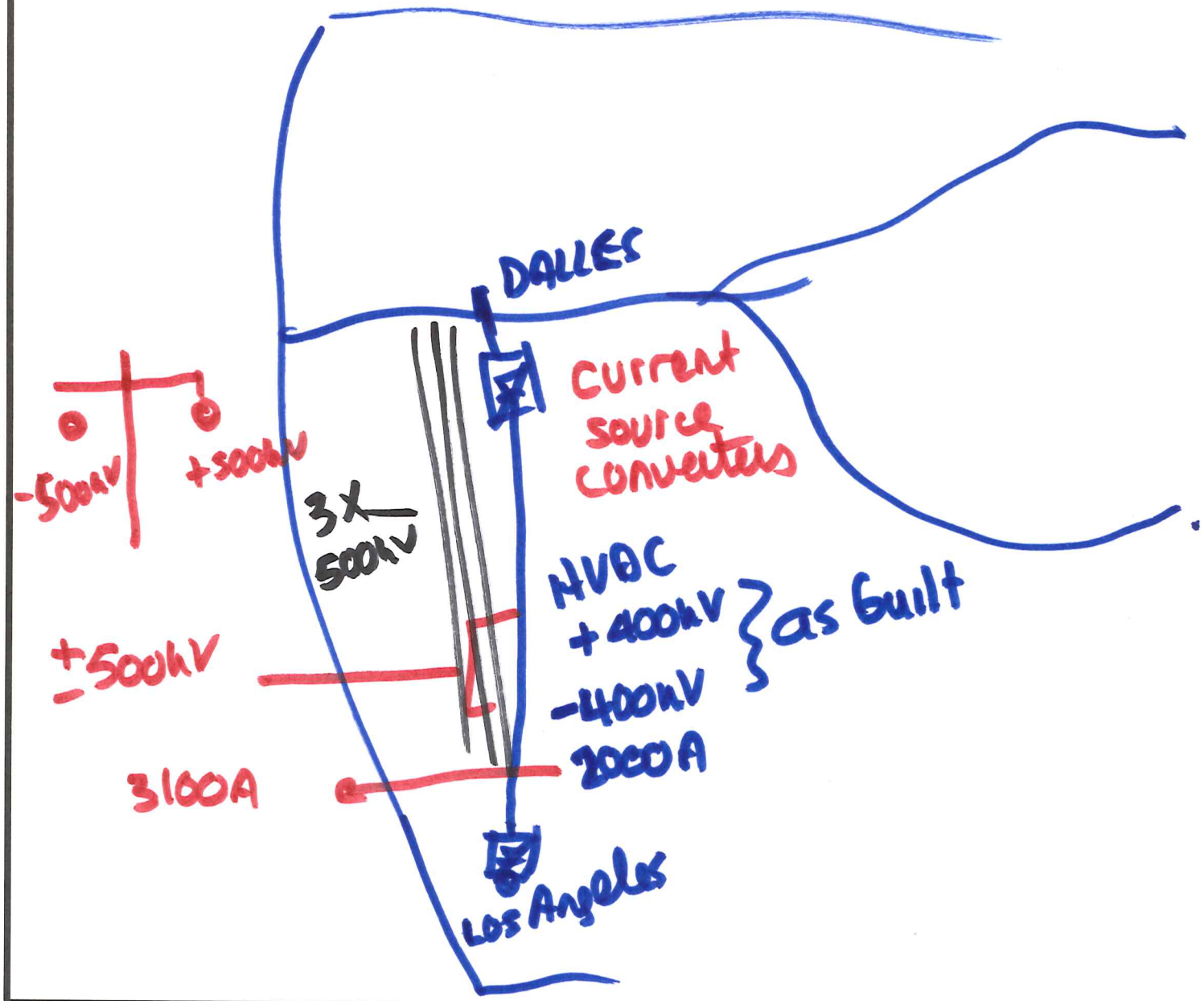
DALLES
current source converters
-500kV
+500kV
3X 500kV
HVDC
+400kV
-400kV
2000A
as built
±500kV
3100A
Los Angeles

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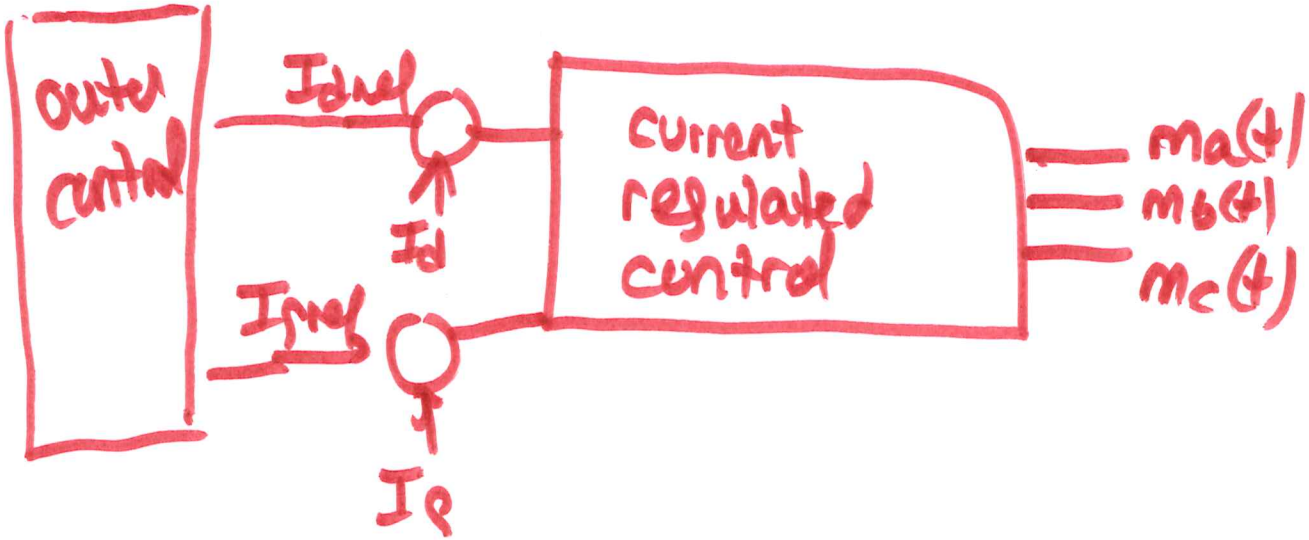
- Outer Control Loops to determine Q_{ref}, P_{ref} (and then $I_{q\,ref}$ and $I_{d\,ref}$)



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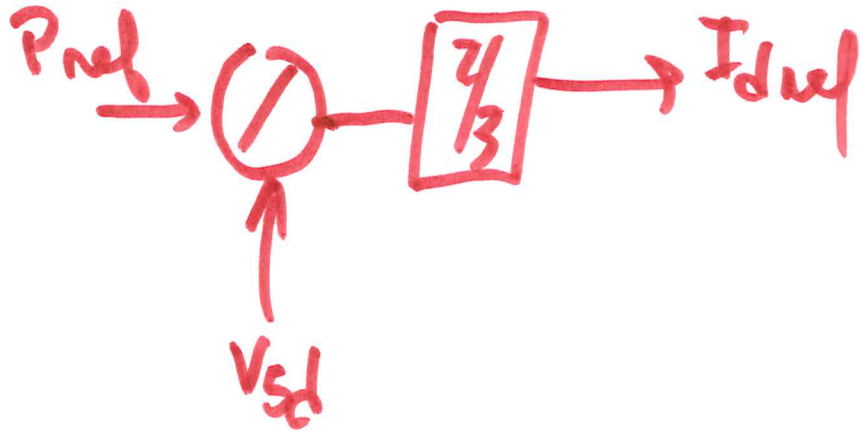

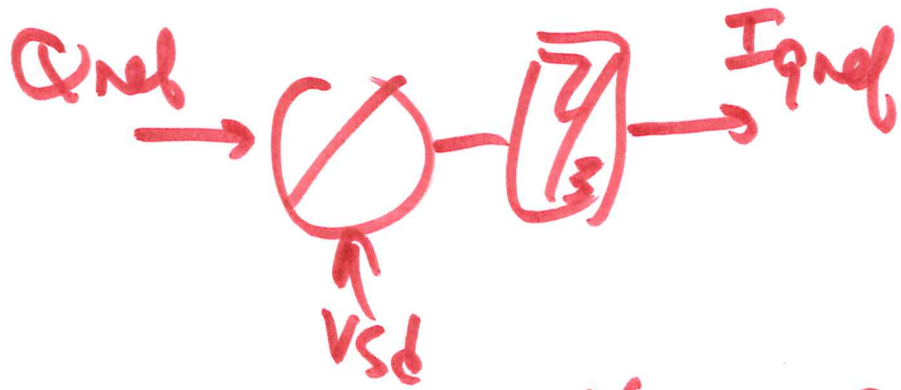

$V_{sq} \rightarrow 0$ due to PLL for frequency tracking

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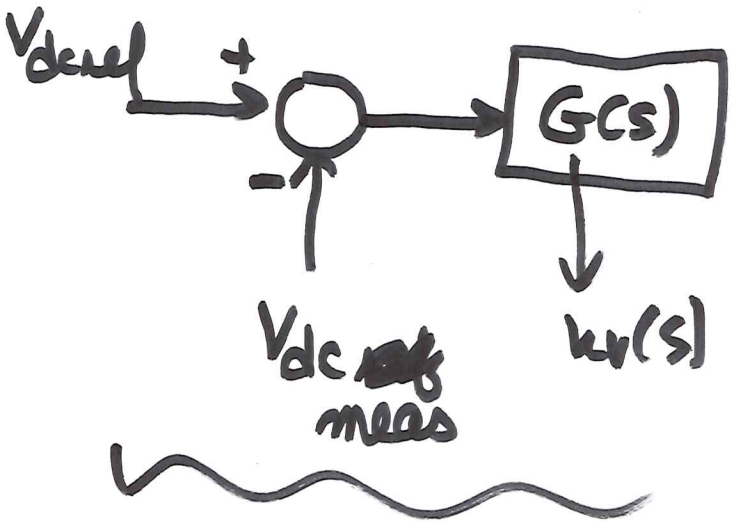
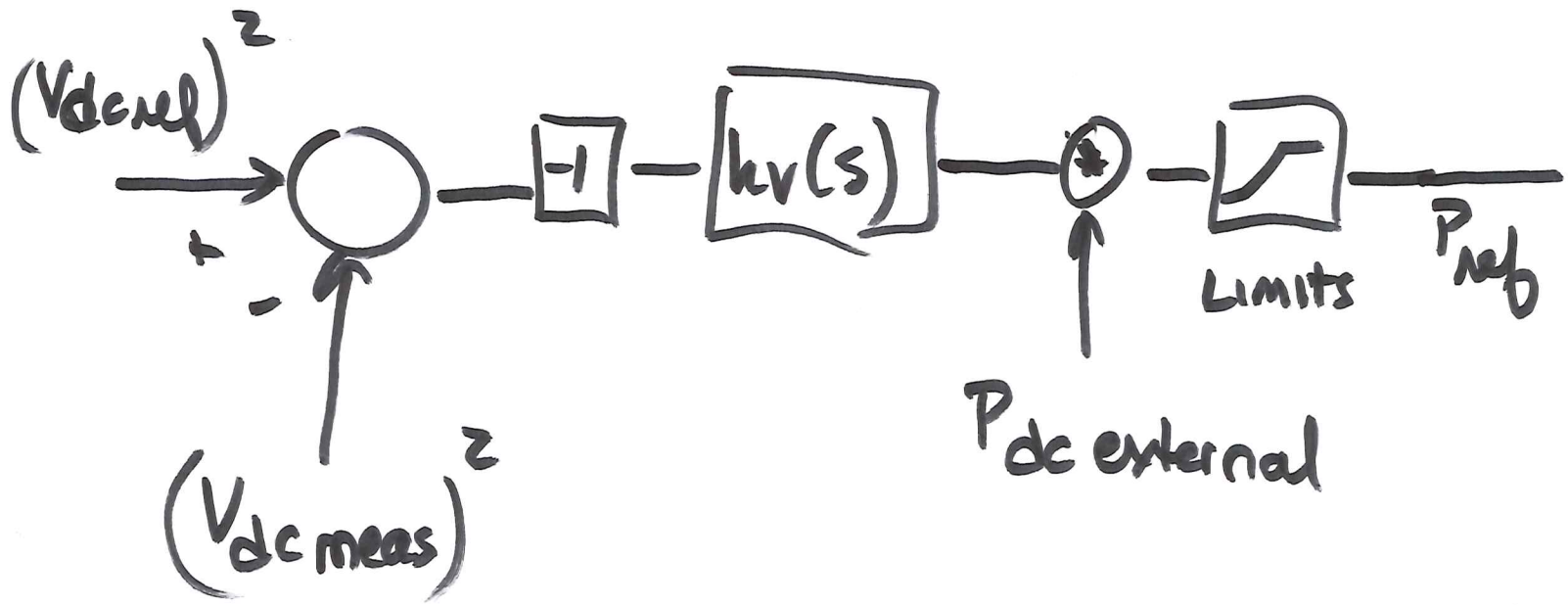
Regulated DC Power Pole



$(V_{dc})^2$

One option, many implementations in published papers



- Voltage Sourced Converter HVDC Transmission (VSC HVDC)
  - → MMC, multilevel converters
- Type 3 & Type 4 wind turbines
  - → Bridges or multilevel
- PV systems (large)
- Other generation or storage with a dc link

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- $P_{external}$ (or $I_{external}$)
  controlled at DC source to meet external demands

- wind turbine applications on PV
  → to maximize capture of available energy generation

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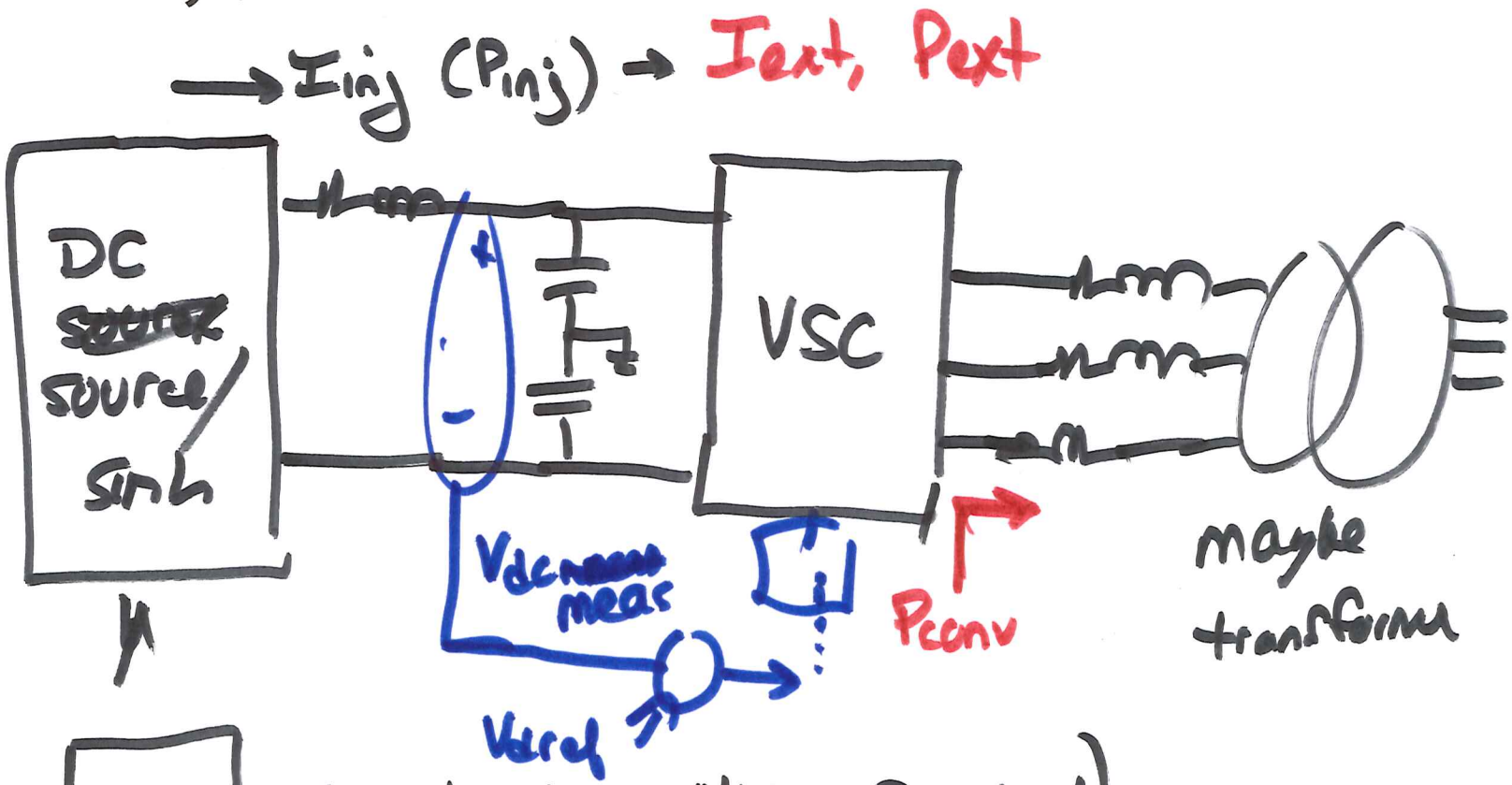
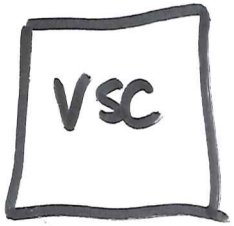
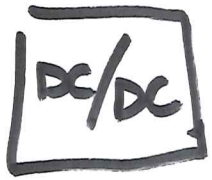




(wind turbines, HVAC, flywheel)



(PV, fuel cell)

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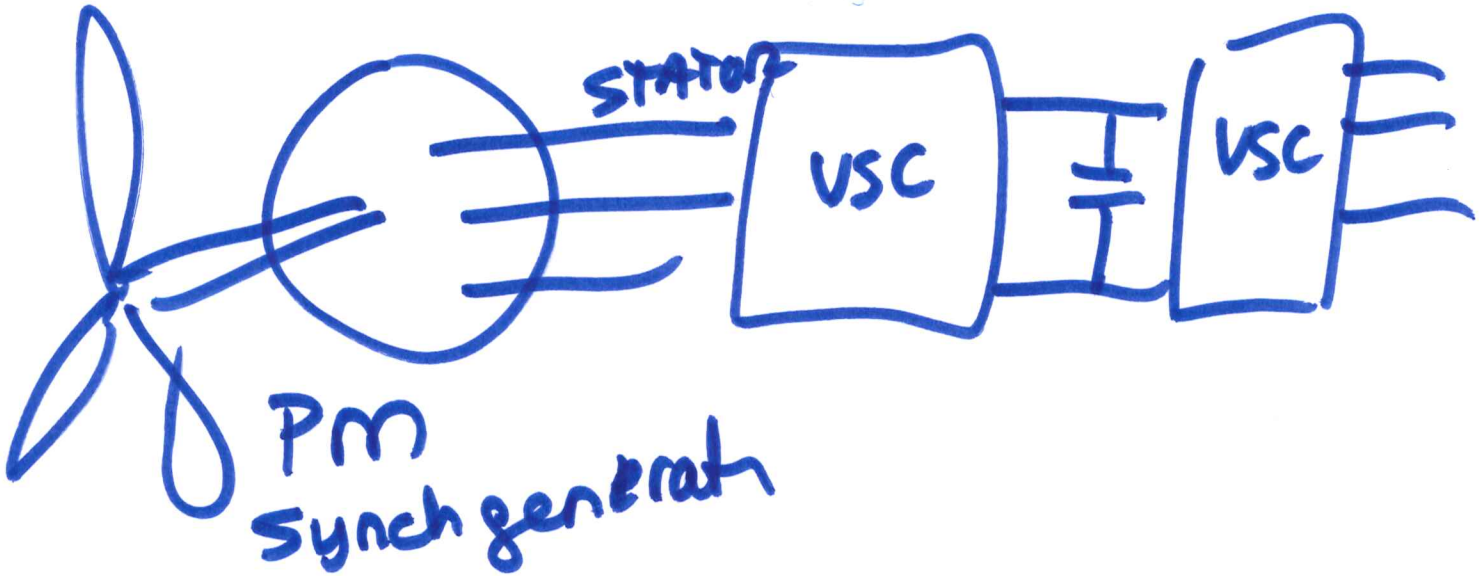
Type 4 turbine



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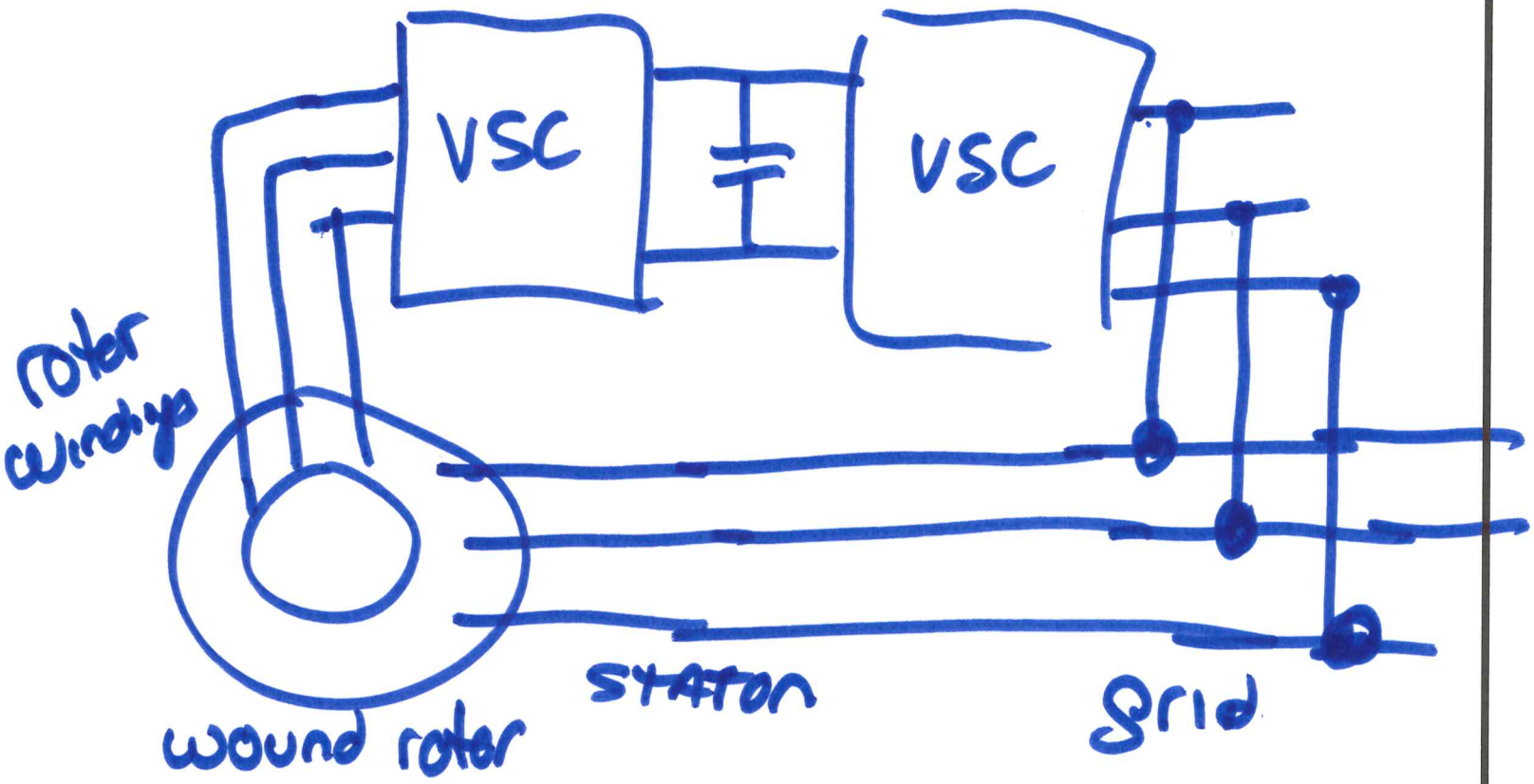
Type 3 wind turbine



Induction generator