Topology selection:

1. Single phase thyristor (may need isolate the firing angle from the circuit?????? )

Advantages:

-With some addition and adjusting it can be work at all four quadrants. Two quadrant work both as inverter and rectifier.

-It is cost friendly

Disadvantages:

-Requires big capacitor in order to decreases ripple at the output.

- Hard to arrange firing angles simultaneously and needs for additional circuits and source to open thyristors.

-Lower average output voltage comparing to three phase one.

-Large harmonics in the input current

-low pf and dpf for smaller output voltage.

1. Three phase thyristor rectifiers

Advantages

-Two quadrant operation, with additions it can be increased to work at 4 quadrant operation

-Lower voltage ripple

-Higher average output voltage

-More efficient comparing to other rectifier topologies.

Controlled voltage and power flow??????

Disadvantage

-Desynchronization problem since 6 thyristors must be synchronal.

-More complicated comparing to single phase

-lower pf and dpf comparing to diode rectifier

1. Diode rectifier and buck converter

Advantages:

-Low ripple dc signal

-Opportunity to adjust output voltage

-Easy to construct just need one timer as an extra

-No needs for pulse generator circuit like controlled rectifiers

Disadvantages:

-????Buck converter needs inductor to work

-needs additional h bridge to implement four quadrant operation

Final decision