**EE463-HW3**

# Understanding Power and Controlled Rectifiers

Preparers:

Onur Toprak

Çağlar Umut Özten

# Introduction

# Question 1- Active Power Creation

## a-)

## b-)

# Question 2- Single Phase Controlled Rectifier

## a-)

## b-)

## c-)

# Question 3- Alternative Rectifier Topologies

## a-)

It is the 12-pulse rectifier circuit. It is used generally in HVDC systems with series devices. It is adventagous with creating more voltage, less ripple and less harmonics. Its harmonics is related with 12n +- 1 (11th,13rd…). Its output voltage stability is better regard to 6 pulse full bridge rectifiers.

Since it is the conversion 3 phase AC/DC conversion, we can find full bridge rectifiers in this topology. Most common is 6-pulse. It has 6 diodes in the circuit to create a DC waveform. Its ripple is higher since we use only 6 diodes to contribute. Usage of higher pulses are considered and we are using more pulses to achieve better voltage stability. 24 and 48 pulses are possible. It can be achieved by adding diodes with series to the circuit.

diyagram, çizgi, origami, kalıp, desen, düzen içeren bir resim

Açıklama otomatik olarak oluşturuldu

## b-)

Our expectation would be;

* Higher voltage stability in 12 pulse (Less ripple in the waveform)
* Achieving more voltage in the same configuration
* Achieving a better THD value in 12 pulse.

# Conclusion