

EEP 453: Power Electronics Application Assignment

For a single-phase output voltage with quarter wave symmetry generated from half-bridge inverter (shown in Figure.1), the bipolar selective harmonic elimination is used to calculate suitable angles ($\alpha_1, \alpha_2, \dots \alpha_6$) to control the fundamental component peak and remove as much harmonics as possible.

Write a code with any programming language to determine the angles for the desired fundamental component peak. Use the code to fill the following table assuming the following initial guess. Then sketch the variation of the angles with fundamental component peak for the given range on the same graph.

$\alpha_{1(0)}$	$\alpha_{2(0)}$	$\alpha_{3(0)}$	$\alpha_{4(0)}$	$\alpha_{5(0)}$	$\alpha_{6(0)}$
20°	30°	40°	50°	60°	70°

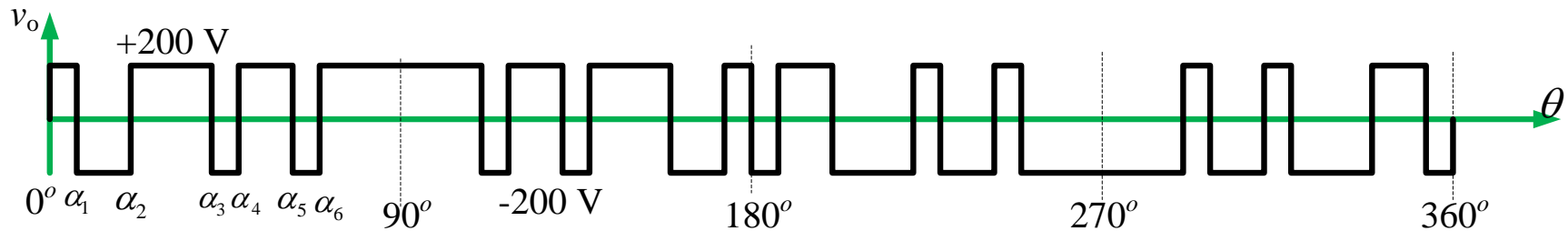


Figure.1

V_{p1}	200V	170 V	160 V	150V
α_1	?	?	?	?
α_2	?	?	?	?
α_3	?	?	?	?
α_4	?	?	?	?
α_5	?	?	?	?
α_6	?	?	?	?