Problem 5-25

The following values are obtained from the PSpice output:

	$C_d = 220\mu F$	$C_d = 550\mu F$	$C_d = 1{,}100\mu F$	$C_d = 1500\mu F$	$C_d = 2{,}200\mu F$
$V_{d,min} =$	262.5V	271.9V	274.2V	274.8V	275.2V
$V_{d,max} =$	293.7V	281.1V	278.4V	277.7V	277.2V
$\therefore \Delta V_{d(p-p)} =$	31.2V	9.2V	4.2V	2.9V	2.0V
$\phi_1 = -14.4^\circ$ (i_s lags V_s)	-13.67°	-13.23°	-13.12°	13.02°	
$THD_i =$ 73.8% (based on 25 harmonics)	57.9%	53.85%	52.9%	52.2%	
DPF =	0.968 (lag)	0.972 (lag)	0.973 (lag)	0.974 (lag)	0.974 (lag)

[From Eq. 3-45, $PF = \dfrac{1}{\sqrt{1 + THD_i^2}} \cdot DPF$]

$\therefore$ PF =	0.779	0.841	0.857	0.861	0.863