ENM061 Power Electronic Converters
Demonstration 11 – HT2017

Dept. Of Electric Power Engineering
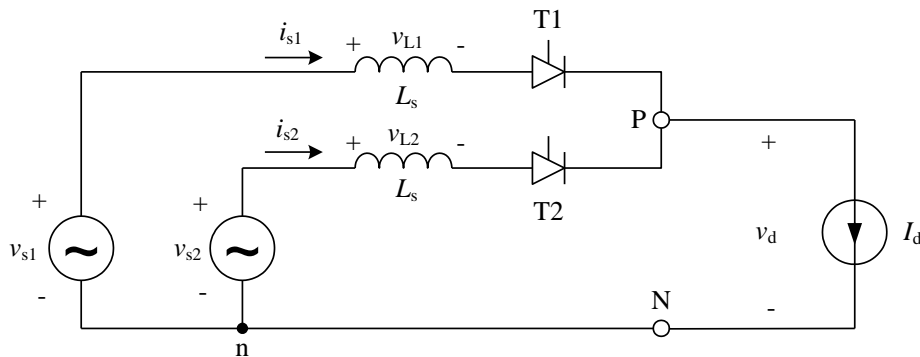Chalmers University of Technology

Demonstration 11

Tutorial exercises

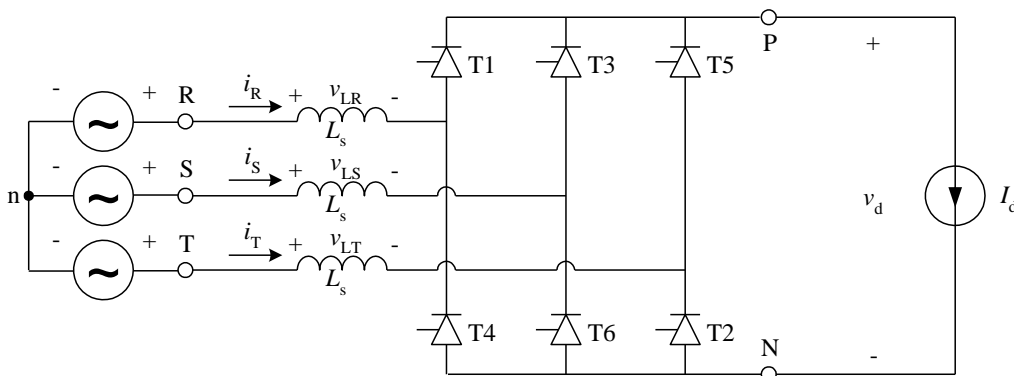**Problem 1 (P6-1 in Undeland book)**

For the circuit below, v_{s1} and v_{s2} have an RMS-value of 120V, a frequency of 60Hz and a phase shift of 180°. Assume that the source inductance (L_s) is 5mH and that $I_d = 10A$ (pure dc-current). For the following two values of the delay angle (α), obtain v_{s1}, i_{s1} and v_d waveforms. Calculate the average value of V_d and the commutation interval u at the two different specified commutation angles.

a) Delay angle 45°
b) Delay angle 135°.

Problem 2 (P6-12 in Undeland book)

In the three phase converter below, $V_{LL} = 460\,\text{V}$ at 60 Hz and $L_s = 25\,\mu\text{H}$.

Calculate the commutation angle u if $V_d = 525V$ and $P_d = 500kW$.

Self-study exercises

From Undeland book:
P6-3, P6-11, P6-15, P6-16, P6-17

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