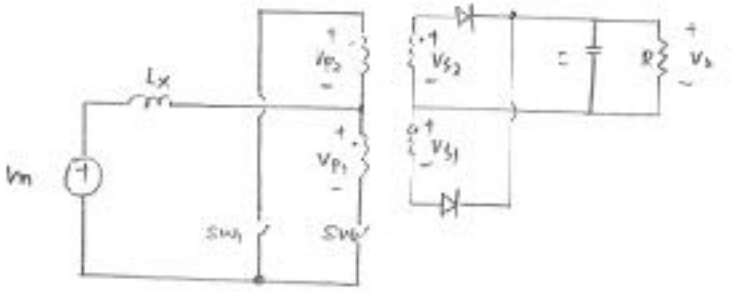
The current fed converter in the figure shown below has the following parameters. $V = s$ $24\ v$, $N_p/N_S = 2$, $R = 10\ \Omega$, and $D = 0.35$. Assuming that the input inductor is very large, determine the following:

- a) The output voltage and the input current.
- b) The maximum voltage across every switch.



$V_{in} = 50V$

$N_p : N_s = 2:1$

$R = 10\Omega$

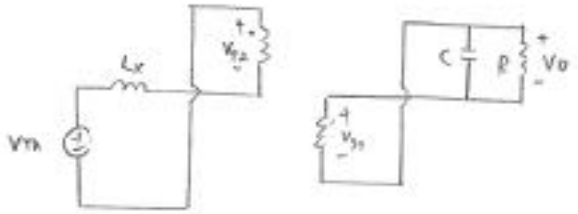
$D = 0.65$

$f_s = 100kHz$

$L_x = 10mH$

$N_p : N_s$

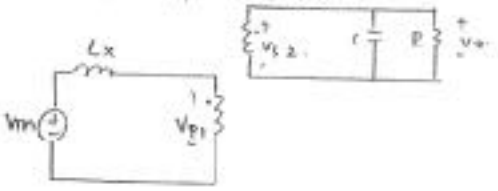
① SW1 ON, SW2 OFF.



$V_{Lx} = V_s + V_{p2}$

$V_{p2} = V_o \cdot \frac{N_p}{N_s}$

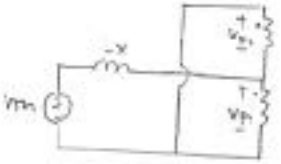
② SW1 off, SW2 ON.



$V_{Lx} = V_s - V_{p1}$

$V_p = V_o \cdot \frac{N_p}{N_s}$

③ Both ON.



$V_{Lx} = V_s$

④ $\frac{V_o}{V_s} = \frac{1}{2(1-D)} \frac{N_s}{N_p}$

$V_{SW1\ max} = V_{p1}$

$V_{SW2\ max} = V_{p2}$

$V_{SW1,max} = V_{P1} = V_o \frac{N_p}{N_s} = 34.286V$

$V_{SW2,max} = V_{P2} = V_o \frac{N_p}{N_s} = 34.286V$

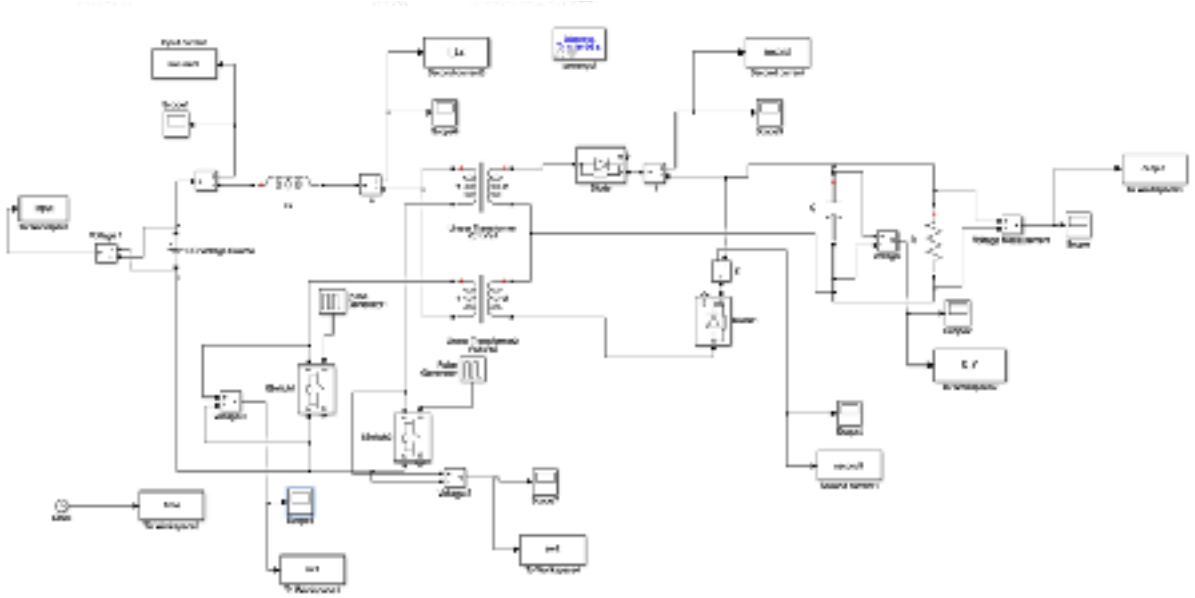


fig1. simulation of current fed converter