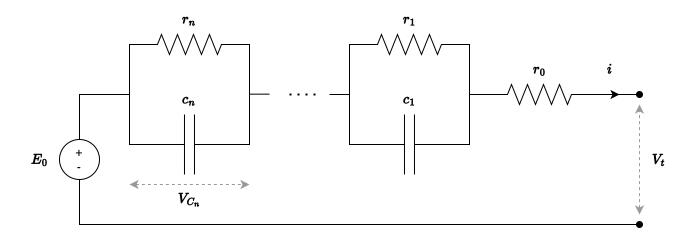
ECM model

Schematic



 $E_0 o open \ circuit \ voltage \ (V)$

 $V_t o terminal\ voltage\ (V) \leftarrow output\ of\ the\ model$

 $i \rightarrow current \; draw \; (A) \leftarrow input \; to \; the \; model$

 $r_n, c_n
ightarrow resistance \ and \ capacitances \ (\Omega, F)$

Equations

Model equations

$$egin{aligned} V_t &= E_0 - \sum_{1 o n} V_{c_n} - i r_0 \ & rac{dV_{c_n}}{dt} = rac{i}{c_n} - rac{V_{c_n}}{r_n c_n} \ & rac{soc}{dt} = rac{-i}{Q_{Ah} imes 3600} \end{aligned}$$

Post-processing equations

$$P_{heat} = i^2 r_0 + \sum_{1
ightarrow n} rac{V_{c_n}^2}{r_n}$$