Electric Scooter
xxRF-ID
*** Mechanical work
**** Motor, drive
**** Stop/start
**** Break system
****** Regenerated
\[ E = -L \frac{di}{dt} = -L \left( i_{\text{max}} - i \right)/\left( t_0 - t_f \right) \]
\[ V_C = \frac{Q}{C} \]
\[ I_c = C \frac{dv}{dt} \]
**** DC Motor
n-rpm & Vi (PWM)
**** Speedometer
**** Overload protection
*** Control problem

Data Acquisition Modules for AC Power Measurement System & Monitoring
** Generator I/Ps
**** Wind power
***** wind speed
***** wind direction
***** Warning system
** Generator O/Ps
*** Variable AC => Rectified to DC => Store in BA => Inverter =>AC
*** Synch => Pass power to grid
***** ???
**** Current, phase A, B, C
**** Voltage, line voltage
**** Power calculation
***** \[ P = V*I*\cos(\theta) \] --- single phase
***** \[ P_L = V_a*I_a*\cos(\theta) + V_b*I_b*\cos(\theta) + V_c*I_c*\cos(\theta) \] … unbalanced
***** \[ P_L = 1.732 * V_L * I_L * \cos(\theta) \]
***** \( \theta \) is phase difference between \( V \) and \( I \)
Inverter Output => Step-up TR (Vi/Vout)
6.9kV => wise
Current: CT
** V, I, PF, Frequency