Appendix:
Nomenclature

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{\text{cut-in}}$</td>
<td>Cut in wind speed ($\frac{\text{m}}{\text{s}}$)</td>
</tr>
<tr>
<td>$V_{\text{cut-out}}$</td>
<td>Cut out wind speed ($\frac{\text{m}}{\text{s}}$)</td>
</tr>
<tr>
<td>$V_{\text{rated}}$</td>
<td>Rated wind speed ($\frac{\text{m}}{\text{s}}$)</td>
</tr>
<tr>
<td>$\lambda_{\text{TSR}}$</td>
<td>Tip speed ratio</td>
</tr>
<tr>
<td>$\lambda_{\text{opt}}$</td>
<td>Optimal tip speed ratio</td>
</tr>
<tr>
<td>$P_{\text{m}}$</td>
<td>Mechanical power of the turbine (kw)</td>
</tr>
<tr>
<td>$T_{\text{m}}$</td>
<td>Mechanical torque of the turbine (nm)</td>
</tr>
<tr>
<td>$P_{\text{sf}}$</td>
<td>Power signal feedback</td>
</tr>
<tr>
<td>$P_{&amp;o}$</td>
<td>Perturbation and observation</td>
</tr>
<tr>
<td>$D_{\text{cs}}$</td>
<td>Hill climb searching</td>
</tr>
<tr>
<td>$P_{\text{msg}}$</td>
<td>Permanent magnet synchronous generator</td>
</tr>
<tr>
<td>$D$</td>
<td>Duty cycle of the converter</td>
</tr>
<tr>
<td>$M_{\text{pp}}$</td>
<td>Maximum power point</td>
</tr>
<tr>
<td>$I_{\text{in}}$</td>
<td>Input current of the converter (a)</td>
</tr>
<tr>
<td>$V_{\text{in}}$</td>
<td>Input voltage of the converter (a)</td>
</tr>
<tr>
<td>$\rho$</td>
<td>Air density ($\frac{\text{kg}}{\text{m}^3}$)</td>
</tr>
<tr>
<td>$\rho_{\text{ref}}$</td>
<td>Input voltage reference of the converter (v)</td>
</tr>
<tr>
<td>$V_{\text{w}}$</td>
<td>Wind speed ($\frac{\text{m}}{\text{s}}$)</td>
</tr>
<tr>
<td>$V_{\text{dc}}$</td>
<td>Output voltage of the rectifier (v)</td>
</tr>
<tr>
<td>$C_p$</td>
<td>Power coefficient</td>
</tr>
<tr>
<td>$\beta$</td>
<td>Blade pitch angle (degree)</td>
</tr>
<tr>
<td>$\omega_m$</td>
<td>Mechanical angular velocity of the rotor ($\frac{\text{rad}}{\text{s}}$)</td>
</tr>
<tr>
<td>$\alpha$</td>
<td>Constant scaled factor</td>
</tr>
<tr>
<td>$\omega^*$</td>
<td>Optimal generator speed ($\frac{\text{rad}}{\text{s}}$)</td>
</tr>
<tr>
<td>$\omega$</td>
<td>Generator speed ($\frac{\text{rad}}{\text{s}}$)</td>
</tr>
<tr>
<td>$\alpha$</td>
<td>Constant scaled factor</td>
</tr>
<tr>
<td>$\text{Pfc}$</td>
<td>Power factor correction</td>
</tr>
<tr>
<td>$\text{Dcm}$</td>
<td>Discontinuous conduction mode</td>
</tr>
<tr>
<td>$\text{Optimal generator speed}$</td>
<td>$\frac{\text{rad}}{\text{s}}$</td>
</tr>
<tr>
<td>$\text{Maximum power point}$</td>
<td>$\frac{\text{v}}{\text{a}}$</td>
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<tr>
<td>$\text{Tracking}$</td>
<td></td>
</tr>
<tr>
<td>$\text{Input voltage reference}$</td>
<td>$\frac{\text{v}}{\text{a}}$</td>
</tr>
<tr>
<td>$\text{Input voltage of}$</td>
<td>$\frac{\text{v}}{\text{a}}$</td>
</tr>
<tr>
<td>$\text{Optimal turbine radius}$</td>
<td>$\frac{\text{m}}{\text{s}}$</td>
</tr>
<tr>
<td>$\text{Maximum coefficient}$</td>
<td>$\frac{\text{rad}}{\text{s}}$</td>
</tr>
<tr>
<td>$\text{of power}$</td>
<td>$\frac{\text{rad}}{\text{s}}$</td>
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</tbody>
</table>