

Implementasi algoritma maximum power point tracking pada turbin angin skala kecil menggunakan metode gabungan perturb and observe dan optimum relation based = Implementation of maximum power point tracking algorithm on small scale wind turbine using combination method of perturb and observe and optimum relation based

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Abstrak

Pemodelan generator turbin angin skala kecil yang terdiri dari generator magnet permanen, rectifier, dan DC-DC boost converter, serta algoritma pengendalian yang daya maksimum direpresentasikan dalam buku skripsi ini. Pemodelan model turbin angin dilakukan berdasarkan rangkaian pengganti gabungan permanent magnet synchronous generator PMSG, rectifier, dan boost konverter. Pemodelan rectifier boost converter dibagi menjadi 12 kondisi berdasarkan keadaan switching diode dan rectifier akibat tegangan stator tiga fasa keluaran generator.

Algoritma Maximum Power Pint Tracking MPPT yang dibangun menggabungkan algoritma MPPT Perturb and Observe dan Optimum Relation Based ORB. Keluaran MPPT akan memberikan set point arus.

Pengendali PI akan memberikan pengendalian arus beban untuk mencapai daya maksimal. Model turbin angin yang dibangun mampu memodelkan sistem generator turbin angin dengan akurat, dan algoritma MPPT yang dibangun dapat mengoperasikan turbin angin pada daya maksimumnya pada sistem riil.

Modeling a small scale turbine generator consisting of a permanent magnet generator, rectifier, and DC DC boost converter, as well as the maximum power control algorithm represented in this book. The modeling of the wind turbine model is performed based on permanent magnet synchronous generator PMSG equivalent circuit, rectifier, and convower boost. Modeling rectifier boost converter is divided into twelve 12 conditions based on switching diode and rectifier conditions due to three phase stator voltage of generator as the input.

The Maximum Power Pint Tracking MPPT algorithm constructed incorporates the Perturb and Observe and Optimum Relation Based ORB algorithms. The MPPT output will provide the current set point. PI controller will provide load current control to achieve maximum power. The simulation of wind turbine model is capable of modeling an accurate wind turbine generator system, and the presented MPPT algorithm can operate the wind turbine at maximum power in the real system.