

ABSTRAK

Kata kunci: Automatic Generation Control, sumur produksi, PLTP, panas bumi.

Dalam sistem tenaga listrik, jaringan perlu dijaga keandalannya. Salah satu komponen penting yang perlu diatur untuk menjaga keandalan jaringan adalah menjaga frekuensi sistem dalam rentang operasi tertentu. Secara umum, mode kontrol yang umum digunakan untuk generator dalam jaringan sistem tenaga listrik adalah load limit. Namun sesuai dengan aturan jaringan sistem interkoneksi Sulawesi telah diamandemen dengan terbitnya Peraturan Menteri Energi dan Sumber Daya Mineral (ESDM) No. 20 Tahun 2020 tentang Aturan Jaringan Sistem Tenaga Listrik (Grid Code). Di aturan ini, khususnya pada CC 4.4.2.9 mengenai Pengaturan Pembangkitan Otomatis (Automatic Generation Control), pusat pembangkit dengan kapasitas lebih besar dari 5 MW harus dilengkapi dengan Automatic Generation Control

Karakteristik sumur panas bumi dalam reservoir yang didominasi cair (water dominate) dan reservoir yang didominasi uap (steam dominate) memiliki karakteristik yang berbeda, sehingga pemilihan mode operasi menggunakan Pengaturan Pembangkitan Otomatis (Automatic Generation Control) harus dianalisis secara menyeluruh untuk menghindari gangguan pada sistem secara keseluruhan. Sistem panas bumi yang didominasi cairan menghadapi tantangan yang lebih tinggi untuk menjaga kestabilan sistem selama respons frekuensi dalam operasi Automatic Generation Control. Dengan demikian, perlu dilakukan analisa setting operasional Automatic Generation Control yang sesuai.

ABSTRACT

Keywords: Automatic Generation Control, production well, PLTP, geothermal energy

In power systems, network reliability must be maintained. One of the critical components in ensuring system reliability is maintaining the system frequency within a specified operating range. In general, the control mode commonly applied to generators in power system networks is load limit control. However, in accordance with the amended Sulawesi Interconnection Grid Code issued through the Regulation of the Minister of Energy and Mineral Resources (ESDM) No. 20 of 2020 concerning the Power System Grid Code, particularly Clause CC 4.4.2.9 regarding Automatic Generation Control (AGC), power plants with a capacity greater than 5 MW are required to be equipped with Automatic Generation Control. Geothermal well characteristics in liquid-dominated (water-dominated) reservoirs and steam-dominated reservoirs differ significantly; therefore, the selection of an operational mode using Automatic Generation Control must be thoroughly analyzed to avoid disturbances to the overall system, especially to production wells. Liquid-dominated geothermal systems face greater challenges in maintaining system stability during frequency response under Automatic Generation Control operation. This is due to the backpressure effect that may arise from governor response, which influences separator pressure and ultimately affects production well performance. Therefore, it is necessary to conduct an analysis of appropriate Automatic Generation Control operational settings.