

★★★ <第30回知的財産翻訳検定試験【第16回和文英訳】> ★★★
《1級課題 -電気・電子工学-》

【問1】

[Claim 1]

A satellite comprising a Doppler compensation circuit, the Doppler compensation circuit comprising:

a Doppler estimation unit that acquires a received power level of a received wave and a time variation of the received power level and that performs a process of deriving a Doppler frequency of the satellite on the basis of the received power level of the received wave and the time variation of the received power level to output the Doppler frequency as an estimated Doppler frequency, and

a multiplication unit that multiplies a signal of the estimated Doppler frequency and a signal of a local frequency for demodulation, thus offsetting the local frequency by the estimated Doppler frequency.

[Claim 2]

The satellite according to claim 1, wherein the Doppler estimation unit

acquires the received power level of the received wave and the time variation of the received power level;

uses, as fixed parameters, the speed of light, a position of a transmitting station, a carrier wavelength λ , a transmission equivalent isotropic radiant power, and a receiving antenna gain G_r ;

calculates the Doppler frequency of the satellite in accordance with the received power level of the received wave and the time variation of the received power level; and

outputs the Doppler frequency to the multiplication unit as the estimated Doppler frequency.

[Claim 3]

The satellite according to claim 1, wherein the Doppler estimation unit

acquires the received power level of the received wave and the time variation of the received power level,

refers to reference information including candidates for the estimated Doppler frequency, the candidates for the estimated Doppler

frequency being prepared in advance in association with the received power level,

calculates the candidates for the estimated Doppler frequency on the basis of the acquired received power level of the received wave,

selects the estimated Doppler frequency from the candidates on the basis of the time variation of the received power level, and

outputs the estimated Doppler frequency to the multiplication unit.

【問 2】

A fuel cell device that includes a fuel cell capable of generating power from a fuel gas (e.g., a hydrogen-containing gas) and an oxygen-containing gas (e.g., air) has recently been proposed as a next-generation energy source.

A power conditioner is used in a power generation system for a fuel cell device which is a distributed power source to supply power to a load in cooperation with a system power supply. The power conditioner has various functions such as an inverter function of converting a direct current output from the fuel cell device into an alternating current and a control function of controlling the cooperation with the system power supply.

The power conditioner supplies power generated in the fuel cell device to the external load in cooperation with the system power supply. At this time, the power conditioner increases or decreases the output power so as to prevent backfeeding to the system, thereby outputting the power according to a power requirement of the external load. As the output power from the power conditioner to the external load increases, an output current from the fuel cell device to the power conditioner decreases. When the fuel cell device detects the decrease in output current, the fuel cell device attempts to increase the amounts of oxygen gas and fuel gas to be supplied to the fuel cell, by controlling the operation of auxiliary machinery to increase the amount of power generation. It is, however, difficult to instantaneously increase the amounts of oxygen gas and fuel gas. The fuel cell device consequently develops a state of insufficient oxygen gas and fuel gas for power generation. Power generation in the state of insufficient oxygen gas and fuel gas causes damage to the fuel cell, resulting in problems such as an increased possibility of failure of the fuel cell device and a reduction in service life of the fuel cell device.

【問 3】

The business bird's eye view BV, which will be described later in detail, is a bird's eye view that abstracts and illustrates an overall image of business to be systematized, with figures that indicate "events", "cores", and their relationships, thereby illustrating the entire business of a company in a macro manner and in a form understandable by plural persons. When a core business application is constructed, the pre-processing engine 100 has a role of clearly identifying work and objects in the core business and describing them in the form of a business bird's eye view.

The SVO list E1 is a list that displays the type of operations conducted on the operation objects by the roles on the scenario chart. The SVO list E1 is a list expanded with the same granularity as that of the roles on the scenario chart D4. In other words, it is a list that sorts out, as its granularity, "functions" obtained by systemizing the roles on the scenario chart D4. Further, the activity definition E2 is a definition related to a process (step) for completing the roles on the scenario chart D4.