태양광-풍력 하이브리드를 이용한 철도 선로전환기 융설 장치 구현

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Railway Switching Point Heating System Using the Photovoltaic-Wind Power Hybrid

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This paper proposes the method to implement the railroad switching point heating system using the hybrid of the photovoltaic and wind power. The goal of the implementation of the railroad switching point heating system is to prevent freezing of the snow in the winter. The heating system of railway used to supply electricity through photovoltaic and wind power to prevent freezing. Hot wires of the railroad switching point heating system are used about 2kW of electric energy at the day. The electric energy of 2kW used the length of the hot wires about 3m. As the ON and/or OFF mode considering the tracks temperature and the ambient temperature, so the way the use of power-saving effect. In addition, the system can be used the railroad switching point heating system in winter and railway signal and street lights around the track in summer. In experiment, we acquired the power data according to time at the day of photovoltaic and wind power. We confirmed the temperature rise using the heating cable for 3m of 85℃, 30W/m. The temperature rise of the heating cable changes the temperature of 5℃ after 10 minutes and 11℃ after 10 minutes. We have confirmed the possibility of the railroad switching point heating system using the hybrid of the photovoltaic and wind power.

Key words : photovoltaic(태양광), wind power(풍력), hybrid(하이브리드), railway switching point heating system(철도 선로전환기 융설 장치), energy(에너지)

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파일럿 플랜트 최적운전을 위한 SCR공정 동적 모사

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A dynamic simulation study on SCR (Stream Carbon dioxide Reforming) process for pilot plant operation

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A dynamic simulation study on SCR process in GTL process was carried out in order to find optimum operation conditions for pilot plant operation. Optimum operating conditions for SCR synthesis gas process were determined by changing operation variables such as feed temperature and pressure. It was also assumed that physical properties of reaction medium were governed by RKS (Redlich-Kwong-Soave) equation. The effect of temperature and pressure on synthesis gas process H_2/CO ratio were mainly examined. Dynamic simulation results were fed back to feed operation condition for optimizing productivity, especially for appropriate condition to FT (Fischer-Tropsch) synthesis unit.

Key words : Gas-to-liquid(GTL), Natural gas(천연가스), Synthetic fuel(합성유), Synthesis gas(합성가스), Reforming (리포밍), Fischer-Tropsch synthesis(FT합성)

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