

## Analisis indeks keandalan pembangkit listrik tenaga gas dan uap (PLTGU) menggunakan teori graph = Reliability index analysis of combined cycle power plant using graph theory

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### Abstrak

Tesis ini membahas tentang evaluasi keandalan PLTGU menggunakan teori graph yang dibagi dalam 15 sistem serta keterkaitannya. Peta Kesehatan Unit (PKU) digunakan untuk mengidentifikasi sistem dan sub sistem PLTGU. Berdasarkan pembagian 15 sistem tersebut dibuat System Structure Graph (SSG) dan system reliability graph. Dengan graph tersebut dapat diketahui bentuk matrik dan persamaan matematis untuk permanent function PLTGU (VPF-r). Melalui data gangguan work order, dapat diketahui nilai keandalan sistem dan sub sistemnya yang kemudian disubstitusikan ke permanent function untuk mengetahui indeks keandalan PLTGU.

.....This thesis discusses about how to evaluate reliability of combined cycle power plant using graph theory that divided into 15 systems by considering the interrelation one system to each other. Peta Kesehatan Unit (PKU) used to identify the system and sub systems of combined cycle power plant. Based on the division of 15 systems previously, System Structure Graph (SSG) dan system reliability graph are created to indicates systems and sub systems configuration. Using graph theory, matrix form will be known and permanent function (VPF-r) can be obtained. Based on failure data in work order, reliability value of systems and their sub systems can be calculate then substitute it into permanent function to determine combined cycle power plant reliability index.