

Abstract of Presentation

Presentation Title:

Energy efficient data center for ASEAN infrastructure optimizations

Abstract :

Confronting energy crisis in global economic growth, there is no doubt that efficiency is a key for sustainability in every aspect of today's system. For efficiency, GDC-DC concept is presented in this talk. The GDC-DC is an interconnection between GDC (Gas District Cooling) and DC (Data Center), which means GDC plant provide electricity and chilled water to computers in DC, while the computers calculates the better operation plan for GDC plant. To realize GDC-DC, a new energy model is considered under time constant gap between chilled water and electricity. The model is based on the daily energy gap in chilled water, which is estimated by sensor information from GDC and DC. The gap is minimized by Data Center Job Scheduling (Shift IT demand to night) and SAC (Steam Absorption Chiller) Scheduling (Store chilled water at night). The GDC-DC energy efficiency performance is estimated through analytics using ten year operational Big Data in UTP (Universiti Teknologi PETRONAS, Malaysia) GDC plant. In comparison with only-by-EC DC (Data Center with only Electric Chillers), 34% electricity reduction is expected, which means that PUE (Power Usage Effectiveness) of 1.63 is reduced to that of 1.07. The estimates show that DC with GDC, located even in tropical countries, has potential to achieve the world top class efficiency, while most energy efficient DC in northern countries so far makes use of outer cooling air.