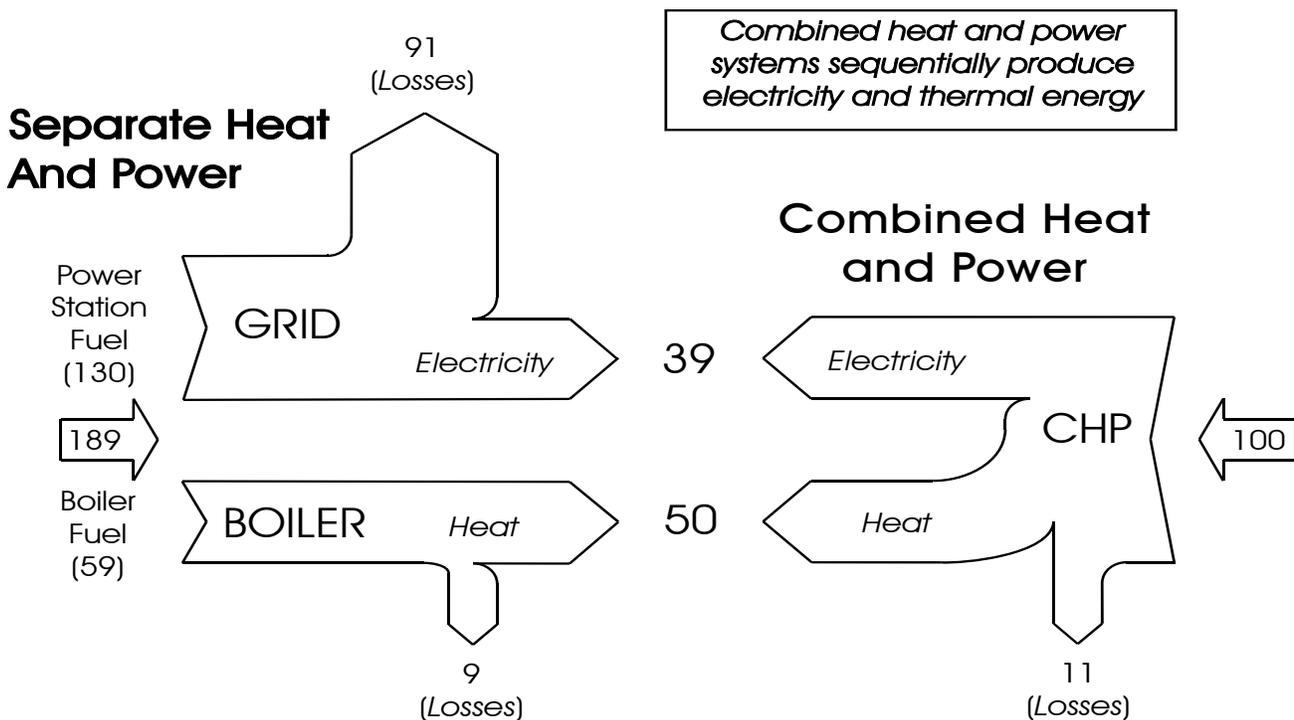


Combined Heat and Power Workshop Overview

by
Billy Williamson, EIT, EMIT

On August 9, 2007, the Louisiana Department of Natural Resources' Mrs. Paula Ridgeway welcomed over 50 engineers and architects to the Chateau Sonesta Hotel in New Orleans for a workshop titled "Preventing Hurricane Damage Due to Loss of Building Climate Controls: Opportunities for Combined Heat & Power." The workshop offered attendees a better understanding of combined heat and power (CHP) technology while helping them to make a case for implementing CHP systems. It was hosted by the Louisiana Department of Natural Resources (DNR) and the Gulf Coast CHP Application Center.

Figure 1. Combined Heat and Power Schematic
(Energy Units are Btu's)



Combined heat and power is a family of technologies which maximize fuel efficiency by using waste heat to perform different tasks. Many industrial processes produce excess heat which is discharged into the atmosphere. By using the heat, the overall efficiency of the process is increased. Combined heat and power is often called cogeneration.

Dan Bullock of Gulf Coast CHP Application Center opened the presentations with an overview of combined heat and power technology. Mr. Bullock discussed the Department of Energy's CHP strategy, which calls for 92 gigawatts of power provided by CHP systems by the year 2010. According to Mr. Bullock's presentation, CHP systems provided 81 gigawatts of power as of 2004. The strategy also calls for the Department of Energy to provide assistance in the adoption, development, and regulation of CHP technology. Mr. Bullock then discussed observations made during and after Hurricane Katrina that demonstrate the viability of CHP systems in the event of a large-scale natural disaster. Mr. Bullock's

presentation can be viewed at URL: <http://files.harc.edu/Sites/GulfCoastCHP/News/PreventingDamage2007/CHPOverview.pdf>.

Lianne Lami of Bocci Engineering gave a presentation on the application and economics of CHP systems. She described six major business drivers for the implementation of CHP. These drivers are reliability, asset replacement, demand growth, energy risk, economics, and sustainability. The drivers were presented as needs and the way in which CHP meets those needs.

The morning ended with a panel discussion of the different CHP technologies. The panelists included Steve Brandon of Bluepoint Energy, Steve Cernik of Kawasaki Gas Turbines, Mark Hughes of Solar Turbines, Dr. Ted Kozman of the Louisiana Industrial Assessment Center, and Bob Tierney of UTC Power. The panel discussed available models and the positive and negative aspects of CHP technologies. Dr. Ted Kozman spoke about the problems encountered with the University of Louisiana at Lafayette's recently implemented CHP. The length of time required to apply for and receive air quality permits was one of the problems encountered.

The afternoon session started with a presentation by Bryan Johnston of the Louisiana Department of Environmental Quality discussing the air quality permitting of CHP technology. He began by describing the organization of LDEQ, as well as the air permits division. He then discussed the application process and government deadlines for approving or denying applications in a timely manner. He also discussed the expedited permit process, which has overwhelming support from industry leaders. The cost of the expedited permit process is equal to the total amount of overtime pay for the employee who performs the work. You can view his presentation at URL: <http://files.harc.edu/Sites/GulfCoastCHP/News/PreventingDamage2007/CHPAirQualityPermitting.pdf>.

One of the highlights of the workshop was the Natural Gas panel discussion on the reliability of the gas supply. Representatives from the three major natural gas providers in Louisiana were on hand to answer questions regarding natural gas supply dependability. Each panel member answered questions regarding the impact of Hurricanes Katrina and Rita on gas supplies and deliveries. The panel members also discussed the lessons learned from the disasters, as well as progress made toward returning to full supply. The final topics discussed by the panel considered the costs associated with natural gas. The panel briefly discussed distribution costs before considering the long term cost estimations of natural gas. The future prices were compared to the cost of electricity to demonstrate potential savings.

The workshop was concluded with three case studies of CHP in the Southern United States. Rickie Kramer from Tulane University provided a look at the CHP system in use at Tulane in New Orleans. He discussed the history of the system, problems realized during Hurricane Katrina, and plans to safeguard against future disasters. Next, Dr. Keith Hodge provided a look at the CHP system in use at the Mississippi Baptist Memorial Hospital in Jackson, MS. He discussed the history of the system and the value of the system during Hurricane Katrina. The CHP system kept the hospital nearly 100% operational throughout the storm, ensuring vital healthcare systems were available during the disaster. Finally, Ed Mardiat of Burns & McDonnell presented the CHP system in use at the new Dell Children's Hospital in Austin, Texas. The hospital, aided by the use of CHP technology, aspires to become the first Leadership in Energy and Environmental Design (LEED) Platinum hospital in the world.

Additional information about combined heat and power can be found on the DNR website (http://dnr.louisiana.gov/sec/execdiv/techasmt/electricity/nonutility/cogen_2005.pdf).