SAND2020-1254C

Title: Evolution of a Chilled Water Loop to Meet the Changing Needs of Buildings at Sandia National Laboratories, New Mexico

Abstract: The Sandia National Laboratories campus in New Mexico has many types of buildings from general office buildings to laboratories to data computing facilities. The dynamic nature of the work performed at the laboratories causes the functionality of the buildings and operations to change frequently. This presentation discusses the evolution of chilled water loops to meet campus needs while improving energy efficiency to comply with federal regulations. Changes to the loop included combining chilled water loops, changing system design from a constant primary/constant secondary to a variable primary only and installing heat exchangers to cooling towers for “free cooling”. Replacing old water-cooled chillers with new and improved technologies and optimizing loop operations for maximum efficiency were also part of the evolution. As improvements to the chilled water loop were being made, changing campus user requirements were met by adjusting flow rates and providing a wider range of temperatures. Additionally, provisions were made to permit the easy incorporation of new buildings into the system. During the entire process, many lessons were learned which are being applied to the dynamic changes required of the chilled water loop. The goal of this presentation is to share the lessons learned.

SNL is managed and operated by NTESS under DOE NNSA contract DE-NA0003525.

Speaker: Casiano C. Armenta, PE, is a Mechanical Engineer in the Facilities Building Systems Engineering Department at Sandia National Laboratories, New Mexico. Casiano has been working on and studying chilled water systems for over 8 years and has been a member of ASHRAE for 11 years and AEE for 6 years. He is also a Professional Mechanical Engineer, a Certified Energy Manager (CEM) and a Green Building Engineer (GBE). He holds a BS in Engineering Technology from New Mexico State University and a MS in Mechanical Engineering from the University of New Mexico.