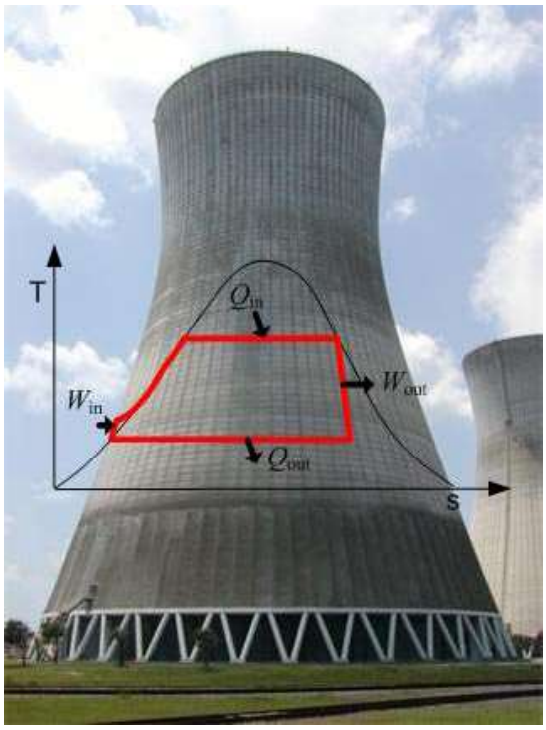
Mechanical/Environmental Sustainability Project

Water Cooled Condensers

Mission Statement

To identify the ultimate method of cooling for steam power plants, and to estimate the cost and loss of generation capacity if all of the steam power plants in Connecticut using once through condensers were switched to air cooled or cooling tower systems.



Synopsis

There are two main types of condensing methods in steam power plants; once through condensers and cooling towers. Cooling towers have been deemed the best management practice by the EPA because once through condensers kill fish eggs and larvae, but cooling towers are less efficient, more costly, and produce more carbon dioxide emissions. The DOE partnered with a team of LSSL students to do a cost/benefit analysis of the condensation methods in Connecticut.

The project was broken down into three parts. The team worked simultaneously on all parts, with each member researching areas pertaining to their experience.

- Condensing Method and Efficiency
- Cost
- Environmental Impacts

The project culminated with the decision that it is more economical and environmentally conscious for large power plants to use once through cooling condensers than cooling towers or dry air cooling, and the finding that there is going to be a 130-226 MW (2-3%) generation loss if all of the once through condensers at large Connecticut plants are switched to cooling towers.

George Keryakos — University of New Haven
Daniel Drzal — Housatonic CC
Jay Richardson — University of Connecticut