CE397 Energy Management Systems

Project 1

Due: November 27, 2018

Couple the

1. water cooled chiller model with
2. cooling tower model and
3. building model (building in Syracuse, NY).

Calculate the energy consumption for the chiller for the first week of July.

The model coefficients for water chiller model are provided in the course website. Use the two variable regression model for the cooling tower model. Use the empirical model for the building in Syracuse provided in class. The nominal COP for the water cooled chiller is 4.5, and **the design chilled water supply temperature (TCWS) is 5C and the design chilled water return temperature (TCWR) is 11C. The Design cooling tower supply (TCTS) is 29C and the cooling tower return (TCTR) is 35C. NOTE**: t**he cooling tower return vary for different operation condition.** Fort this HW assignment use constant pumps flow rates.

You will need the Syracuse weather data from:

<http://rredc.nrel.gov/solar/old_data/nsrdb/1991-2005/tmy3/by_state_and_city.html>
Find Syracuse, NY (Airport)
You will be able to download Excel (cvs) file. Also you can use the file from the course website.

**Nominal building capacity is 20 ton (70kWh).**

**For the chiller model**

You should use the model for water-cooled electric centrifugal chiller. Models equations and coefficients for the default DOE2 water-cooled electric centrifugal chiller model are given in the table below.







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**For the cooling tower model**

Use the cooling tower data from the class notes (posted in the handout section of the course website) to generate regression model.