**How to run the optimization algorithm**

Software neded: Matlab; YALMIP; glpk

* Once installed Matlab on your PC you can download the YALMIP interface from the web site <http://users.isy.liu.se/johanl/yalmip/pmwiki.php?n=Main.Download> and save the folder in your pc.
* I am attaching the GLPK library (GNU Linear Programming Kit), which is necessary to solve the optimization problem.
* Now you have to set the path of YALMIP and GLPK in MATLAB. Open Matlab and set the path on file->Set Path… and click on add with subfolders.

Description of the files in the folder “Optimization\_code”:

* *doMPC.m* is the main. It calls the function:
* *parameters.m* that configures the microgrid, setting some input parameters related to the boilers and the storage.
* *creadomanda.m,* it fakes the forecast of the thermal and electric consumption. I have already saved *Demand\_c.mat* and *Demand\_e.mat*.
* The economic dispatch problem is solved over a simulation period *Ts.* At each time step the function *MES\_MPC.m,* is called. This is the most important file, it builds the optimization problem and calls the solver *gplk* to solve it over a prediction horizon *T*.  
  In this analysis we consider a simulation scenario of 24 hours, and a prediction horizon of 12 hours.
* When the simulation is done you can run the file “*plotrisultati.m*” to have some figure of the most important variables.

KES asked for a .exe file, in order to have the possibility to launch a standlone application, in a machine which does not have Matlab, but only Matlab Runtime.

You can use the Matlab *deploytool* (<https://www.youtube.com/watch?v=rjYUtJA3f18>) by including also yalmip and the solver in the files.

**TO DO**: Implement the combined behavior of chiller 1 and 2.