ELEC 0041: Homework 1 - due on March 3 2021

The upgrade of an electric power station requires the original high-voltage 100 mm diameter (hollow, with a 60 mm internal diameter) copper tubing system to be replaced with bundles of smaller-diameter solid conductors, which should be easier to manufacture, install and maintain.

The maximum (peak) voltage of the conductors is 600 kV. The phase-ground distance (computed with respect to the lowest point of the conductors) is 5m.

Design a conductor arrangement that

- allows for the same ampacity (current) at 50 Hz;
- minimizes the maximum electric field (to avoid electrical breakdown at 3 MV/m);
- is as compact as possible while minimizing cost and technical complexity.

Write a 2 page report where you present and comment your results.

Send your report by email to `cgeuzaine@uliege` in PDF format together with your model files, bundled in a single `.zip` file named `hw1_FirstName_LastName.zip`.