

ELEC 0041: Homework 1 - due on March 6 2018

The upgrade of an existing electric power station requires the original high-voltage 60mm-radius (hollow, with a 40mm internal radius) copper tubing system to be replaced with bundles of smaller-diameter, solid conductors.

The maximum (peak) voltage of the conductors is 500kV. The phase-earth distance (computed with respect to the center of the tube or of the conductor bundle) is 4m.

Design a bundle arrangement (for a single phase) that

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

By groups of 2, write a 2 page report where you present and comment your results.

Send your report by email to cgeuzaine@ulg.ac.be in PDF format together with your model files, bundled in a single .zip file. The file should be named: `hw1_lastname1_lastname2.zip`.