**Challenges**

It must be taken into account that the re-construction of the University of Glasgow campus power grid will produce certain noise, which will cause some obstacles to the teaching activities of the university and affect the daily activities of staff and students. Therefore, according to the arrangement of daily teaching activities on campus, the construction can be carried out at a time that has as little impact on daily teaching and research activities as possible.

To replan the campus power grid, it is necessary to first know the electricity load required by the buildings in each area of the campus, and at the same time to consider how to lay the lines to save more human and material costs, which requires a lot of statistics and calculation, as well as a certain time cost. It would be a priority to keep the power lines between the power plant and the areas of the University of Glasgow that use the most electricity as short as possible, because the longer the transmission lines, the more energy is lost in the transmission process. On the other hand, we should also consider making the total length of the transmission line in the school as short as possible, so as to save the manpower and material resources required for laying the line. At the same time, the shorter the transmission line, the less manpower and material resources required for the maintenance of the power system will be.

For large-capacity power supply, the hourly load demand is variable. At the same time, there are different load demands for winter and summer. Therefore, the algorithm is more complex when considering the optimization of the power grid (Das, 2012). In general, customers need more electricity in the summer and less in the winter. The demand for electricity in each area of the campus is also different. Therefore, it can be considered to set up an electric energy storage device in the campus grid to store the excess electric energy and transmit it to areas with high demand for electricity. In this way, the waste of electric energy is avoided to some extent. At the same time, we can also consider generating electricity through clean energy. For example, we can install solar panels in areas with sufficient solar irradiation on campus to reduce the dependence on fossil fuels through clean energy generation.

If the power grid in the University of Glasgow is re-constructed, such as laying power lines and installing compensation equipment, vegetation damage and soil erosion may be caused to some extent, which may have some impact on the ecological environment in the university. In addition, if the grid is to be rebuilt, recycling of discarded wires and other materials should be considered to reduce the environmental burden.

**References**

Das, J. C. (2012). Power system analysis: Short-circuit load flow and harmonics (Second ed.). CRC Press. https://doi.org/10.1201/b11021