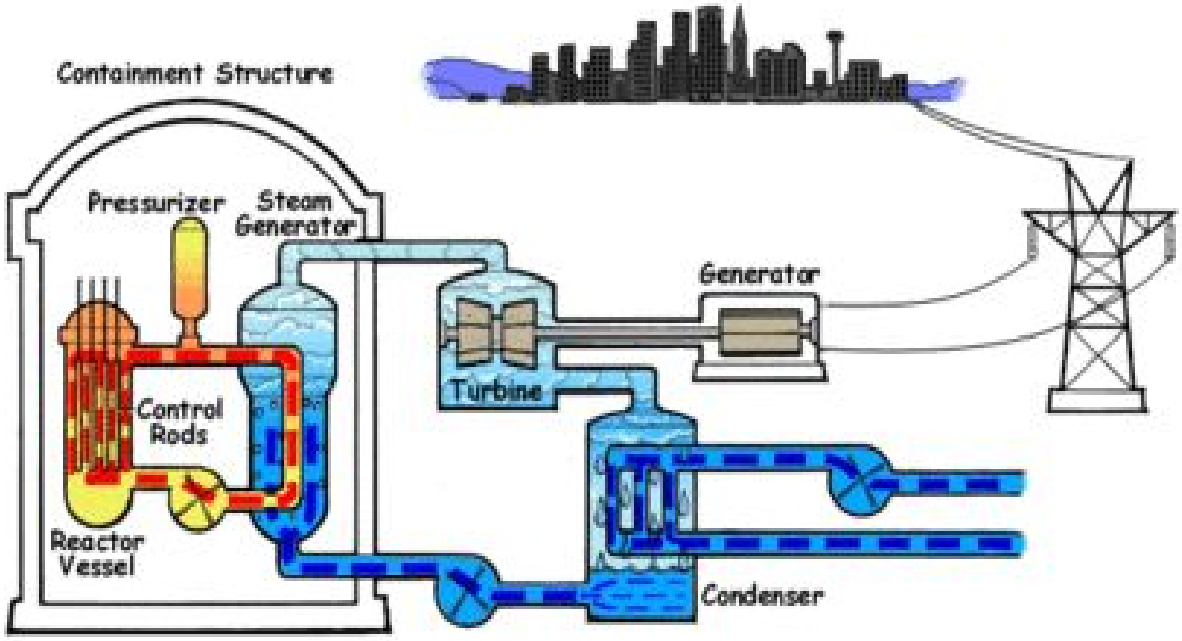


Nuclear Power Plant Simulation

Our objective is to simulate the working of nuclear power plant in C using OpenGL library. This project demonstrates the internal working of the nuclear power plant. We are using different OpenGL transformations to show how the things work internally in the nuclear power plant.

Team:

Melwin Lobo - 4SF16CS091
Shreyas Baliga - 4SF16CS148

Introduction:

Nuclear power plants are a type of power plant that use the process of nuclear fission in order to generate electricity. They do this by using nuclear reactors in combination with the Rankine cycle, where the heat generated by the reactor converts water into steam, which spins a turbine and a generator.

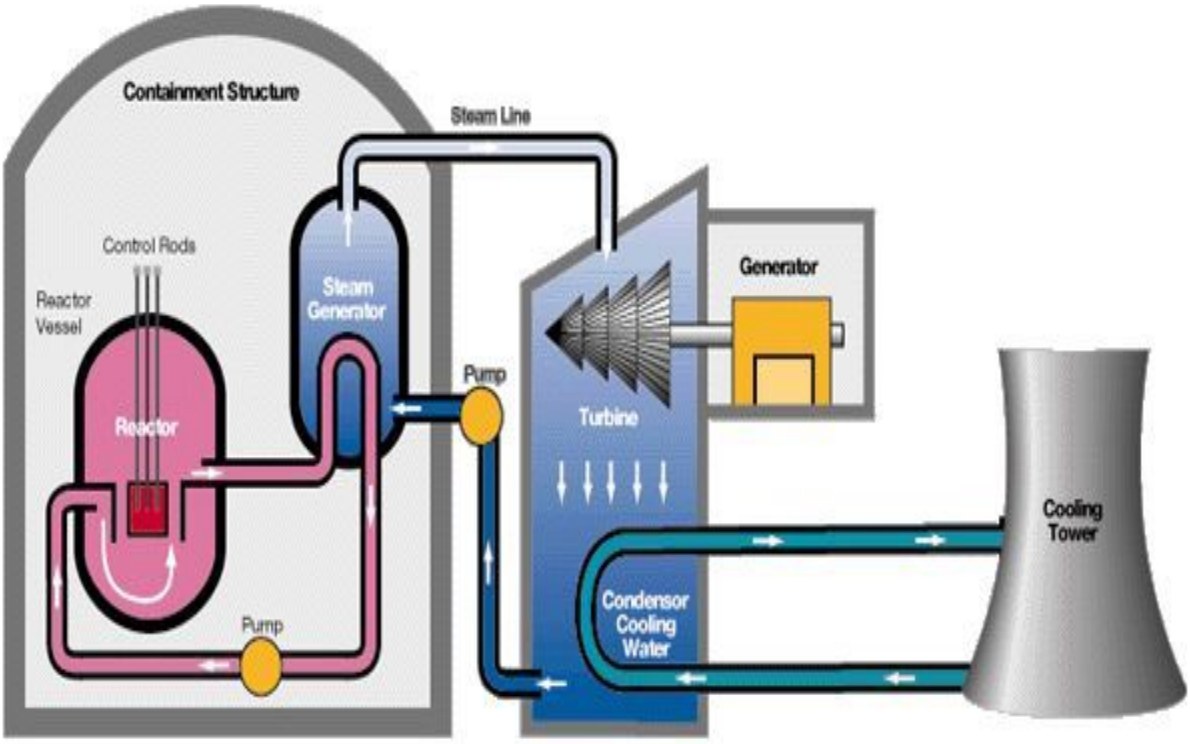
OpenGL is a low-level graphics library specification. It makes available to the programmer a small set of geometric primitives - points, lines, polygons, images, and bitmaps. OpenGL provides a set of commands that allow the specification of geometric objects in two or three dimensions, using the provided primitives, together with commands that control how these objects are rendered (drawn).

In this project we use OpenGL library to demonstrate the working of nuclear power plant. We implement it in C. Initially we construct the schematic diagram of the nuclear power plant using different OpenGL primitives. We also give different colors, textures and thickness to various parts.Once the schematics is completed we'll show how the coolant flows through the entire power plant, moving of control rods and also how the turbine rotates.

The project will contain different options displayed in menu. The user will land in the project name page when he executes the project from where he can navigate to the simulation of the nuclear power plant and also there's one more option provided in the menu which gives the detail of how the power plant works. The menu also contains exit button so that the user can quit from the project.

Design:

The schematic diagram of the nuclear power plant is shown below.



Requirements:

Software Requirements:

- Operating System : Windows 98 or higher
- Language Tool : OpenGL
- Compiler : GNU GCC Compiler /C++ compiler.
- Libraries : Supporting glut32.h, opengl32.h & glu32.h .
- Documentation Tool : Visual C++ 6 or higher versions like 2008.

Hardware Requirements:

- Processor : Intel 386 onwards Compatible Hardware.
- RAM : 16Mb RAM
- Hard Disk : use in KB
- Monitor : EGVGA Compatible
- Keyboard : Standard 101 key Keyboard
- Mouse(ps/2)

Bibliography:

I. https://www.glprogramming.com , Introduction to OpenGL

II. https://energyeducation.ca , Introduction to Nuclear Power Plant