Journey to the heart of energy – transcript

A nuclear power plant generates electricity using the heat released during the fission of uranium atoms.

Several types of nuclear reactors exist.

The world's most common reactor type is the pressurized water reactor.

This power plant has 3 entirely standalone water systems: the primary system, the secondary system, and the cooling system.

The fuel used by a nuclear power plant takes the form of small uranium pellets that are stacked in long metal tubes known as fuel rods. These tubes are placed in a steel tank filled with water, the reactor's core.

The fission of the uranium atoms heats the tubes which, in turn, heat the water to a temperature of 320 degrees.

Pressurized to keep it in a liquid state, this water is then channeled to the steam generators.

When secondary system water enters into contact with the primary system's pipes which contain very hot water, it heats up in turn and becomes steam.

This steam turns a turbine which turns a generator.

In the generator, the interaction between the electromagnets of the moving rotor and the stationary stator's copper coils produces an electric current.

A transformer then boosts the current's voltage to between 225,000 and 400,000 volts, thereby facilitating transmission over the grid's high-voltage power lines.

When leaving the turbine, the steam is turned back into water by the cooling system.

It is then returned to the steam generator to begin a new cycle.

Before it does so, it goes through a condenser which is either supplied with cold water from the sea or a river or with water cooled by the draft that circulates in large towers known as water cooling towers.

Generating electricity from a nuclear source produces radioactivity and radioactive waste.

The facility's safety is therefore of utmost importance.

The waste is rigorously managed, sorted, and treated before being safely stored.

Nuclear power plants generate very large amounts of electricity and do not emit greenhouse gases.

They are used continuously to meet the growing demand for electricity.