2. Recycling of Nuclear Fuel (Plu-Thermal project)

Spent uranium fuel contains plutonium that is newly produced and can be used as a fuel. The Plu-Thermal project, therefore, aims to use the plutonium extracted and recycled from spent fuel in existing thermal reactors.

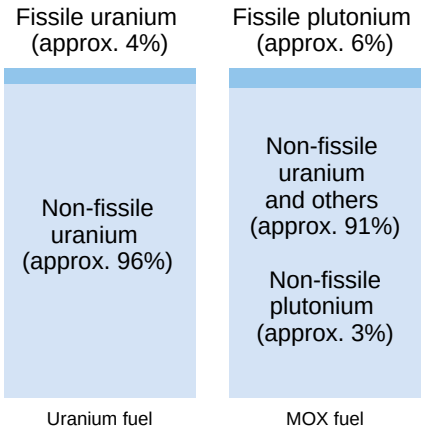
N.B. The term ' Plu-Thermal ' comes from an abbreviation of the terms' plutonium ' and ' thermal reactor '

Kyushu Electric Power is aiming to apply plutonium use in thermal reactors at a plant by 2010 as the earliest possible date. We are currently undertaking an investigation to establish a specific timetable and to select the plant. After a plan has been established, we will give detailed explanations to the local communities near the plant, and proceed once we have gained their understanding.

(1) Effective use of uranium as a resource

Resources such as oil, coal, natural gas and uranium are limited, and Japan lacks natural resources. Japan's basic policy is therefore to extract and recycle remaining uranium and newly produced plutonium from spent uranium fuel in order to effectively use its limited resources.

(2) Uranium fuel and mixed oxide (MOX) fuel



The spent uranium fuel used at nuclear power stations still contains about 94% reusable uranium and about 1% newly generated plutonium. In other words, about 95% of spent uranium fuel is recyclable. A mixture of uranium oxide and plutonium oxide called MOX (mixed oxide) fuel substitutes fissile plutonium (about 6%) for fissile uranium (about 4%), used for conventional uranium fuel. The remaining 94% is covered by non-fissile uranium or plutonium. Additionally, the other specifications of MOX fuel are almost identical to those of conventional uranium fuel.

(3) Safety of Plu-Thermal

Even at present nuclear power stations using uranium fuel only, some portion of the newly produced plutonium converted from non-fissile uranium during the power generation process has already been used in power generation. The amount of power generated by burning plutonium accounts for about 30% of the total power generated at nuclear power stations.

The use of MOX fuel may increase the share of plutonium used in power generation. The use of MOX at nuclear power stations, however, does not involve a major restructuring of operation techniques, but employs nearly conventional operation methods. Plu-Thermal application has been widely used abroad; and its reliability has been fully verified. In Japan, safety was also confirmed by trial use of Plu-Thermal at Mihama and Tsuruga Nuclear Power Stations.