



SPEAKER: **MALTINI, F.**

TITLE: **The Chernobyl and Fukushima Daiichi nuclear accidents and their tragic consequences**

DATE: Thu 29/09/2016 16:30

PLACE: 500-1-001 - Main Auditorium

## ABSTRACT

On April 26, 1986, the Unit 4 of the RBMK nuclear power plant of Chernobyl, in Ukraine, went out of control during a test at low-power, leading to an explosion and fire. The reactor building was totally demolished and very large amounts of radiation were released into the atmosphere for several hundred kilometres around the site including the nearby town of Pripjat. The explosion leaving tons of nuclear waste and spent fuel residues without any protection and control totally contaminating the entire area. Several hundred thousand people were affected by the radiation fall out.

The radioactive cloud spread across Europe affecting most of the Northern, Central and Eastern European countries. Some areas of southern Switzerland, of northern Italy as well as western France were subject to radioactive contamination.

The initiative of the G7 countries to launch an important programme for the closure of some Soviet built nuclear plants was accepted by several donor countries. A team of engineers was established within the European Bank for Reconstruction and Development were the Nuclear Safety Account Fund was provided by 41 donor countries for the entire design, implementation and management of all projects for the plants decommissioning.

Fulcieri Maltini has been in charge of the conception of the Chernobyl and the Ignalina programmes including the establishment of the safety strategy for the entire site remediation and the planning for the plant decommissioning. Several facilities have been designed and built for the processing and storage of the spent fuel and the radioactive liquid and solid waste as well as to protect the plant damaged structures.

This lecture will describe the Chernobyl accident, the contamination of the surrounding areas as well as the radioactive effects of the "cloud" on several European countries that have provoked more than one million casualties over several years. The detailed presentation includes the construction of several facilities for the storage of spent fuel and the treatment of radioactive waste as well as the construction of the New Safe Containment, a "gigantic" structure that, when completed, will be moved over the destroyed reactor.

The entire programme, started in 1994, is carried out in a totally contaminated site and will be most likely completed by 2026. The cost for the entire decommissioning programme will exceed 4 billion €.

The Fukushima-Daiichi nuclear power disaster in Japan occurred on 11 March 2011 initiated primarily by the tsunami following the Tōhoku earthquake. A 15-metre wave disabled the sea-water emergency power supply and the cooling of three reactors, causing their explosion and melting of the cores. The accident was rated 7 on the INES scale, due to high radioactive releases over days 4 to 6, eventually a total of some 940 PBq (I-131 eq). Four reactors were written off due to damage in the accident. In order to provide cooling for the cores and the spent fuel ponds, large amount of water were for several days pumped from the sea and contaminated water were returned to the sea.

Over 100,000 people were evacuated causing a toll of about 1000 human deaths.

The tsunami inundated about 560 sq km and resulted in a human death toll of about 19,000 and much damage to coastal ports and towns, with over a million buildings destroyed or partly collapsed.

The causes of the accident had been foreseeable. The plant operator, Tokyo Electric Power Company (TEPCO), had failed to meet basic safety requirements such as risk assessment, preparing for containing collateral damage, and developing evacuation plans.

There are no clear plans for decommissioning the plant, but the plant management estimate is 30 or 40 years.

Organised by: W. Lerche/TH-SP & F. Spano EP/UAT.....\*\* Tea and coffee will be served at 16h00\*\*