

## NUCLEAR DECOMMISSIONING IN ITALY

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### **Introduction**

Italy is in a unique position. Italy has been in the past among the leading countries in the pacific use of nuclear energy, but, as a consequence of the 1987 referendum decided to shutdown all operating power plants, to leave uncompleted the plants under construction and to stop all related research and industrial activities declaring a 5 years moratorium on any future initiative.

The moratorium ended unnoticed in 1992, since there was no political move to restart nuclear power in Italy and, in practice, it is still acting. Therefore, now the major efforts in the nuclear field are focused on the closure of past liabilities assuring safety and security highest levels. This is a duty to be carried out by the generation that used this form of energy, but, at least for somebody, also a pre-condition for the acceptance of any future renaissance of nuclear energy in Italy.

### **A vision for the future**

SOGIN is a Company carrying out a service for the country and fully committed to solve the liabilities left by the interrupted nuclear industry in Italy. To this aim SOGIN is managed as a private company to assure the highest possible efficiency, but, at the same time, is driven by moral and ethical objectives and the vision of protecting the environment and health and safety of the public.

SOGIN blends in a synergic way the various ENEL experiences (design and operation of NPP's) and ENEA experiences (engineering and operation of R&D and industrial facilities supporting NPP's). Such a comprehensive combination of technical competences should not be dispersed in the medium and long term and the management is committed to facilitate the technical growth of the impressing number of motivated young people joining the Company, whose enthusiasm is contaminating every day also the "veterans", to assure for the country an asset and a presidium of very specialized multi-disciplinary nuclear competences.

Speaking of possible scenarios for the future, we should mention that the current international situation in the oil market, both in terms of barrel cost and in terms of security of supplies, and the severe black-outs that have plagued also Italy (the major one in September 2003 lasting in some areas for about 24 hours), have started a widespread discussion about energy alternatives and strategic energy plans. In this frame an increasing number of politicians and scientists are calling for a reconsideration of nuclear energy as a viable option also for Italy in a new energy mix. It is clear that public acceptance of nuclear energy is strictly connected not only to the demonstration of high safety standards of future plants, but also to the solution of radioactive waste disposal and of plant decommissioning. This is the link that could make the SOGIN mission even more strategic for the country.

**LIST OF MAJOR ACTIVITIES RECENTLY COMPLETED OR TO BE STARTED SOON*****Trino***

- Decontamination of the steam generators (completed)
- Removal of turbine asbestos insulation (completed)
- Dismantlement of some conventional buildings, i.e. emergency diesels, emergency cooling towers, administrative building (completed)
- Construction of the new industrial water system (advanced)
- Asbestos removal from the Controlled Area (underway)
- Turbine system removal (underway)
- Removal of the river barrier for water supply (underway)
- Removal of the remaining spent fuel from the pool and loading them in CASTOR casks (2005)
- Supercompaction of operational wastes (DAW and asbestos containing materials) (2006)
- Modification of the ventilation system of the primary containment (2006)
- Realization of the waste route from the primary containment and of the new personnel access (2006)
- Realization of the Waste Management Facility (2006)
- Realization of the Monitor release facility (2006)
- Realization of the new radwaste system (2006)

***Caorso***

- Primary circuit decontamination (completed)
- Removal of asbestos from the turbine system (completed)
- Main generator removal (completed)
- Main turbine components and thermal cycle components removal (underway)
- Centralized facility for material management (underway)
- Insulation materials removal from the Reactor Building (underway)
- Dismantlement of the Residual Heat Removal system cooling towers (underway)
- Treatment and conditioning of operational wastes (waiting authorization)
- Dismantlement of the Off-gas building (2006)
- Removal of the spent fuel from the pool and loading it in CASTOR casks (2007)

### ***Latina***

- Removal of asbestos from the turbine system and from some rooms of the Reactor Building (completed).- 12 -
- Primary loops piping removal (underway)
- Extraction, treatment and conditioning of the operational sludge's (underway)
- Extraction, treatment and conditioning of splitters (to be authorized)
- Dismantlement and melting of the boilers (to be authorized)
- Construction of the interim storage building (waiting for authorization)
- Removal of the auxiliary systems from the Reactor Building (2006)
- Scarification of the spent fuel pool (2006)
- Preparation of the Reactor building to dismantling (2006)

### ***Garigliano***

- such as a light decontamination and drainage of the vessel, primary circuit and spent fuel pit; dry low level operational wastes compaction, cementation of liquid and semi-liquid (sludge) radioactive wastes, refurbishing of the reactor spherical containment. All the activities have been authorized in anticipation to the approval of the Global Decommissioning Plan
- Removal and dismantlement of the T11 tank (completed)
- Removal of asbestos from selected rooms (completed)
- Removal of asbestos from turbine building (waiting for authorization)
- Refurbishing and adaptation of turbine building ventilation system (waiting for authorization)
- Clean-up of waste trenches (2006)
- Demolition of plant stack (2006)

### ***Saluggia/EUREX***

- Decontamination of two process hot cells (completed)
- Flooding protection barrier (completed)
- Construction of a new tank park bunkerized building for highest activity liquids, about 120 m<sup>3</sup>, produced by the reprocessing of MTR and CANDU fuel (2005)
- Construction of 2 modules of interim storage facilities for medium level conditioned wastes 1000 m<sup>3</sup> each (2006)
- Start of construction of the cementation facility for all liquid waste present on-site (2005)
- Modification of the pool structures and systems in preparation for the removal of the remaining spent fuel (2006)

***Bosco Marengo/FN***

- Complete removal from the site of all fresh fuel scraps (2005)
- Start of the decontamination facility (pallinatrice) (2005)

***Casaccia/Plutonio***

- Alfa contaminated liquids treatment (completed)
- Modification of the Fire system, ventilation radioactive monitoring systems and plant access system (2005).- 13 -
- Start of dismantling of the plutonium contaminated glove boxes (2005)

***Casaccia/Hot Cells***

- Removal of contaminated tools from hot cells (completed)
- Initial decontamination of 3 hot cells (completed)
- Removal of underground tanks for liquid wastes (2007)
- Modification of Fire system (2005)
- Refurbishing of one Hot Cell for all expected needs (2005)
- Complete refurbishing of an existing building to be used for interim storage of alfa contaminated conditioned wastes (2005)

***Trisaia/ITREC***

- Cementation of medium and high level liquid wastes (completed)
- Clean-up of trenches containing low level contaminated materials and their super compaction (completed)
- Realization of a new on-site interim storage for medium level wastes (2005)
- Conditioning of the operational dry wastes (2008)
- Removal of wastes from grouted trenches (2005)
- Construction of a new cementation facility for low and medium level wastes (2006)
- Start of construction of a cementation facility for nitric solution of uranium and thorium (2005)
- Modification of pool structure and auxiliary systems in preparation for the dry storage of the uranium-thorium spent fuel in TN casks (2006)