



A NEW SEMI-MOBILE PLANT FOR RADIATION PROCESSING OF WASTE

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A new pilot/demonstrative semi-mobile irradiation plant, named TRIRIS (TRIsaia-Rifiuti-Sterilizzazione, namely "Trisaia Res. Center - Wastes - Sterilization"), has been designed and erected in order to propose and explore new technological opportunities, based on an "in-situ" effective cleaning process. The main general goal is to face increased problems and concerns related to the treatment /disposal of different solid-liquid wastes, particularly with reference to emergency situation (e.g. need of a quick environment restoring operation following an accident with groundwater pollution).

The project, which was jointly carried out by ENEA and Hitesys Co., an Italian electrons accelerators manufacturer, foresees a LINAC type EB-machine (s band) having 4-6 MeV and till 1000 W as beam features. A highly flexible automatic system allows materials (solid or liquid wastes) transporting and handling, being equipped with a belt conveyor and a piping net.

Scattered radiation shielding is performed by a water pool surrounding the EB-machine head, filled up before operations. Auxiliary systems, control console and analytical chemical laboratories are hosted in suitable containers near the plant and easily transportable.

The whole plant and annexed systems disassembling and reassembling in a new site can be easily carried out in a short time (few days).

The plant, that is located by the ENEA-Trisaia Res. Center (Basilicata, southern of Italy), allows a large operative flexibility: groundwater and wastewater decontamination (1800 to 70 kg/h in the 1 to 25 kGy dose range), organic and chlorinated waste streams (25 kg/h at 75 kGy), solid hospital wastes (50 kg/h at 35 kGy) or hazardous wastes like polycyclic aromatic compounds (180 to 35 kg/h in the 10 to 50 kGy dose range).

The paper describes and illustrates the plant in details and presents first available operating results so far performed by the installed plant.

TRIRIS Plant during testing operations by the HITESYS Co machine shop in Aprilia (Rome) before disassembling for shipping to ENEA-Trisaia Research Center (Basilicata, southern of Italy)

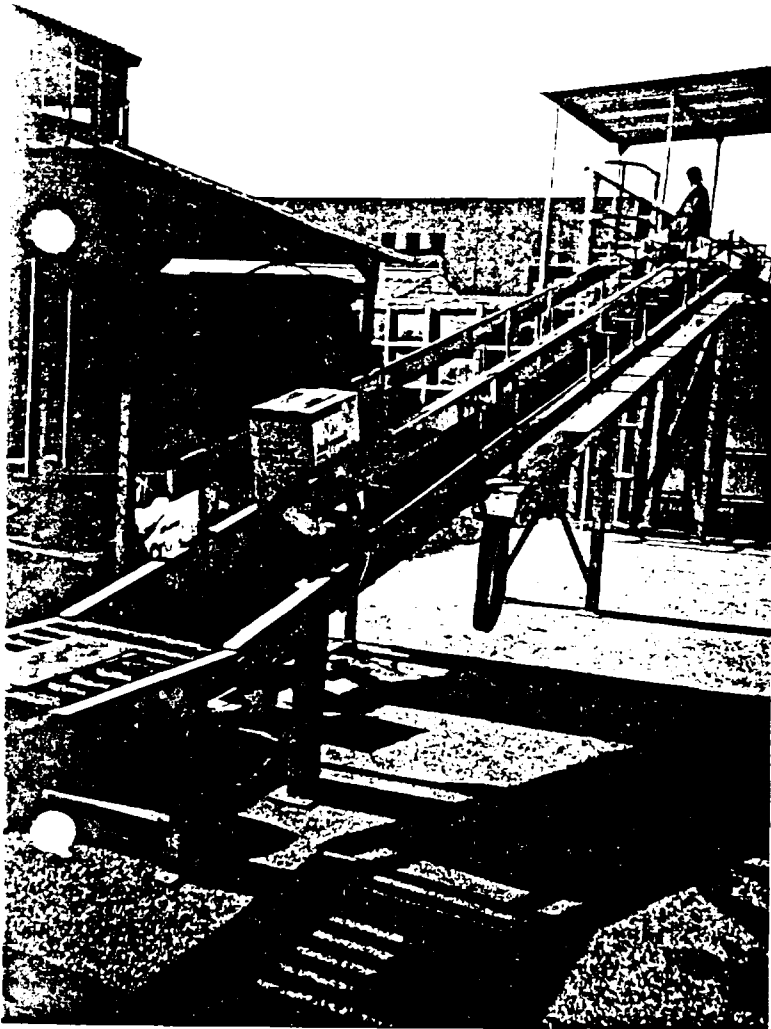


Fig 1 - External view

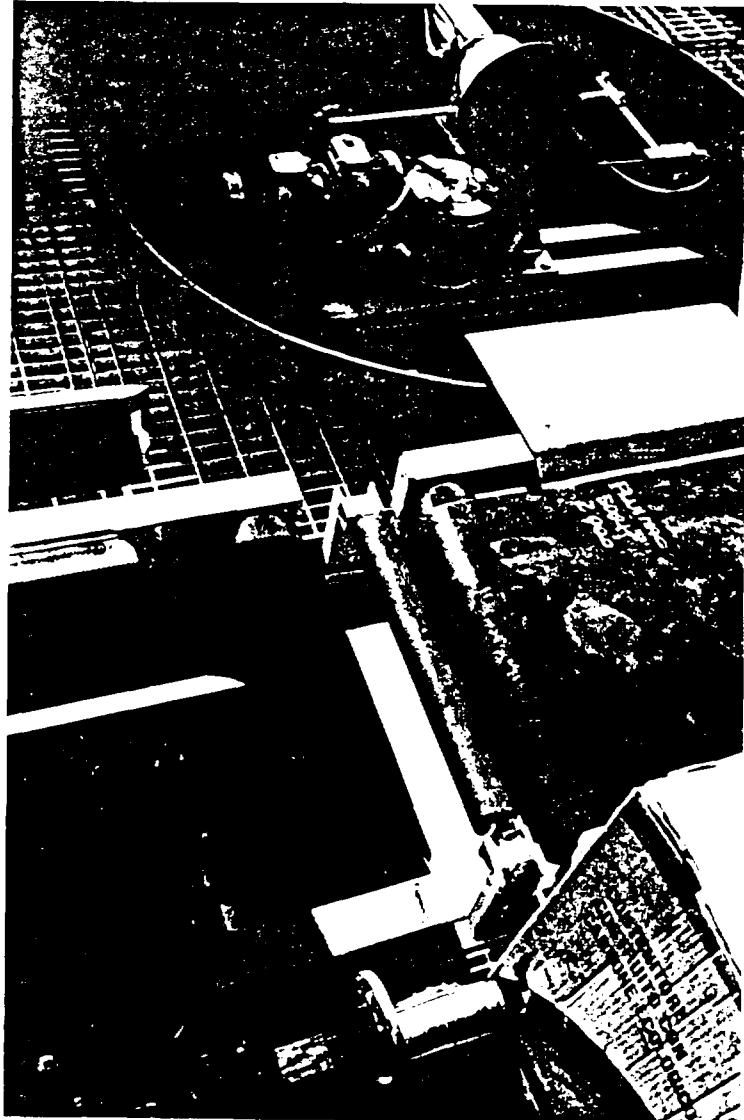


Fig.2 - EB-machine top area / Irradiation channel