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ARGENTINA CYCLOTRON FACILITY

A .MANZINI, C. ROCCO, R. STRANGIS, G. CASALE, G. MASLAT
Comisión Nacional de Energía Atómica
Buenos Aires, Argentina

Even since it's creation in 1950, the Comisión Nacional de Energía Atómica (CNEA) pays special attention to the development of activities related to the production of radioisotopes, ionizing radiations and its applications, promoting producing and supporting them.
In 1954, with the installation of a cyclotron (syncrocyclotron), CNEA started early in the production of radioisotopes, discovering with this accelerator 17 new radioisotopes during the '50 years.
Furthermore, with the installation of the RA-1 and RA-3 research reactors, production and baby cyclotrons and processing plants, CNEA complete and complement all an infrastructure dedicated to production activities.

CYCLOTRON

In 1994, a Cyclotron Facility for the production of radioisotopes started its operations in the Ezeiza Atomic Center. The cyclotron is a isochronous, negative ion accelerator, model CP-42, manufactured by The Cyclotron Corporation Company and further modified in Germany by Kraftanlagen Heidelberg. The cyclotron accelerates H^- up to 42 MeV of energy and a maximal currents of 200μA. An extraction system made possible to select proton beam energy between 25 and 42 MeV, which is transported through a beam line and a switching magnet towards 3 irradiation rooms.
In 1999, within the frame of a project of technical assistance with the International Atomic Energy Agency (IAEA), it was possible to improve the initial maximal current from 100 to 200μA. Also a modification of the software control system for the accelerator operation was made. It permitted the replacement of the original PDP-11 computer by a PC.

FACILITY DESCRIPTION

The facility consist of a cyclotron vault, 3 irradiations rooms, radiochemical process room for the radioisotopes production, cooling system room, power supply room, operation control room, maintenance workshop and same offices.
Each irradiation room is used for solid, liquid and gas target irradiation respectively.

APPLICATIONS

At present the cyclotron is used for Tl-201 production and F-18 and I-123 production will be incorporated during the year. In the case of Tl-201 production a new radiochemical process was developed. The Tl-203 target is irradiated with a 100μA proton beam (28 to 24 MeV) during 14 hs, obtaining at EOS 2000mCi of Tl-201.
Respect to I-123 production in the frame a project of Technical Assistance with IAEA (ARG4085) a system for the irradiation of a gaseous target has been developed.
A system for the production of F-18 and the synthesis of F^{18}DG was also developed.
Finally the cyclotron is used for other special applications such as the study of neutron damage in semiconductors used in satellites and grafting used a proton beam.

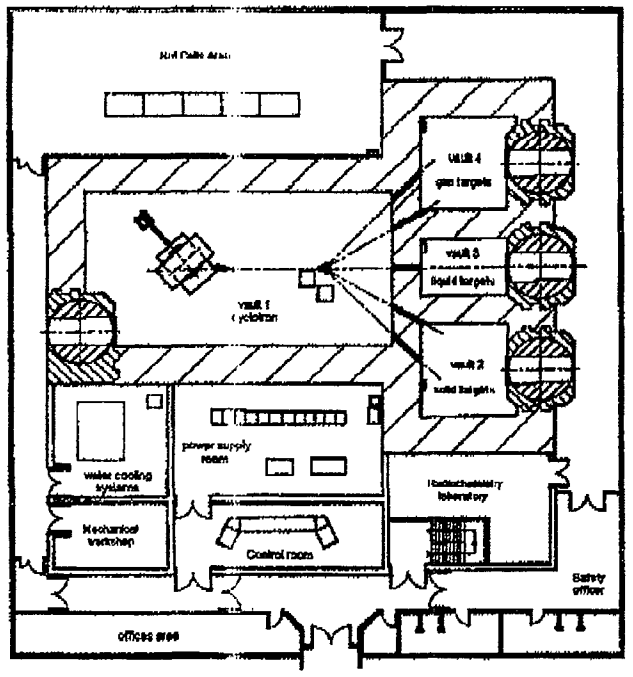

Figure 1. CNEA Cyclotron facility layout.

Facility and Production Description

Figure 1 shows the ground level of the cyclotron facility. The main vault allocates the cyclotron, the switching magnet and three beam lines. Future expansion to five beam lines is prepared[1]. The solid, liquid and gas targets are disposed in vaults number 2, 3 and 4. The solid targets are pneumatically transferred to the hot cell area.

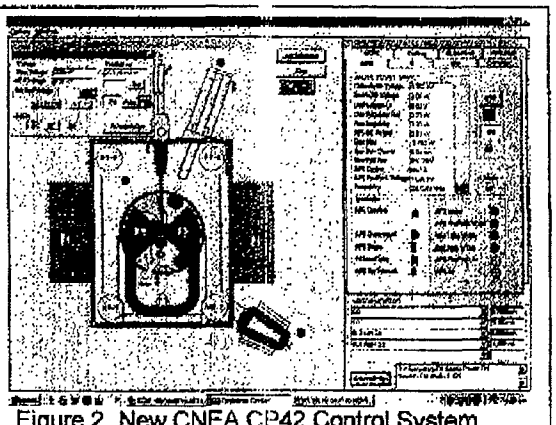

Figure 2. New CNEA CP42 Control System

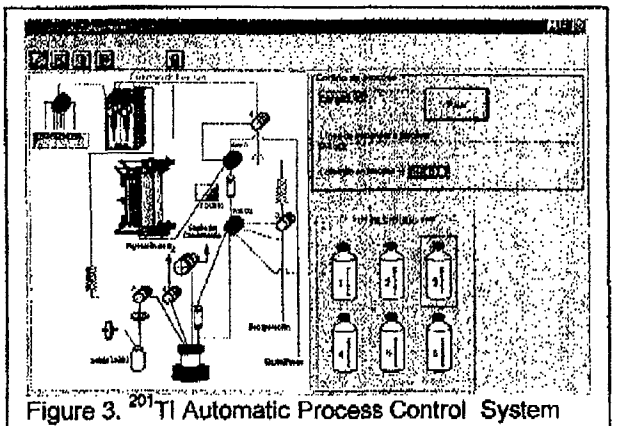

Figure 3. ^{201}Tl Automatic Process Control System

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