The universal target system is a mechanical device to bring beam intercepting material into the beam of an accelerator.

A universal target system is installed inside the Synchrocyclotron where it is used to bring the target material at any coordinate x, y, z within a volume of 9000 cm³.

The surroundings in which the device has to perform are characterized by:

- a magnetic field of 18 kG;
- a vacuum of $10^{-6}$ Torr, high-level radioactivity;
- an operation temperature of 1000 K when in use.

The device consists of a double platform, moved in the x and y directions by linear motors. The magnetic field, present in the accelerator, is used for these motors. The linear motors are integrated in the platforms. The z movement, to bring the target material in or out of the beam, is performed by a linear motor variant. The platforms are mounted on silver-plated rails, which at the same time supply the electrical current to the motors via contact brushes.

A problem encountered in the development of the universal target systems concerned the choice of material for the contact brushes. This material should ascertain a good electrical contact and yet not produce cold welds with the rails when used in vacuum. The solution was a high-pressure sintered composite material ($\text{Ag}_x\text{C}_y\text{NbSe}_2$). This material was developed in collaboration with Métal Précieux in Neuchâtel. All insulating material has to be resistant to radiation, and consequently polyimides such as Kapton*) and Vespel*) parts are used.

(*) Du Pont trade name

Further information can be obtained from K. Gase, MSC Division, CERN.