

Preface

Radioactive isotopes are produced in the surface layers of the sample being investigated, by irradiating them with a charged particle beam of appropriate energy, intensity and irradiation time.

The activated samples are installed in their normal working environment and subjected to typical wear, corrosion or erosion. The change in surface activity is then measured. The amount of wear (or corrosion or erosion) can be calculated from the activity change.

Dedicated cyclotron beam line for activation



Target station

Beam line



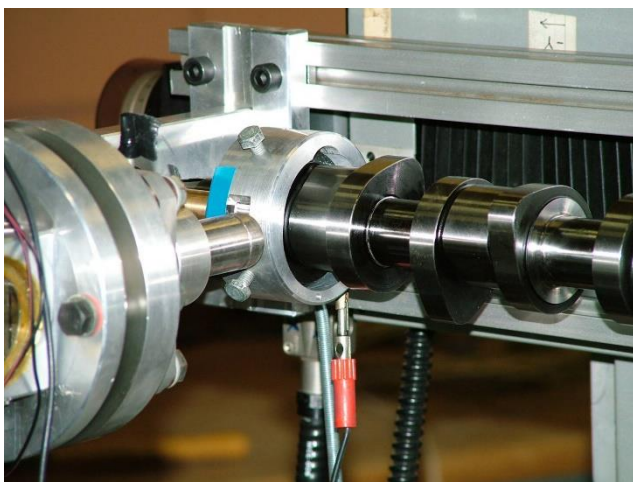
X-Y positioning table

Cyclotron beam exit

Sample to be irradiated in shielding

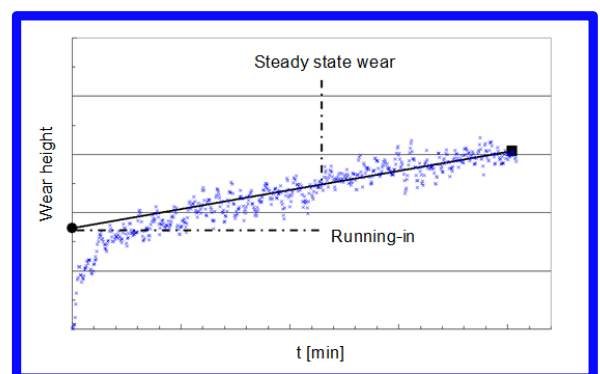
Infrastructure

Example



The activated part then used in normal circumstances and the activity loss is measured directly or indirectly (removed activity) and the material loss is calculated

Cam-shaft of an internal combustion engine was irradiated by using external particle beam of the Cyclotron through a specially designed mask at an area subject to intensive wear



Typical wear curve