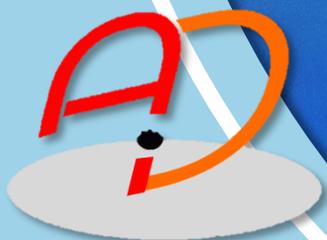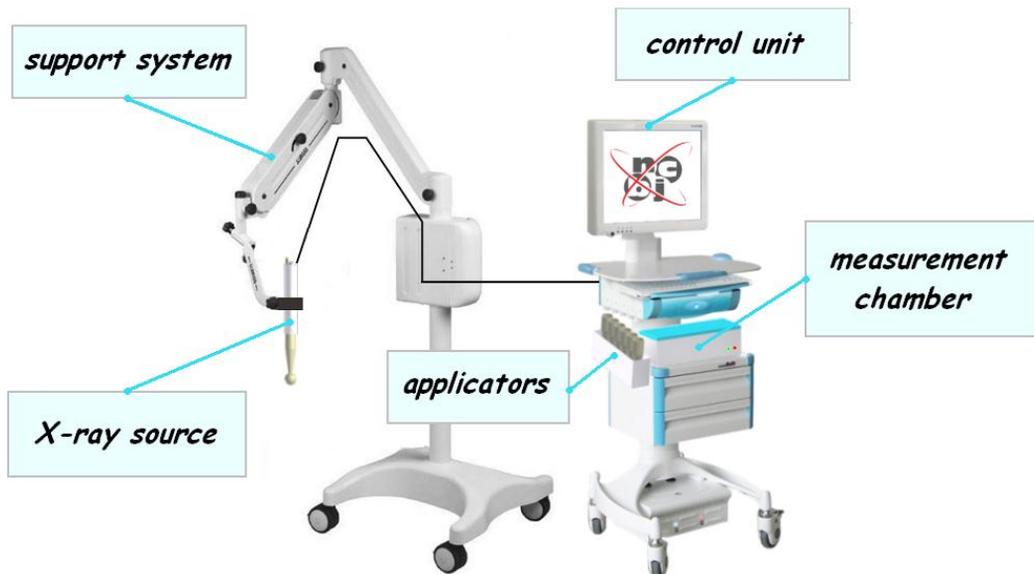# INLINE PN50

Electronic X-Ray Source for Brachytherapy of Breast Cancer in Conservative Treatment

INLINE PN50

An innovative construction X-Ray source for intra-operative brachytherapy of breast cancers in conservative treatment is under development in NCBJ (National Centre for Nuclear Research) in Świerk, Poland. The source will feature a specially designed anode dedicated for radiotherapy of breast tumours. The optimized anode will be relatively robust to facilitate work of surgeons. Besides, an ergonomic shape of its housing will enable the physicians to situate anode tip very precisely within the cavity left over after resection of the tumour.

The INLINE-PN50 source is a complete system. Its main components include:

- X-ray source itself (X-ray tube head with integrated control electronics, power supply)
- control computer
- chamber to test device parameters before the treatment
- XYZ manipulator to precisely move the device head
- applicators to precisely position X-ray tube anode tip within the treated cavity

The INLINE-PN50 source will typically find its applications to irradiate cavities left over after resection of tumours within the so-called "process boost step". In some selected cased it may also be used to perform single-day radiotherapy, in which a 15-20 Gy dose may be delivered within a single-session treatment lasting from 10 to 30 minutes.

Source parameters

anode bias voltage	30-50 kV
anode current	0-50 µA
needle-like anode dimensions	6 mm dia, 100 mm long
X-ray head power supply	12 VDC

National Centre for Nuclear Research
ul. Andrzeja Sołtana 7
PL-05-400 Otwock-Świerk, Poland

AiD project
http://www.ncbj.gov.pl/aid
aid@ncbj.gov.pl
phone +48 22 71 80 465

INNOVATIVE ECONOMY
NATIONAL COHESION STRATEGY

EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND