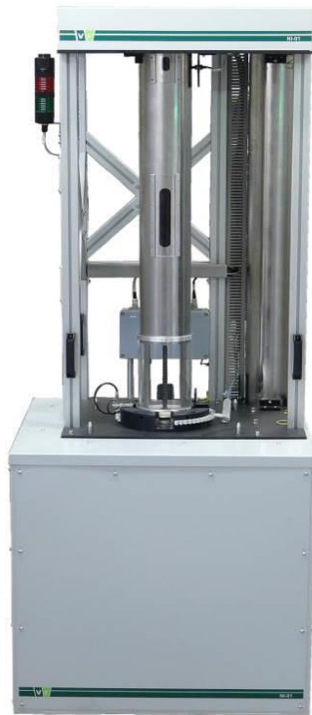


# NI-01 Neutron Irradiator



**NI-01 Neutron Irradiator was designed as a neutron source for the calibration and testing of the neutron flux measuring and signalling instrument.**

**It contains one nest for inserting the neutron radiation source.**

## Purpose

The NI-01 Neutron Irradiator was designed as a neutron source for the calibration and testing of the neutron flux measuring and signalling instrument.

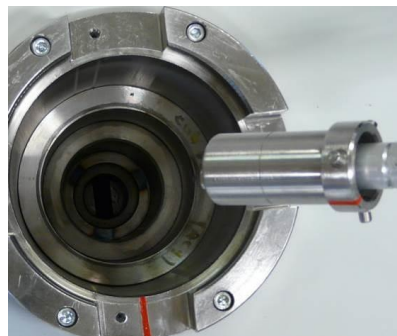
It contains one nest for inserting the neutron radiation source.

It can be fully controlled from a PC using standard interfaces.

## Description

The NI-01 Irradiator consists of:

- a support structure with shielding;
- one nest for the neutron source in a holder,
- a source-lifting mechanism;
- a post for optical status indication;
- a control box and;
- an optional polyethylene moderator



*Detail of the source nest and holder*



*Optional moderator*

## Main Advantages

- Simple reliable design
- Safe operation
- Easy installation

## Specifications

Number of nests for the sources	1
Maximum source size	(Ø35 x 60) mm
Maximum activity <sup>239</sup> Pu-Be	2.4E11 Bq
Dose rate at 1 m (neutrons)	< 5 µSv/hour
Dose rate at 1 m (gamma)	< 0.5 µSv/hour
Beam centre-line height	1.5 m
Time of source transport to working position	< 5 s
Power supply	230 V/50 Hz/1 A
Ingress protection	IP 30
Weight	800 kg
Irradiator dimensions (h x w x l)	(2,100 x 800 x 800) mm
Control box dimensions (h x w x l)	(800 x 600 x 300) mm
Operating temperature	(+10 to +35) °C

The structure with shielding contains one nest and a lift shaft for the source in a special holder. The shielding is made of Borotron boards and is designed to minimise leakage. The lower part of the structure contains adjustable feet to maintain a horizontal position during installation.

The frame with the source guiding tube is located above the structure with the basic shielding, and the guiding tube is connected to the lift shaft and enables exposing the source to its working position. The working position exposure is controlled electromechanically by a motor, a chain and a system of counterbalances. Position sensors and a stop lock preventing unwanted, accidental or unpermitted exposure of sources are located in the guide structure.

An optional polyethylene moderator is used in selected measurements to slow down neutrons.

The control box is usually located on the wall of the irradiator room in the vicinity of the NI-01 and is connected to the irradiator body with two cables and a junction box on the irradiator. It contains all the components necessary to control the NI-01's operation. Including:

- power supply units
- an interface for the safety system
- communication interfaces (RS-485, Ethernet, CAN2B)
- a main switch
- signal lights for visual indication of the instrument's status

The control box is connected to a PC with the DARS Data and Control System application software. Its basic version (BASIC CONTROL) provides basic tools for visualising the status and control of the irradiator, and its extended versions (EASY, PROFESSIONAL) offer many other optional features.

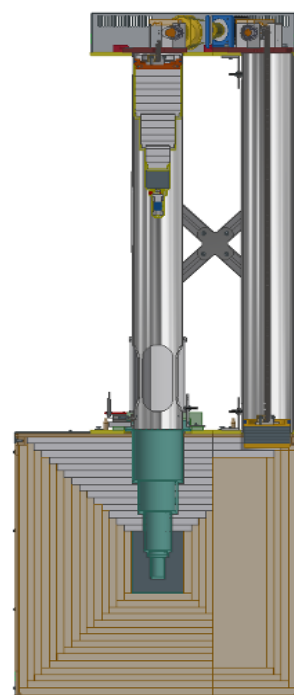
## Operation Description

If all conditions for source exposure are met, it can be lifted into its working position. This is ensured by the engine and chain.

When the working position is achieved, the flowing current maintains this condition. In the case of a signal from the safety system or when the exposure conditions are impaired, the source automatically retracts to its basic shielded position. If the automatic retract function fails or power supply is interrupted, the source returns to a safe shielded position by means of gravity.

## Models and Accessories

Type	Instrument description
<b>K1541</b>	An NI-01 Irradiator with a control box and two connecting cables.
<b>Optional accessories</b>	
	Visualisation and control software for PC
	Polyethylene moderator



*NI-01 Irradiator section*



*Control box*



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