



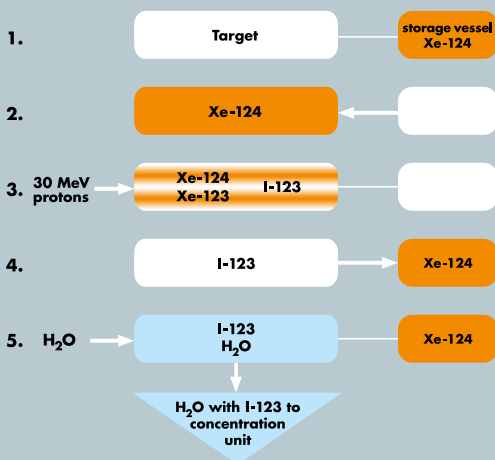
RADIOISOTOPES FOR MEDICINE AND ENGINEERING.



KIPROS 200

KIPROS. THE KARLSRUHE IODINE-123 PRODUCTION SYSTEM.

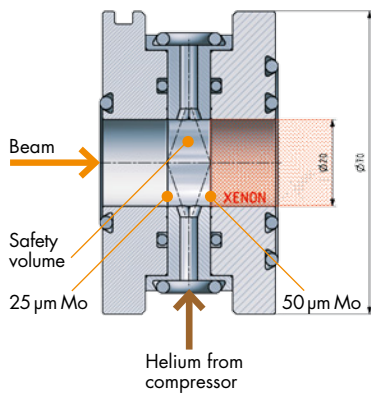
KIPROS 200 is an advanced High Current Gas Target Technology for large scale ^{123}I production. The development of cyclotron target systems is well adapted for making effective use of modern cyclotrons. High proton beam performance is an essential technical challenge. Target design and materials have to withstand beam currents well above $100\ \mu\text{A}$ maximizing the respective production capacity of the system. The KIPROS 200 Gas Target System is the result of more than 25 years experience in ^{123}I production at our own facility in Karlsruhe and several others around the world.



TARGET SPECIFICATIONS KIPROS 200

Target material:	gaseous (Xe-124) > 99,8 %
Product isotope:	I-123
Target body:	Aluminum, Nickel plated 15 μm
Target volume:	$\varnothing 20\ \text{mm ID}$, length 500 mm, 158 ml
Target thickness:	12 MeV for 30 MeV protons
Max. beam current:	200 μA (higher currents on request)
Target pressure:	4 – 20 bar (0 – 200 μA)
Target window:	double foil Mo (50 μ + 25 μ)
Seals:	Metal, FFKM O-Ring, 250°C
Window change:	remotely controlled
Activity removed from target:	no carrier added washing with sterile water
Footprint:	approx. 2 x 1 m
Beam line height:	matched to the cyclotron

Cross-sectional view of foil flange

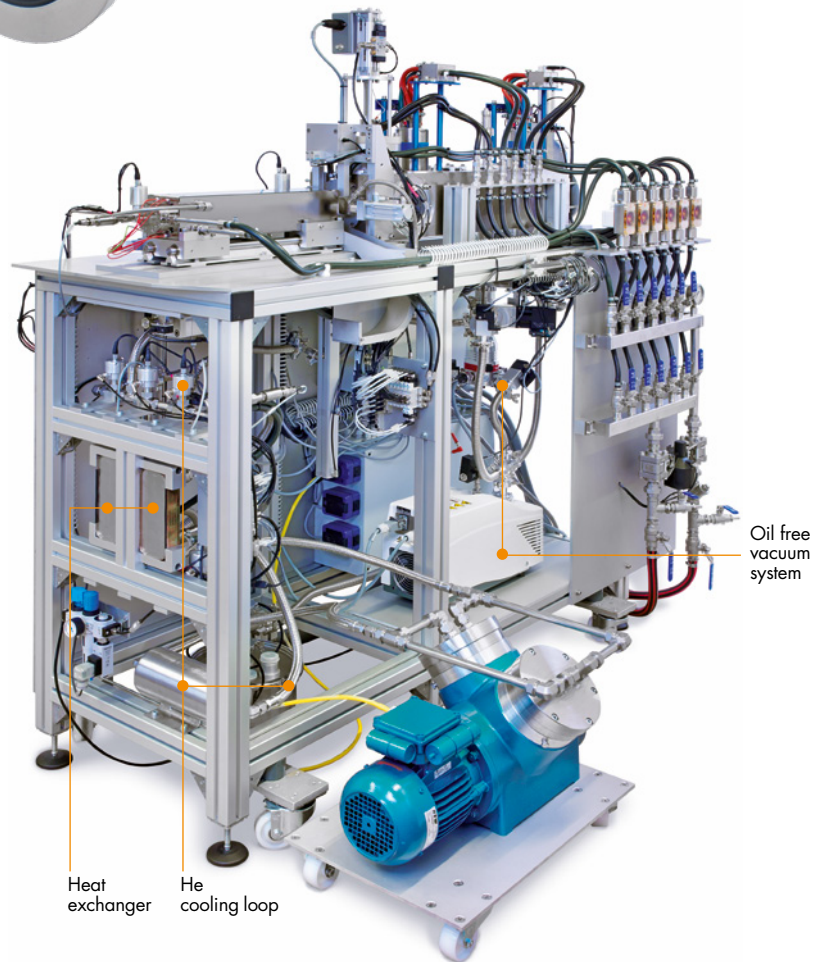


Dual foil flange for automatic exchange



THE KEY ADVANTAGES

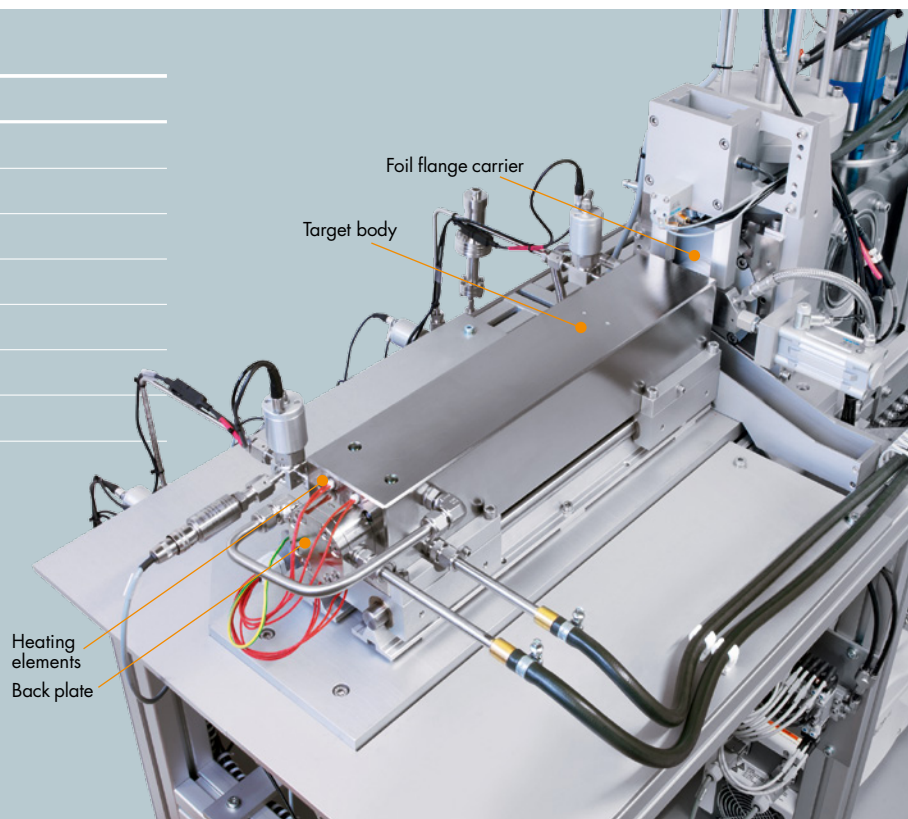
- + KIPROS 200 runs extremely reliable at various facilities
- + Outstanding ^{123}I quality
- + KIPROS 200 is a turnkey system and meets German safety standards
- + ZAG has more than 25 years of gas target experience
- + Constant product quality due to microprocessor production control
- + Complete GMP-documentation available
- + Training in routine production can be provided by ZAG

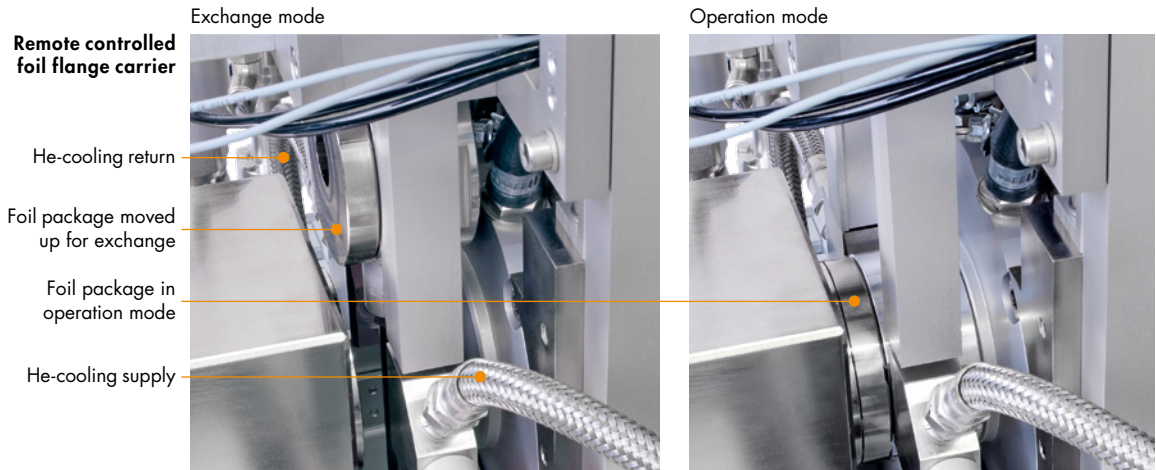


PRODUCT SPECIFICATIONS ^{123}I

Appearance:	clear, colourless
Activity concentration*:	> 5'000 MBq/ml
Specific activity*:	no carrier added
Chemical form:	0.02 mol/l NaOH
Radiochemical purity*:	> 95 % Iodide
Radionuclide purity*:	> 99 %

*Specifications 24 h after EOB and concentration





THE MAIN QUALITIES OF KIPROS 200

KIPROS 200 PRODUCTIVITY AT EOB

- + Wash-out: > 300 MBq/μAh or > 8 mCi/μAh
- + After concentration unit: > 250 MBq/μAh or > 6 mCi/μAh

TARGET STATION

- + Xe-124 gas storage close to target, no gas transfer over long distances
- + Safety and shielding advantages, minimal risk of gas losses
- + Nickel-plated inner target body surface for high chemical product purity

WINDOW REPLACEMENT

- + Remote exchange of target window in less than one minute
- + Radiation dose to personnel is minimized
- + No loss of production run

DIAGNOSTIC BOX

- + Two pairs of four-sector collimators
- + 6 kW beam stop
- + Beam current measurements for beam stop, collimators, and target body are displayed on the control screen

CHEMISTRY UNIT

- + Plug-in technique, easy access for maintenance
- + No heavy shielding needed (only 5 cm lead), because only ¹²³I is handled
- + Activity monitoring via GM detectors
- + Breakthrough control of ion exchange column
- + Dispensing unit to 5 vials

SAFE PRODUCTION CONCEPT

- + Significant reduction of radiation risks for the operating staff
- + Automatic exchange of the dual foil flange
- + Lead shielding of target and reservoir bottles
- + No long distance transport of highly active Xenon gas necessary

CONTROL SYSTEM

- + Industrial-proven PLC
- + All process data are archived, analog measured values as temperatures, pressures, flows, activities, and currents are displayed on the control screen

ZAG KIPROS SYSTEMS

are successfully operated in the USA, Brazil, France, Italy, the Netherlands, Saudi Arabia and Germany. Based on our broad know-how and many years of international experience and contacts we offer qualified consultation in all current and future applications of radioactivity in the medical and technology fields. Contact us for a nonobligatory introduction.

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