

Equipment specification

Photon beams

Energy	6 MV
Dose rate	from 0,5 to 4 Gy/min (for 10 cm x 10 cm radiation field)
Symmetry	±3 %
Flatness	106%
Field sizes	from 0 cm x 0 cm to 35,5 cm x 35,5 cm (fully flattened radiation fields, square corners) or 40 cm x 40 cm (with clipped corners)
Penumbra	9 ± 2 mm
	Beam parameters according to IEC 976 and 977 standard

Dosimetry System	Dual independent dose monitoring system arranged in a primary/secondary combination with temperature and pressure compensation.
Control system	Microprocessor controlled system with MS Windows based user interface; record & verify system (R&V) with DICOM RT interface
Safety system	All safety and dosimetry interlocks in accordance with IEC 60601-2-1 standard- "Medical electrical equipment - Particular requirements for the safety of electron accelerators in the range 1 MeV to 50 MeV"

Mechanical features

Gantry		Collimator (standard)	
Rotation range	± 185°	Maximum field dimensions	40 x 40 cm
Speed of rotation	1 rpm	X jaws type	asymmetric
Target to axis distance	100 cm	Maximal X jaw movement	30 cm (10 cm over isocentre)
Position indicator	digital readouts	Y jaws type	asymmetric
		Maximal Y jaw movement	22 cm (2 cm over isocentre)
		Average transmission:	< 1%

Multi leaf collimator – Basic

Movement range	
- Leafs	0 – 20 cm
- Leafs and carriage	0 – 40 cm
Maximum field dimensions	40 x 40 cm
Average transmission	< 1%
Leaf width at isocentre	1 cm
Number of leafs	2x40 = 80
Leaf position accuracy	< 0.2 mm
Two independent positioning systems	

Portal Imaging System – EPID

Active detector dimensions	40 x 40 cm
Resolution	up to 2048 x 2048
Pixel size	200 µm
A/D conversion	16 bit
CBCT	ready
X movement range	38 cm
Y movement range	99 cm
Z movement range	120 cm



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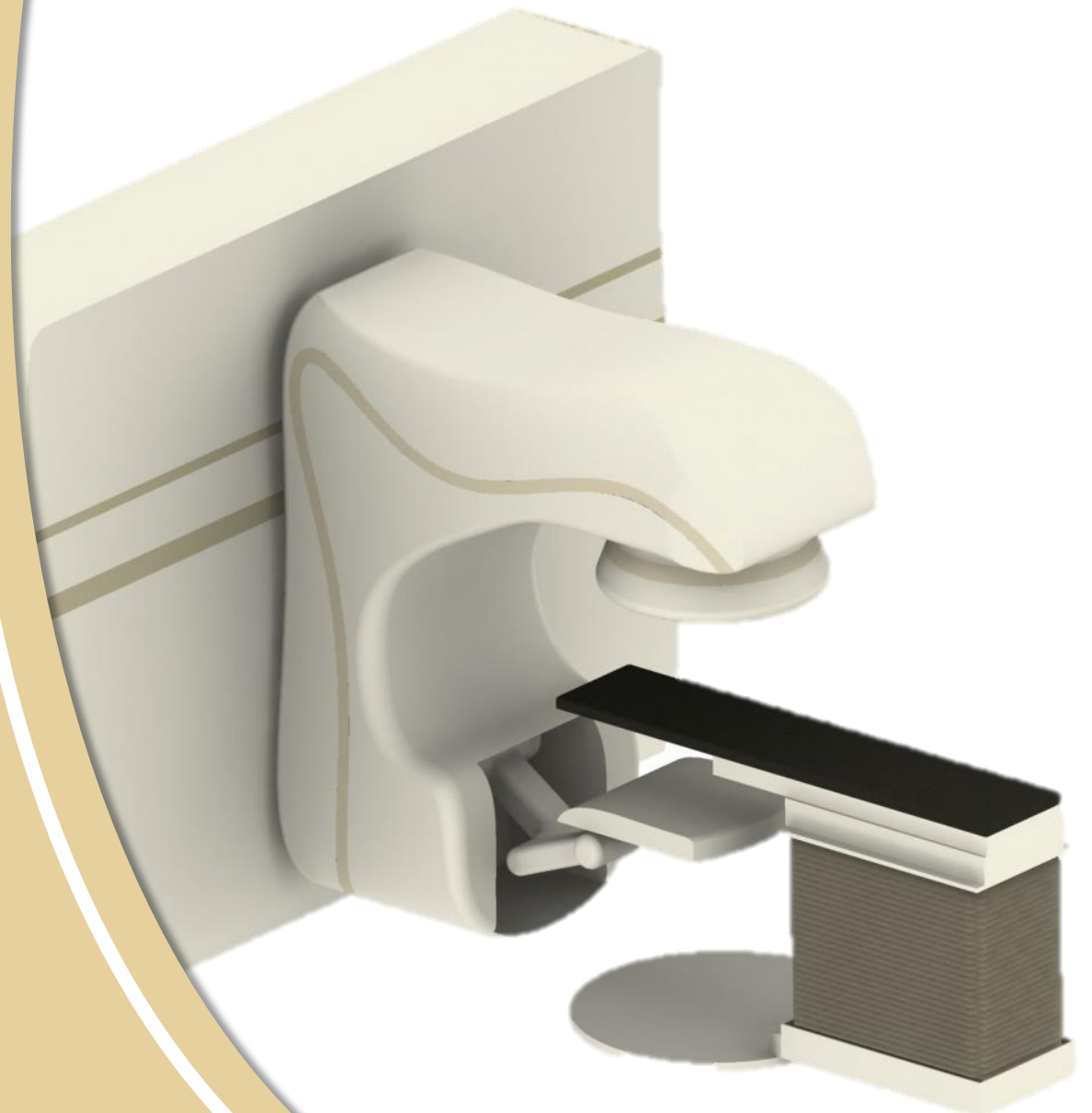
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COLINE 6

Advanced linear accelerator for modern radiotherapy





Our goal

Every human being, all over the world, has a right to live: better, longer, healthier. And to get treatment in the case of illness.

Technological advances allow us to cure diseases more and more efficiently. Even cancer is not a synonym of the death sentence any more. But only to those who have access to modern therapy techniques.

Great challenges require innovative solutions.

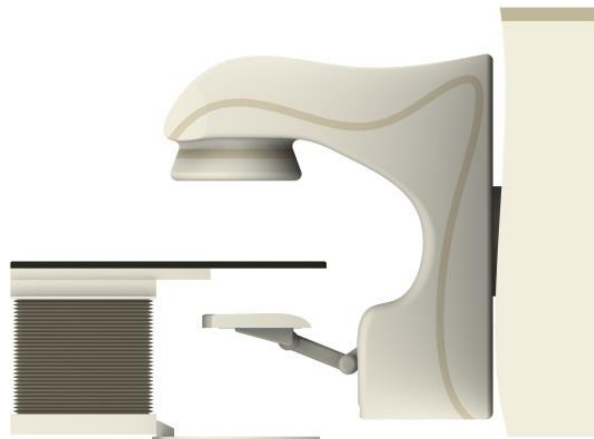
HITEC proudly presents Coline 6 technology. Because our goal is to protect life.

Radiotherapy – a cost effective solution to treat patients

Low energy accelerator Coline 6 with 6 MV photon beam has been designed to treat the most common cancer types and to cover up to 80% of radiotherapy needs.

Coline 6 is available in two versions and with a number of options:

- Coline 6 basic: Modern therapeutic accelerator equipped with a primary asymmetrical jaws collimator. User-friendly control interface combined with digital beam control system provides for precise and stable irradiation.
- Coline 6 advanced: Fully prepared to take advantage of modern radiotherapy techniques such as IMRT and IGRT. Improved accuracy of the radiation field location and reduced exposure of healthy tissues are supported by an EPID based on a 16-inch amorphous silicon flat panel detector working together with a fast and user-friendly imaging software. Real-time adjustment of therapeutic beams and conformal beam shaping is possible with a fast Multileaf Collimator (MLC). All these features are managed by the Record and Verify System (RVS) connected to an external DICOM compliant network to provide fast and reliable therapy.



Both models of Coline 6 take a full advantage of the precision and reliability of Polkam treatment tables. Coupling with an external positioning system allows for an easy and efficient control of patient position and even safer therapy.

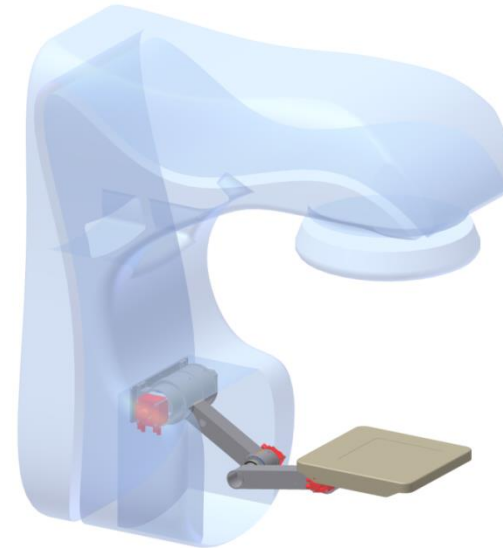
Compact and rigid construction of Coline 6 makes it a suitable replacement for cobalt units. Even the basic model assures lower skin doses, more profitable dose distributions, considerable smaller penumbra and better quality of beam delivery. Patients safety is assured by meeting international requirements established by IEC standards and confirmed by the CE mark.

Both models of Coline 6 are upgradable and capable to accommodate the more advanced features. Thus, with Coline 6, the initial investment threshold for the modern treatment techniques will get substantially lowered.

Ready to use, easy to control position verification and correction system

Modern and friendly user interface of Coline 6 has been designed to take a full advantage of two large screen monitors to provide all important information in an elegant, readable and ergonomic way. The Record and Verify System is compliant with treatment plans recorded in DICOM standard and automatically manages both the EPID and the MLC to provide streamlined user experience combined with a full control of the situation: before, during and after patient irradiation.

One-Click sending mechanism allows for an easy transmitting of all settings from RVS to the accelerator.



High quality imaging solution

Digital x-ray detector is based on monolithic, amorphous silicon flat panel capable to work with energies from 40 keV to 15 MeV. 16-bit resolution (65 536 gray levels) and a frame rate of up to 30 frames per second makes this device to be fully suitable for use with modern radiotherapy techniques while the resolution of 2048x2048 pixels with pixel size of only 200 µm provides great image quality for every single frame.

The detector is mounted on a fully motorized, 3 joint arm, the position of which together with all the detector parameters is controlled by the operator with the unified user interface.

Clinical applications

A new, state-of-the-art multileaf collimator family, specifically designed for Coline 6, allows for a very precise dose delivery, greatly reducing dose delivered to healthy tissues. Working modes include step-and-shoot and dynamic arc therapy, allowing for the effective and straightforward treatment with IMRT and IGRT techniques. Two versions of the MLC are available – Basic and Advanced which is distinguished by a number, width and speed of leaves, making IMRT therapy affordable for a large number of oncology departments.

