

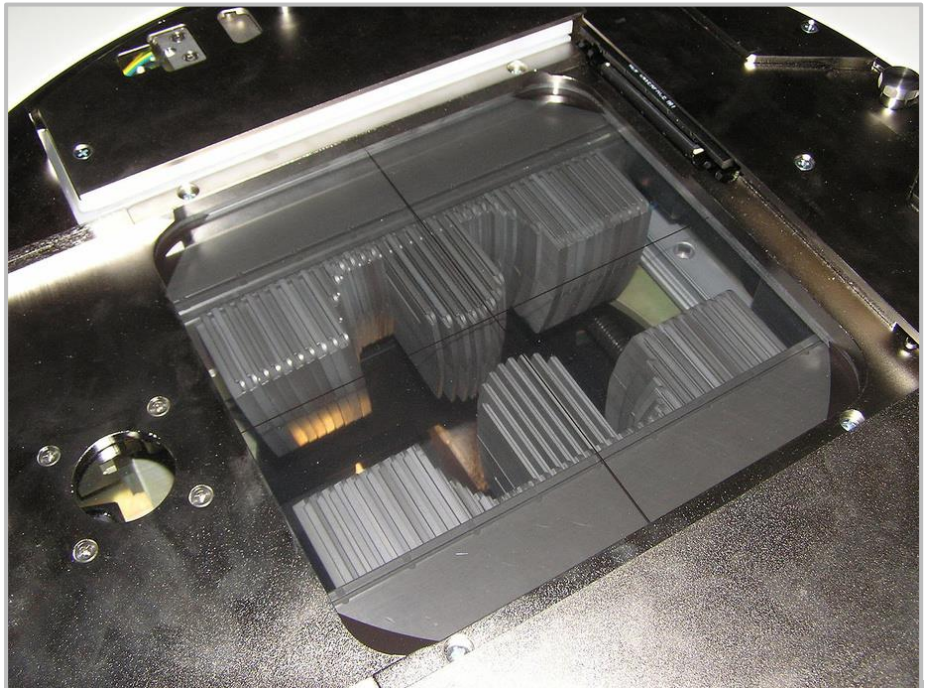
TECHNOLOGY OFFERS

Linear Servo Multileaf Collimator for Radiotherapy (P-1044)

An MLC with reduced assembly size, extremely high positional accuracy and reduced dead time

EXECUTIVE SUMMARY

The aim of radiation therapy is to eradicate a tumor without causing significant damage to contiguous normal tissue. Spatial conformation of the dose to the target allows the application of high doses to the tumor volume. For precise field shaping the multileaf collimators (MLC) have been broadly established. The new generation using a linear servo MLC presented here provides various advantages over conventionally employed MLCs.



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https://commons.wikimedia.org/wiki/File:Multi_leaf_collimator.jpg

Category

Devices

Indication

Radiotherapy

Development stage

Prototype

Seeking

Licensing

BENEFITS

- Reduced assembly size, weight and mechanical transmission parts
- Extremely high positional accuracy without mechanical loose effects
- Linear motors allow simplified control loop algorithm and reduced dead time
- Dynamic movements of the diaphragm elements up to 4 m/s in the patient plane
- Direct fixation of the linear motor rod to the associated diaphragm element
- Simplified mechanical assembly, easier serviceability, no mechanical backlash
- Position sensors are already implemented in the linear drives
- No dead time compensation for control loop is needed when driving sense changes.

TECHNOLOGY BACKGROUND

The MLC presented here uses linear servo motors instead of conventional electric motors. (see also Figure)

DEVELOPMENT STAGE

The 3D engineering drawings for the linear servo MLC are already in place; linear motors of various manufacturers are currently being tested.

APPLICATIONS

The device with its reduced size and weight have been introduced in order to use at radiotherapy.

INTELLECTUAL PROPERTY

Patented.

- “Contour collimator for radiotherapy” was filed as WO2014147046A1.
- Europe granted EP2976771B1, China granted CN105229749B, USA granted US10217539B2 / US9905323B2, pending in Canada CA2907724A1

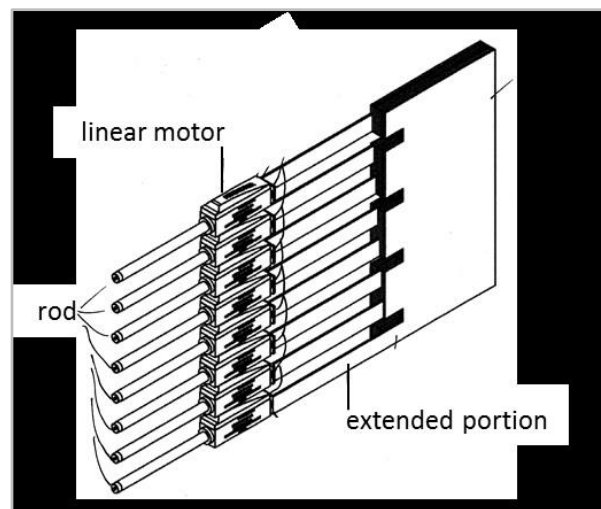


Fig.: Perspective view of a left portion of the linear servo MLC (eight **arranged linear motor-leaf units** are shown)

PUBLICATIONS & REFERENCES

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ABOUT THE DKFZ INNOVATION MANAGEMENT

Working at the interface of research and industry, the Innovation Management of the German Cancer Research Center (DKFZ) helps to get new cancer medications, diagnostic tests, and research instruments onto the market as quickly as possible.

The DKFZ with its more than 3,000 employees is the largest biomedical research institution in Germany. At the Center more than 1,300 scientists investigate how cancer develops, identify cancer risk factors and endeavor to find new strategies to prevent people from getting cancer. They develop novel approaches to make tumor diagnosis more precise and treatment of cancer patients more successful. DKFZ is a member of the Helmholtz Association of National Research Centers, with ninety percent of its funding coming from the German Federal Ministry of Education and Research and the remaining ten percent from the State of Baden-Württemberg