ONCOR Linear Accelerator
The In-line Imaging Solution
On the Leading Edge – Today and Tomorrow

Designed, optimized, and equipped to perform today’s and tomorrow’s most advanced treatments, the ONCOR Linear Accelerator family from Siemens represents sophisticated technology for modern radiation therapy departments. ONCOR’s innovative hardware and advanced software combine to deliver truly optimized patient care and unprecedented clinical efficiency. The unique combination of industry-leading precision, innovative imaging technology, and flexible system architecture brings advanced applications, such as Intensity-Modulated Radiation Therapy (IMRT), Stereotactic Radiation Therapy and Surgery (SRT/SRS), and Image-Guided Radiation Therapy (IGRT), into the mainstream of practical, cost-efficient treatment options.

The ONCOR family of linear accelerators fields advanced hardware and software into one integrated design to help make radiation therapy as safe, seamless, efficient, and cost-effective as possible. By streamlining and optimizing clinical workflow, the ONCOR system significantly increases the efficiency and effectiveness of the clinical team—resulting in enhanced care and better patient outcomes.

The ONCOR Linear Accelerator is a clinically robust solution equipped to deliver today’s most sophisticated treatments, while also providing solutions for the future in image-guided and Adaptive Radiation Therapy (ART).

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The 550 TxT Treatment Table is designed to meet the ever-increasing needs of modern radiation oncology. It delivers the precision, stability, operational flexibility, and dependability necessary for sophisticated therapies.

**Optifocus**

**Multileaf Collimator**

The OPTIFOCUS™ Multileaf Collimator is designed to facilitate optimum dose distribution, and allows the therapist to adjust beam shape without removing the treatment room. Its inherent precision and flexibility allow treatment of a broad range of tumors, applying treatment options such as IMRT. The OPTIFOCUS provides almost any irregular-shaped field within an area of 30 by 40 centimeters with a maximum field size of 40 by 40 centimeters.

The OPTIFOCUS MLC, in combination with VIRTUAL WEDGE™, is fully integrated with the ONCOR control console, helping to provide fast, seamless, highly automated operation.

**Optiveue**

**Fully Automated Amorphous Silicon (a-Si) Imaging System**

The OPTIVEUE™ Electronic Portal Imaging Device, together with syngo® RT Therapist software, is engineered to verify patient positioning to compensate for patient offset, significantly increasing efficiency by reducing patient table time. With a few mouse-clicks, a therapist can quickly calculate 2D or 3D patient position offset values, transmit them to the treatment table, and initiate treatment.

ONCOR Linear Accelerators with the M Vision™ Megavoltage Cone-Beam Imaging Package are equipped with the highly sensitive OPTIVEUE 100ST a-Si detector. Using the treatment beam, this detector is optimized to visualize soft tissue needed for localization of the treatment target.

The ONCOR Linear Accelerator’s compact, open design provides true-in-line patient clearance, helping patients feel more comfortable and enabling treatments to go more quickly. The system’s physical footprint, the smallest in the industry, also gives the treatment area a spacious feel and provides the therapist and patient with more room during treatment.

**Patient-Friendly, User-Friendly**

A New Level of Flexibility

A New Standard in Precision

The ONCOR Linear Accelerator’s compact, open design provides true-in-line patient clearance, helping patients feel more comfortable and enabling treatments to go more quickly. The system’s physical footprint, the smallest in the industry, also gives the treatment area a spacious feel and provides the therapist and patient with more room during treatment.

The user-friendly design and quiet operation allow the therapist to focus more on the patient and less on equipment setup, reducing overall patient anxiety.

Using the newly designed table hand control, a simple press of a button allows the user to automatically move the tabletop to its most retracted and lowest position for easy patient access. The 550 TxT Treatment Table descends close to the floor, helping to facilitate easy transfer of weak, injured, heavy, or disabled patients.
For maximum efficiency, each member of the radiation oncology team needs the right tools to execute his or her role, wherever and whenever they need them. The syngo Suite for Oncology brings together all the disparate elements that make up a radiation therapy regimen.

The Siemens syngo graphical user interface provides an easy-to-use, consistent platform of connectivity, enhancing communication among team members while reducing training costs.

The syngo RT Therapist provides a single, integrated system to quickly perform linear accelerator setup and verification, imaging, patient positioning, and treatment delivery in one highly efficient workflow. The clear, intuitive interface allows accurate, automated patient positioning using a single 2D, an orthogonal 2D, or a 3D image set, and yields easy access to all relevant patient data. Bottom line—the therapist spends less time searching for files and determining offsets, and more time focusing on patient care.

Available with the MioVision Megavoltage Cone Beam Imaging Package, standard on ONCOR Express and available as an option or upgrade on all other ONCOR models.
The syngo-based Oncologist Workspace delivers convenient, intuitive access to a comprehensive, oncologist-specific toolset, organized to provide easy navigation and optimized workflow. All the necessary data and applications needed for localizing and contouring the target and critical adjacent structures, as well as visualization and review of prior treatment history, are right at the oncologist’s fingertips. The ultimate goal? Optimizing and streamlining the oncologist’s workload, leaving more time to be with patients.

The syngo-based Dosimetrist Workspace combines Siemens imaging expertise, advanced data processing, contouring, reference point management and beam placement, leading-edge dose calculation and optimization for inverse treatment planning, and the syngo standard medical imaging platform. Together they provide comprehensive Oncology Workflow Solutions™ for both virtual simulation and IMRT.

The syngo-based Physicist Workspace delivers the tools, processes, and protocols needed for fast, dependable quality assurance functions. The physicist can more easily monitor the operational integrity of all linear accelerators within the department and confirm that a given treatment plan will accurately deliver the specified dose. In an era of increasing treatment complexity, including stereotactic radiotherapy and IMRT, syngo RT Physicist gives the physicist the edge required to deliver optimal care to each and every patient every day.

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The ONCOR Family

Enabling the Advanced Treatment Protocols of Today – and Tomorrow

The ONCOR Family of linear accelerators has been created from the ground up to efficiently and effectively perform the advanced treatment protocols of today. It is also designed to have the flexibility and upgradability necessary for the treatments of tomorrow, including Adaptive Radiation Therapy (ART), as they rapidly transform the practice of radiation oncology.

Stereotactic Radiation Therapy

The geometric gantry accuracy of 0.5 mm radius and the adaptability of the ONCOR family are uniquely suited for performing advanced stereotactic treatments, delivering a highly conformal and precise dose distribution to brain, head and neck, and extremity areas, while sparing critical adjacent regions. An optional treatment mode (ST mode) enables clinical teams to deliver a high dose rate of up to 1,000* Monitor Units (MU) per minute, suitable for simple fraction radiation surgery using cones.

The Modulated Wire Multileaf Collimator, with its 2.5 mm leaf resolution in conjunction with the outstanding isocenter accuracy of the ONCOR Linear Accelerator, is ideally suited for high-precision stereotactic applications, as well as a broad range of IMRT applications, including stereotactic intensity-modulated radiation surgery (IMRS).

Intensity-Modulated Radiation Therapy

To fully deliver on the potential of precise IMRT – increased concentration of radiation dose to the tumor, with reduced dose to surrounding tissue – Siemens has developed a cinematic IMRT solution that fully automates the step-and-shoot process of varying beam shape, intensity, and direction during an IMRT treatment, all within the shortest delivery times. This solution greatly streamlines the IMRT treatment process, reducing patient time on table, as well as significantly increasing clinical efficiency.

The OFFFOCUS Multileaf Collimator features best-in-class leaf speed and low leaf leakage, delivering fast, high-precision movement and positioning, further optimizing clinical workflow.

Gated Radiation Therapy

During radiation delivery, respiratory motion may cause target movement, resulting in a deviation between the prescribed dose and the actual dose distribution. The Gated Therapy option allows an external control device, such as the ANZAI respiratory belt, to control the timing of radiation delivery with the ONCOR Linear Accelerator. This effectively synchronizes the irradiation to correspond with the patient’s respiratory motion to increase accuracy and reduce damage to healthy tissue during gated therapy treatments.

The Gated Therapy option allows the clinical user to choose the type of external control device to use with the ONCOR Linear Accelerator. Input signals from such a device can result from patient parameters, such as chest movement, respiratory cycle, or a switching mechanism. The Gated Therapy mode is fully integrated into the user interface for a seamless delivery process.

* For Klystron machines only. Limited to 5 cm by 5 cm field size.
MVision: The Elegant Solution for IGRT

A true breakthrough in IGRT, the MVision Megavoltage Cone Beam Imaging Package is a unique, fully integrated technology that uses the existing megavoltage beam to provide excellent in-room 3D patient imaging. By not relying on additional imaging hardware, this leading-edge solution can be easily integrated into any existing ONCORN Linear Accelerator for accurate patient position verification and adjustment.

The MVision in–line design assures correct alignment, enhancing imaging accuracy. Megavoltage imaging offers unique benefits in challenging situations, including large patients and targets in proximity to high Z materials. And its elegant design allows imaging and repositioning in three minutes or less, truly bringing IGRT into the day-to-day mainstream of oncology practice.

"MVision has demonstrated localization precision and sufficient soft-tissue resolution necessary for many disease sites. The shared use of the linear accelerator beam for treatment and 3D imaging of the patient in treatment position allows validation of setup by providing 3D anatomical information at the time of treatment. This is a cost-effective and optimized method for assessing inter-fractional treatment setup variation, while maintaining patient comfort."

Jean Pouliot, Ph.D.
Professor, Department of Radiation Oncology
Comprehensive Cancer Center
University of California San Francisco

The Three Minute Solution

The MVision Megavoltage Cone Beam Imaging Package is a fast, highly automated, and efficient. True single-console integration allows the entire process of image acquisition, 3D reconstruction, automatic offset calculation, and patient repositioning to be performed in less than three minutes.

The elegantly simple-in-line architecture of MVision eliminates the need for additional imaging hardware, greatly simplifying maintenance and quality assurance. The one-source, one-beam, one-detector design results in one isocenter for imaging and treatment—separate calibration is not required.

As radiation oncology quickly moves to capitalize on the benefits of IGRT and other advanced treatment applications, radiation therapy departments benefit from Siemens’ extensive experience as a leader in the field of medical imaging.

MVision is a fully integrated IGRT solution, capable of efficiently delivering advanced image-guided treatments in a wide range of clinical situations.

The MVision Megavoltage Cone Beam Imaging Package comes standard on ONCORN Expression, and is available as an option or upgrade on ONCORN Impression and ONCORN Avant-Garde.
Expression
ONCOR Expression is the first linear accelerator to come standard with the MVision Megavoltage Cone Beam Imaging Package, thus providing fully integrated 3D IGRT.

Avant-Garde
Prepared for the latest clinical applications, such as Gated Therapy and IGRT, the ONCOR Avant-Garde Linear Accelerator is designed for departments using advanced radiation therapy techniques.

Impression
Designed for flexibility, the ONCOR Impression Linear Accelerator can be configured to meet a customer's initial needs, while maintaining a flexible upgrade path for future requirements.
Siemens dedication to clinical and patient success doesn’t stop with the delivery of the new ONCOR Linear Accelerator.

- As a pioneer in On-Site Oncology Applications Training, Siemens is committed to training directly in the operational clinic, helping to develop relevant, efficient workflow processes with the existing infrastructure. Siemens’ clinically experienced training professionals are dedicated to helping the treatment staff feel comfortable with new technology and procedures while engineering a smooth transition.

- The Siemens Oncology Learning Center offers technical service training courses, operating and servicing the linear accelerator equipment effectively and efficiently. Current offerings include the Biomedical Course Suite, a combination of courses designed to meet the needs of facility in-house service engineers, and the Physicist Course Suite, a combination of courses designed to meet the needs of medical physicists.

- VELOCITY™ is Siemens’ exclusive service that can reduce customer’s commissioning from three weeks to three days. VELOCITY gathers the commissioning data at the Siemens facility prior to delivery, and models the TPS while the linear accelerator is being installed.

- MOMENTUM™, created to provide a continuum of solutions for the clinical life of Siemens oncology systems, is a suite of services that allow customers to apply the latest treatment techniques with greater efficiency, speed, and effectiveness.

- Siemens Remote Service (SRS) is the efficient and comprehensive infrastructure for optimizing system availability, preventing out-of-service downtimes, and improving patient planning and throughput. Oncology System Remote Service currently offers remote diagnosis, event monitoring, software updates, Siemens virus protection, and remote application support.
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