

A2J laser systems HORUS range allows the marking of the patient skin at the isocentre of the tumour to be treated. This point will remain the reference along the treatment period. Connected to the treatment planning system, the laser systems will participate to the definition of the treatment parameters with a high accuracy. The precise marking on the patient skin allows to the radiotherapist to reproduce the positioning of the patient from one day to another.

The virtual simulation process, part of the three dimensional radiotherapy (3D), needs a 3D imaging system and a treatment planning system with the option of the virtual simulation interfaced with mobile laser systems.

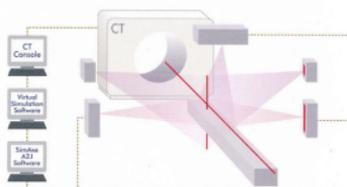
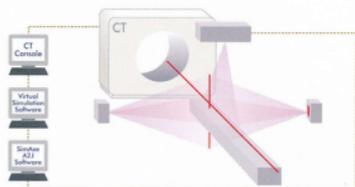
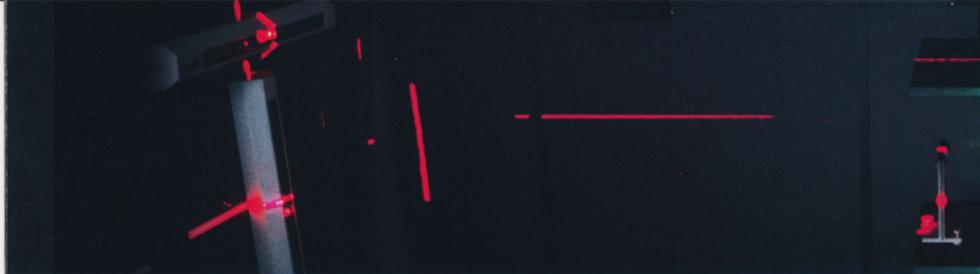
A2J laser systems HORUS are independent from the tumour localisation equipment and from the treatment planning system. They may be combined to the different imaging techniques as CT, PET camera, PET-CT and MRI. These techniques allow the quick acquisition of the anatomic data in 3D with high accuracy. The imaging data treatment software collects the fundamental information for the radiotherapy treatment.

LASER MOVING SYSTEM

- Moving distance : 500 mm \pm 250 mm
- Transverse laser axis move : + 250 mm towards the head ; - 250 mm towards the feet
- Moving speed : 450 mm/sec
- Positioning accuracy : \pm 0.1 mm
- Power supply : 110 - 230 VAC
- Computer interface : RS 232
- Terminal interface : RS 232
- Automatic reset to « Zero laser » after each use
- Auto-calibration by internal coding every time it is used
- Check of the moving parameters : quality control with phantom test
- On-board function processing: microprocessor
- Computer/laser distance : unlimited
- Operating System for A2J SimAxe software : PC under WINDOWS
- Simulation data download : unlimited.

MOBILE LASER MODULES

	Red Emission	Green Emission
Line width (up to 3 m distance)	< 1 mm	< 1 mm
Line length (at 3 m / 10 ft distance)	3 m	3 m
Laser type	Diode	Diode Pumped Solid State (DPSS)
Wavelength	650 nm	532 nm
Beam Color	Red	Green
Output power	< 1 mW	< 1 mW
Laser class	II	II
Drift	Not measurable	Not measurable
Ambient temperature	0 - 40 °C	15 - 30 °C



CONFIGURATIONS	HORUS SV1	HORUS SV3
Sagittal laser vertical projection	One sagittal mobile laser Variation ± 250 mm	One sagittal mobile laser Variation ± 250 mm
Frontal laser horizontal projection	Two fixed laser with cross beam	Two mobile frontal laser Variation ± 250 mm.
Transverse laser vertical projection		Two transverse fixed laser The adjustment is made by the head/feet table translation.
Tibial laser vertical projection		
Other		• Computer and peripherals •

All configurations are available in red, green and mixed emissions to comply with all site requirements.

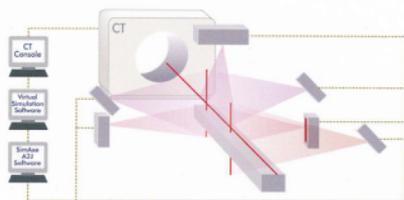
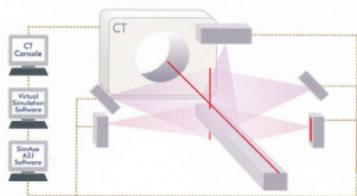
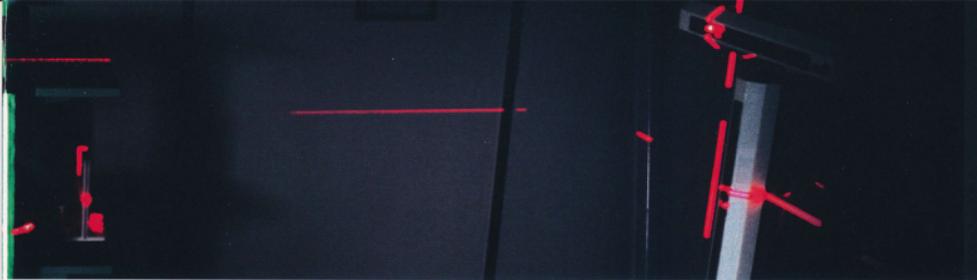
The one case/one laser solution brings flexibility to adapt the 3D imaging room. All laser are designed to be wall mounted.

The sagittal laser mounted at the ceiling level of the CT couch enables a maximum beam sweep of the patient.

The lateral laser with vertical beams are elevated to give a full laser contour of the patient without a zone of shadow.

A touch screen console may be installed in the room for optimal use.





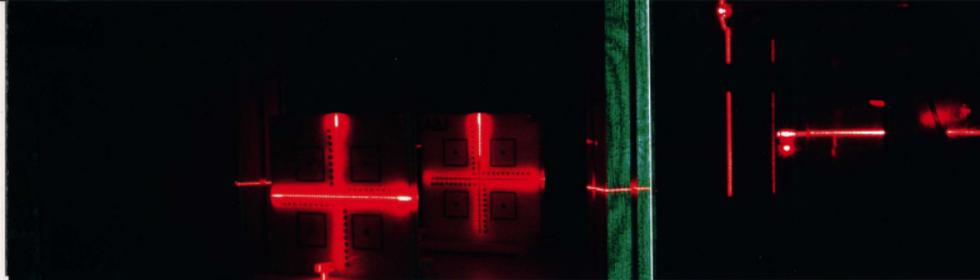
HORUS SV5	HORUS SV6
One sagittal mobile laser Variation ± 250 mm	One sagittal mobile laser Variation ± 250 mm.
Two mobile frontal laser Variation ± 250 mm.	Two mobile frontal laser Variation ± 250 mm.
Two mobile transverse laser Variation ± 250 mm.	Two mobile transverse laser Variation ± 250 mm.
	One mobile laser for tibial marking. Its movement is coupled to the transverse mobile laser with constant interval between axis.

SimAx software • SimAx Manual, test phantom, cables

ACCESSORIES

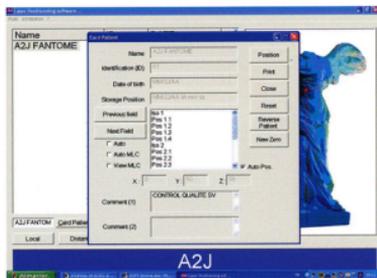
- Small floor mount column for HORUS SV1 fixed lateral laser.
- Long floor mount column for HORUS SV3, SV5, SV6 fixed and mobile lateral laser.
- Ceiling mount for HORUS SV1, SV3, SV5, SV6 sagittal, transverse or tibial mobile laser to be fixed to a concrete ceiling slab.

The floor mount columns and the ceiling mount will be required: when a lead-covered door or window-pane is present, if the beam axis incline is higher than 45° and/or if the wall is not sturdy enough.



A2J SimAxe SOFTWARE

User friendly interface, with tenth millimetre setup accuracy.



Parameters

- Initial configuration: number of axes 1, 3, 5, 6.
- Management of the motion angle axis between the wall carrying the laser and the CT couch with tenth millimetre set-up accuracy.
- Definition of the reference data X, Y, Z.
- Automatic correction of the laser's offset in case of table's arrow (mainly for the Y axis).
- Set-up of the "zero laser" with tenth millimetre accuracy.
- Definition of the virtual simulation console mode.

Quality

- A2J Laser systems HORUS SV1, SV3, SV5, SV6 are warranted by A2J quality assurance consigned in the "A2J quality assurance manual".
- A2J laser systems include 1 year warranty.
- A2J is certified ISO 9001 : 2008.
- A2J HORUS range is CE marked and complies with the European standard EN 60825-1.

Functions

Local functions

- Creation of the patient cards.
- Manual input of patient information and values for mobile laser motions

Distant functions

- Transfer of the virtual simulation console to the A2J SimAxe software.
- Automatic completion of markers field after field. Once marking is tattooed on patient's skin, the user goes on to the next field.

Archives

- Patient cards archiving.
- Archiving of the quality control in the 3 axis of mobile laser movement (in cm) and of the file associated with the phantom test.
- Creation of a new "zero laser". Laser X, Y, Z fit with the initial patient marks at each new treatment session.

Set up

- Movement of the sagittal axis when a patient is lateralised in the tunnel.

Transfer

- Transfer of the data through computer links: isocentre, and all useful points.
- HORUS range has an interface with the key treatment planning systems.
- Transfer mode: network link or DICOM RT



Option

Touch screen for an optimal use in the CT room.

SERVICES: Installation, Training, Maintenance

- Easy integration of the equipments in the 3D imaging room due to the adjustable optical diode and to the computerised angle compensation.
- A2J recommends a pre-installation visit and the installation by the A2J engineers.
- A2J provides the user's training on site. A2J proposes two training modules for the mobile laser systems for virtual simulation in radiotherapy:
 - On the A2J SimAxe software ensured by A2J engineers.
 - On the practice and use of the mobile laser systems for virtual simulation ensured by a physicist.
- A2J ensures the maintenance of the laser systems.