

MOSFET dose verification for VMAT Treatment

MOSFET dosimeters are dose rate independent, energy independent, isotropic, gantry speed independent, with a small footprint and near real-time readout. These detector attributes are ideal for Volumetric Arc Therapy (VMAT) in which all of these parameters are varying during treatment. The detectors and application software enable dose verification in comparison to target dose. They can be used for both in-vivo dose monitoring when the dosimeters are located within the target volume, and/or for pre-treatment plan validation within a phantom. The software also provides for electronic dose reporting with data transfer to Record & Verify systems. MOSFET dosimeters connect to a wireless reader to reduce cabling in the treatment room.

DOSE RATE INDEPENDENT

Dose rate independence for variable dose rate linacs and techniques such as VMAT; in opposition to dose rate dependent detectors (diodes) with limitations when dealing with complex treatments (hypofractionation).

REAL-TIME READ OUT

Convenience of real-time readout after each beam or at end of treatment, allowing immediate action and correction, as opposed to differed readings using OSL detectors (nanoDot) with no possible action during the treatment. Benefit of dose measurement simultaneously on skin and at Dmax, thanks to build-up cap placement flexibility and inherent thin build-up of MOSFETs.

SMALL FOOTPRINT

Small sensors and system make it easy to use in a clinical setting. In-vivo dosimetry possible with small and flexible sensors - Active region of dosimeter measuring only 0.2 x 0.2 mm.

Dose	BIAS SUPPLY	
	Standard	High
200 cGy	<2%	<0.8%
100 cGy	<3%	<1.2%
20 cGy	<8%	<3%

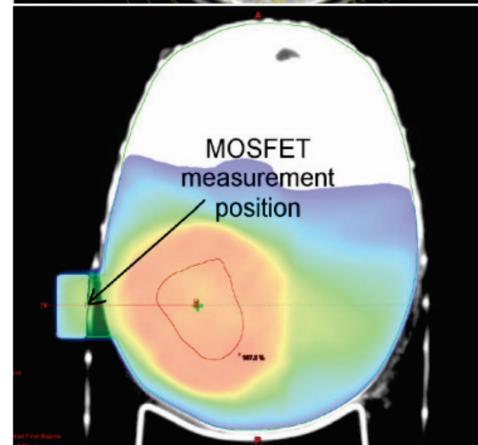
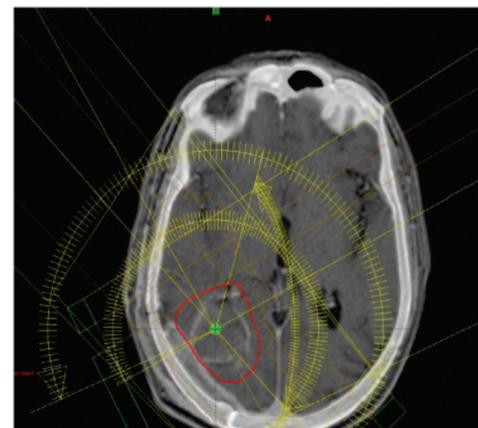
System Dose-to-Dose Reproducibility at 1σ



Pinpoint measurement without patient shielding



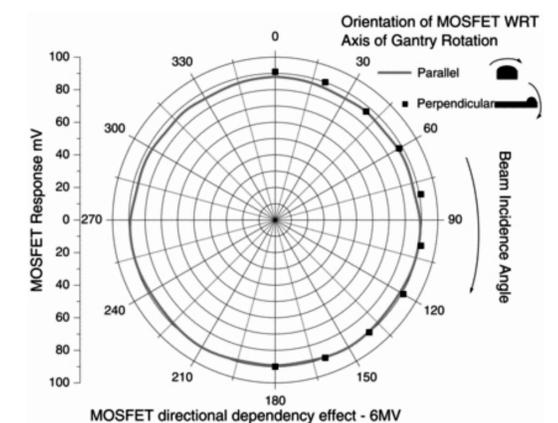
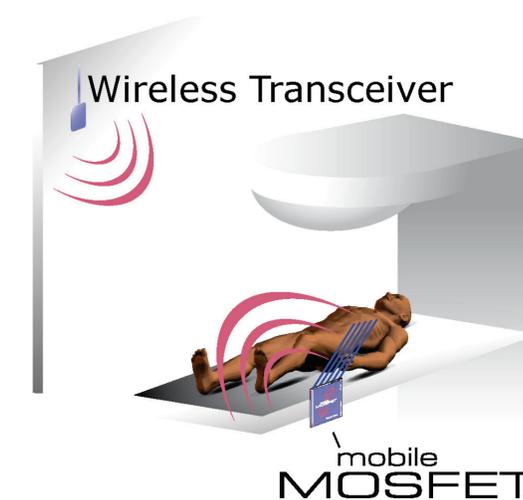
MobileMOSFET with up to five detectors.



TOP: A patient in an immobilization mark is treated with 3 arcs.
BOTTOM: MOSFET placed along with minibolus. Three MOSFET detectors used as VMAT beam is non-uniform.

ANGULAR INDEPENDENCE

MOSFET system is isotropic and able to capture dose rate with $\pm 2\%$ for 360-degrees of continuous gantry rotation at various speeds.



Response of MOSFET at various angles.

GOOD SPATIAL RESOLUTION

Point dose measurement and good spatial resolution useful for small beams or beam edges characterization (nanoDot and diodes are less resolved). Using MOSFETs gives added confidence of correct radiation during treatment delivery.

For more information visit www.mosfet.ca or contact Best Medical Canada, 1-877-668-6636, bmcinfo@teambest.com