BioSpectrum the business of Bio & Health Sciences ASIA EDITION

Mitsubishi system reduces radiotherapy time to 1/4

15 May 2013 | News | By BioSpectrum Bureau

Singapore: Mitsubishi Electric has completed the construction of a new proton therapy system for cancer treatment at its Energy Systems Center in Kobe, Hyogo Prefecture, Japan. The company has started testing the new technology, including a high dose-rate beam delivery system that reduces the irradiation time to one-fourth of the current level.

Mitsubishi Electric plans to perform the quality verification testing of this new system in collaboration with clinical institutions, and also utilizes the preferred status granted as a member of the Kansai Innovation Comprehensive Global Strategic Special Zone in order to obtain early approval as a medical device.

The new beam delivery system is intended to increase the maximum dose rate from 5Gy/min to about 15-to-20Gy/min at all depths, reducing the time to irradiate a tumor by as much as a factor of four over the current level. The shorter irradiation time provides a more comfortable setting for the patient.

It increases the scanning speed five fold from 20mm/ms-to-100mm/ms. At the same time the spot size is reduced in half from 10mm-to-5mm. This means that the proton beam can be delivered more accurately more efficiently to complicated tumor volumes.

The treatment system supports a new nozzle capable of both pencil beam scanning and broad beam treatment. In pencil beam scanning, a finely focused particle beam is magnetically scanned across the tumor, tracing out the three-dimensional tumor volume. In broad beam treatment, the particle beam is spread out to create a uniform field. Using collimators, the treatment field is cut out from this uniform field according to the tumor shape. The nozzle is capable of quickly switching between the two modes of treatment.