## *Best*<sup>®</sup>Cyclotron Systems, Inc.

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Vancouver, British Columbia, Canada

A group of Internationally renowned Scientists from Academic, US and European National Laboratories are collaborating with Best Cyclotron Systems (BCSI) and Best Theratronics (BTL) Scientists in Vancouver, British Columbia, Canada, at the BCSI office, to develop a range of low to high power, next generation Cyclotrons.

BCSI and BTL have invested in a Multi Million USD test and research facility, the only one of its kind in the world, for these scientists to design, develop and test prototype concepts for these Cyclotrons. This research will help BCSI and BTL to introduce a new generation of modern low to high power Cyclotrons next year. Currently, BCSI and BTL are expecting nearly 50 Million USD worth of orders for new Cyclotrons, in addition to the 20 Million USD worth of orders for 70 MeV and 15 MeV Cyclotrons, to be shipped this year. These are the result of BTL and BCSI investing more than 20 Million USD in product, research, design, development and manufacturing of these unique modern Cyclotrons, using the latest in technological advancements.

BCSI and BTL are hosts to a Massachusetts Institute of Technology (MIT)/Italian National Laboratory of Legnaro (INFN) experimental group, part of the DAE $\delta$ ALUS Collaboration (http://www2.lns.mit.edu/~conrad/daedalus.html) aimed at world-class neutrino experiments using a new generation of high-current cyclotrons. The DAE $\delta$ ALUS Group has installed and is currently testing its new ion source, developed at the Catania INFN laboratory, at the TeamBest Vancouver test and research facility. Professor Janet Conrad of the MIT Department of Physics reported that, "...It is nice to see basic science and applications of physics move forward hand-in-hand so productively."

The key feature of the high current accelerator is the use of singly-ionized molecules of hydrogen (H2 +), that are subsequently converted to two protons (2H+), and delivered to high-power neutrinoproduction targets.

The BCSI and BTL test and research facility has assembled a new well-instrumented Cyclotron Central Region Test Stand. This comprehensive research facility produces, transports and injects particles into a flexibly designed test cyclotron, capable of accelerating ions up to a maximum of 1 MeV. This low energy allows ion source and injection dynamics to be studied together with the first few turns of the actual

cyclotron, without generating any radioactivity. Consequently, the MIT/INFN teams can test their developments and designs at an early stage before finalizing the details of their much larger accelerators. The test stands are used to confirm and validate Ion Source and Injection Systems for all the TeamBest Cyclotrons, such as the B15, B25, B35 and the B70. The BCSI and BTL new test stand is arguably the smallest cyclotron in the world today, and with it and the DAE $\delta$ ALUS group, TeamBest is contributing to one of the largest cyclotron design teams in the world. The test stand experiments optimize the accelerator characteristics before final products are manufactured and delivered to customers. This will reduce commissioning time at the customer site and installation will be executed as planned.

BTL's president, Krishnan Suthanthiran, has said, "There is so much synergy between our research and development and our science friends! We are pleased that they are at our test and research facility in Vancouver." The BCSI Director of Operations and Research, Dr. Richard Johnson reports that, "The ideas that DAEδALUS has brought to our laboratory will surely be applied to our health care equipment development."

## About Best Theratronics

Best Theratronics (BTL) was founded more than 60 years ago with their invention of the first commercial Gamma Beam Teletherapy (GBT) machine for treating cancer and non-malignant tumors with radiation. Canada issued a special stamp to commemorate this breakthrough invention. BTL has been manufacturing and supplying these machines that are considered the gold standard and work horses of radiation oncology departments globally since its invention and commercialization. In addition, BTL manufactures a range of Blood Irradiators, Cyclotrons and other products. For more information, please visit www.theratronics.com.

## About Best Medical International

Best Medical International (BMI) has served the medical community with the highest quality products and unparalleled customer service for more than 35 years. BMI, headquartered in Springfield, VA, USA encompasses a family of medical companies known as TeamBest, with a proven track record of innovation, quality and service. TeamBest provides solutions for External Beam Radiation Therapy and Brachytherapy including: Best<sup>®</sup> lodine-125 and Palladium-103 seeds; Brachytherapy accessories, Radiotherapy and diagnostic imaging devices, Gold fiducial markers, MOSFET patient dosimetry, patient immobilization, cardiovascular brachytherapy and medical physics/QA instrumentation, repair and calibration.

For more information, please visit: www.bestcyclotron.com www.theratronics.com

www.teambest.com

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