ADVANCED CYCLOTRON SYSTEMS, INC.

ADVANCED TR-19 CYCLOTRON SYSTEMS

Built for production. Cost effective and innovative.

150 µA | **200** µA | **300** µA

The TR-19 cyclotron is a high performance, variable energy cyclotron that provides users with unmatched beam power and reliability. Designed with high production capability in mind, the TR-19 will not only serve your most demanding radioisotope production needs today, but it will also ensure your facility has built-in capacity for future growth.

VARIABLE ENERGY: 14-19 MeV

Provides additional flexibility by allowing users to adjust the proton beam energy in order to optimize the radionuclidic purity of the radioisotope being produced.

MODULAR VACUUM SYSTEM

The ion source, extraction probes, and targets can all be isolated from the main vacuum tank by gate valves. This allows for servicing without breaking the cyclotron tank vacuum, resulting in no dose routine maintenance of the ion source and extraction foils. The TR-19 uses an ultrapure cryogenic vacuum system that completely eliminates oil contamination, while requiring very little maintenance.

HIGH CURRENT

The TR-19 is the only low energy cyclotron system available with >300 µA beam current capability. This is achieved by the use of external ion source technology, combined with an innovative accelerator design. High current capability translates into high production capacity -at least double that of the typical biomedical cyclotron.

UPGRADEABLE

The system can be upgraded as the user needs change. Higher beam current as well as additional beamlines and targetry are among the possible upgrades available.

TARGETRY

ACSI is continuously developing new target technology to match the high beam output of the TR-19. Currently ACSI target technology can produce over 30 Ci (1110 GBq) of $^{18}F^-$ in a single run. Extensive beam diagnostics and continuous target position feedback automatically correct beam on target alignment during irradiation. Quick release targets allow for easy and low dose maintenance.

SHIELDING

Both full and local shielding options are available. Local target shielding virtually eliminates radiation exposure to the operator during routine cyclotron maintenance. It also allows for thinner vault walls and eliminates activation of the concrete, subsequently lowering the decommissioning costs.

The TR-19's outstanding production capability and unique features have made this cyclotron the accelerator of choice for many leading research institutes and distribution centres around the world.

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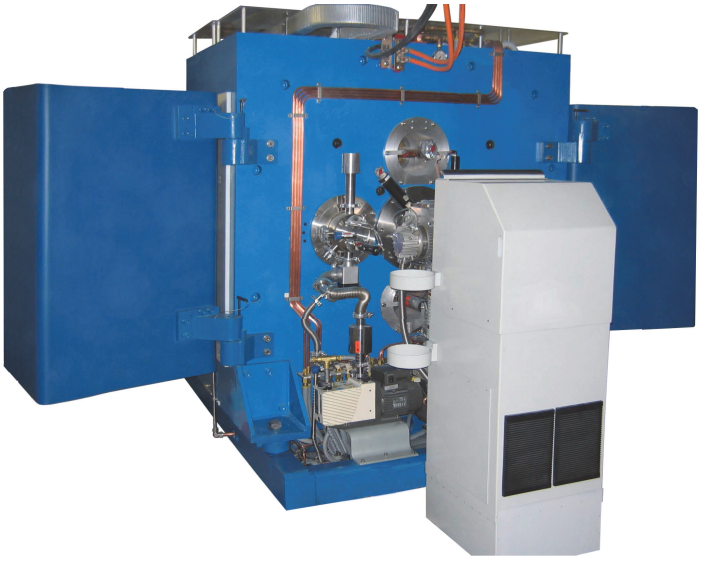
The TR·19 at a glance:

	TR-19	TR-19/9 (deuteron option)
Accelerated Ions	H^-	H^- D^-
Extracted Ions	H^+	H^+ D^+
Extraction Method	Carbon Foils	Carbon Foils
Extracted Beam Current	Protons: 150 µA, 200 µA or 300 µA	Deuterons: 40 µA
Acceleration Plane	Vertical	Vertical
Extraction Ports	2	2
Dual Beam Operations	Dual irradiation at any split ratio	Dual irradiation at any split ratio
Standard Extraction Probes	Single carbon foil	Single carbon foil
Optional Extraction Probes	Carousel type, multiple foils per carousel, which allows automated switching between extraction foils	Carousel type, multiple foils per carousel, which allows automated switching between extraction foils
Targets	Up to 8 targets	Up to 8 targets
Shielding Options	Self-shielded, partially shielded, unshielded	Self-shielded, partially shielded, unshielded

TARGETRY:

PET targets are mounted to a target selector which allows target position adjustment during beam irradiation. All PET targets are easy to remove from the target selector when maintenance is required.

Available Equipment	PET Targets
Liquid Targets	$^{18}F^-$, $^{13}NH_3$
Gas Targets	$^{11}CO_2$, $^{11}CH_4$, $^{18}F_2$, $H_2{}^{15}O$
Solid Targets	^{124}I, ^{64}Cu, ^{89}Zr
Beamlines	Available
Automated Transfer Systems	Available for all gas, liquid and solid targets



The first TR-19 cyclotron, commissioned more than 20 years ago, is still operational at TRIUMF. All the TR-19 cyclotrons sold worldwide remain in use - proof of the exceptional reliability of ACSI's equipment.

MADE IN CANADA
FABRIQUÉ AU CANADA

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