ENTRY NO: C-41
Machine Name: PSI Injector 2 Cyclotron
Date: 6/8/01 3:58:06 AM
Institution: Paul Scherrer Institute
Address CH-5232 Villigen PSI, Switzerland
In Charge of Cyclotron: Pierre A. Schmelzbach, Stefan Adam
Telephone: ++41-56-310 33 93
Fax: ++41-56-310 33 83
Person Reporting: Stefan Adam
Web: www.psi.ch
E-mail: Stefan.Adam@psi.ch

HISTORY
Designed By: PSI(former SIN)-team
Construction Dates: 1978-1983
First Beam Date: 1984
CHARACTERISTIC BEAMS

ions	/ **energy**(MeV/N)/**curre**nt(pps)/**powe**r(w)		
p	72	2.2 mA	160 000

transmision efficiency(source to extract beam)
typical: % - **best:** %
tranverse emmitance
emmitance definition: rms
vertical: 1.0π mm mrad
horizontal: 1.0π mm mrad
longitudinal: 0.1(Δ) E/E)%xdeg RF

USES
basic research: 74% **therapy:** %
development: 12% **isotope production:** 20 parasitic%
other: % **maintenance:** 9%
beam tuning: 5% **Total Time:** 7300h/year

TECHNICAL DATA
a)magnet: **type:** separated sectors
Kb: 72MeV/A **Kf:** 72MeV/A
average field (min/max): 0.33-0.36 T
number of magnet sectors: 4
hill angular width: 27hill angular width
spiral (max): 0 deg
pole parameters
diameter: 7 m
injection radius: 0.406 m
extraction radius: 3.505 m
hill gap: 0.035m **valley gap:** m
trim coils
-number: 11x2
-current(max): 40 A A-turns
harmonic coils
-number: 1xNsectorsx2
-current(max): 200 A A-turns
main coils
number: 4x2
total ampere-turns: 3.8 e4 A-turns
current: 400 A
stored energy: MJ
weight - iron: 4*180t coils: 4*0.96t
power
main coils (total): kW
trim coils (total max): kW
refrigerator (cryogenic): kW
b)RF
acceleration
frequency range: 50.633MHz
harmonic modes: 10
number of dees:
number of cavities: 2+2 flattop now used for acc.
dee angular width: degrees
voltage
at injection: 125 kV(peak to ground, max)
at extraction: 250kV(peak to ground, max)
peak: kV(peak to ground, max)
line power(max): 2*180kW
stability
phase: 0.01 deg
voltage: 0.03%
injection
c)ion source: Multicusp
external injection:
components: conical injection shim in one magnet tip
source bias voltage: 60kV
injection energy: 870MeV/N
buncher: 1
injection efficiency: 20%
d)injector: Cockcroft-Walton
e)extraction
electrostatic extraction channel septum magnet inside vacuum
efficiency
typical: 99.97%
best: 100%
f)vacuum
pumps: 4 turbopumps
achieved vacuum: 1.3 e-4Pa
REFERENCES
U. Schryber et al., Proc 9th Int Cycl Conf, Caen(1981)43 U. Schryber et al., EPAC (1992) 173 U. Schryber et al., Proc 14th Int Cycl Conf, Cape Town
EXPERIMENTAL FACILITIES
Injector for the PSI 590 MeV Ring Cyclotron Isotope production with splitted beam
COMMENTS