

ENTRY NO. CM5 Date

Machine Name TR30

Manufacturer EBCO Technologies

Address 4004 Westbrook Mall, Vancouver Canada V6T2A3

Tel (604)224-7090 Telex

Fax (604) 228-1715 EMAIL

In Charge:

Reported by: B. Milton

HISTORY AND STATUS

DATES: Design 1988-89 First Machine July 1, 1990

SALES: No. Sold/Operational 2 / 1 Currently Available yes

COST: Accelerator

Facility

MAGNET

POLE PARAMETERS:

Diameter 76 cm $R_{extract}$ 47-66 cm R_{inject} 2.5 cm

HILL PARAMETERS: Gap (min) 3.5 cm B_{max} 1.3 T
 (@ 2.8 x 10² AT) Gap (max) 5.2 cm B_{min} 1.3 T

VALLEY PARAMETERS: Gap (min) 1.8 cm B_{max} 1.1 T
 (@ 2.9 x 10² AT) Gap (max) 1.8 cm B_{min} 0.4 T

AVERAGE FIELD: $\langle B \rangle_{min}$ 1.2 T $\langle B \rangle_{max}$ 1.24 T

NUMBER OF SECTORS: compact/separated 4 /
 sector angle 32.7 deg. spiral (max) none deg.

FIELD TRIMMING: Trim Coils none
 Harmonic Coils none
 Other

CURRENT: Main Coils 500 Amps Stability 0.01%
 Trim Coils

Stored Energy (cryogenic) 0 MJ

WEIGHT: Iron 45 tonnes. Conductor 1.5 tonnes

ION ENERGY: Bending Limit E/A = 30 q²/A² MeV/u
 Focussing Limit E/A = 30 q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:

Description: 2 pie shape dees with lambda/4 stems

No. of Gaps/turn 4 dE/dn(max) 0.200 MeV/q

Voltage(max) 0.050 MV Harmonic f_{rf}/f_{ion} 4

Freq 73.14 MHz Power in(max) 0.035 MW

Stability: Phase 1 Voltage 10

VACUUM SYSTEM

OPERATING PRESSURE: 3 x 10e-7 Torr

PUMPS: No. and type 2 cryo pumps

ION SOURCE(S)

Type	Intensity (mA)	$\epsilon_n = \beta\gamma\epsilon$ (π mm mrad)	Ion Species
(a) Cusp	<u>7</u>	<u>0.7</u>	<u>H+</u>
(b)			

INJECTION SYSTEM

Axial - spiral Efficiency 12 %

EXTRACTION SYSTEM

Stripping Efficiency 100 %

CHARACTERISTIC BEAMS

Accelerated Ions	E/A (MeV/u)	Current(part. μ A)	
		Internal	External
(a) H+	<u>30</u>	<u>450</u>	<u>450</u>
(b)			

EXTRACTED BEAM PROPERTIES:

For 400 μ A of 30 MeV/u H+ ions

$\Delta E/E$ 1 % $\Delta\phi$ 30 $^\circ$ rf

$\epsilon_n = \beta\gamma\epsilon$ x 2 π mm mrad z 2 π mm mrad

REFERENCES/NOTES

(a) 12th International Cyclotron Conf. B. Milton et al

(b) PAC 1991 B. Milton et al

ENTRY NO. CM6 Date

Machine Name BC168

Manufacturer The Japan Steel Works, LTD.

Address 1-2, Yurakuchō 1-chōme, Chiyoda-ku, Tokyo Japan

Tel (03)3501-6111 Telex J24298 (JSW)

Fax (03)3504-0727 EMAIL

In Charge:

Reported by: Y. Toda

HISTORY AND STATUS

DATES: Design 1981-1982 First Machine 1982

SALES: No. Sold/Operational 4 / 4 Currently Available yes

COST: Accelerator

Facility

MAGNET

POLE PARAMETERS:

Diameter 81 cm $R_{extract}$ 38 cm R_{inject}

HILL PARAMETERS: Gap (min) 7 cm B_{max}

(@ 1.2 x 10² AT) Gap (max) 7 cm B_{min}

VALLEY PARAMETERS: Gap (min) 1.3 cm B_{max}

(@ 1.2 x 10² AT) Gap (max) 1.3 cm B_{min}

AVERAGE FIELD: $\langle B \rangle_{min}$ 1.54 T $\langle B \rangle_{max}$ 1.54 T

NUMBER OF SECTORS: compact/separated 4 /
 sector angle 45 deg. spiral (max) 0.009 deg.

FIELD TRIMMING: Trim Coils 2
 Harmonic Coils 2
 Other

CURRENT: Main Coils 310 Amps Stability 1.2 x 10⁻²
 Trim Coils 50 Amps Stability 1.1 x 10⁻²

Stored Energy (cryogenic) 0 MJ

WEIGHT: Iron 20 tonnes. Conductor 1.1 tonnes

ION ENERGY: Bending Limit E/A =

Focussing Limit E/A = q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:

Description: 2 sets of pie/A shape dee with lambda/A stems

No. of Gaps/turn 4 dE/dn(max) 0.15 MeV/q

Voltage(max) 0.04 MV Harmonic f_{rf}/f_{ion} 2.4

Freq 47 MHz Power in(max) 0.02 MW

Stability: Phase 1 Voltage 1 x 10⁻²

VACUUM SYSTEM

OPERATING PRESSURE: 1 x 10⁻⁷ Torr

PUMPS: No. and type 1 diffusion pump

ION SOURCE(S)

Type	Intensity (mA)	$\epsilon_n = \beta\gamma\epsilon$ (π mm mrad)	Ion Species
(a) Hot Cathode PIG	<u>1</u>		<u>H+</u>
(b)			

INJECTION SYSTEM

Efficiency

EXTRACTION SYSTEM

Electrostatic deflector Efficiency 80 %

CHARACTERISTIC BEAMS

Accelerated Ions	E/A (MeV/u)	Current(part. μ A)	
		Internal	External
(a) H+	<u>16</u>	<u>150</u>	<u>70</u>
(b) D+	<u>8</u>	<u>150</u>	<u>70</u>

EXTRACTED BEAM PROPERTIES:

For 50 μ A of 16 MeV/u H+ ions

$\Delta E/E$ 1 % $\Delta\phi$

$\epsilon_n = \beta\gamma\epsilon$ x 30 π mm mrad z 10 π mm mrad

REFERENCES/NOTES

(a)

(b)