

**ENTRY NO:**CM06

**Date:** 8 Feb 2005 14:32:26

**Machine Name:** Cyclone 18/9

**Institution:** Ion Beam Applications (IBA)

**Address:** chemin du cyclotron, 3

1348 Louvain la Neuve, Belgium

**Telephone:** + 32 10 47 58 11

**Fax:** + 32 10 47 58 10

**Web Address:** www.iba-worldwide.com

**Person in Charge of Cyclotron:** Yves Jongen

**Person Reporting Information:**

**E-mail Address:** info-tg@iba.be

#### History

**Designed by:** IBA

**Construction Dates:** 03/92

**First Beam Date:** 1992

**Characteristic Beams**

18 MeV proton 100 - 150 microA

9 MeV deuteron 50 microA

**Transmission Efficiency (source to extracted beam)**

**Typical (%)**: 55

**Best (%)**: 60

**Emittance**

**Emittance Definition:** -

**Vertical (pi mm mrad):**

**Horizontal (pi mm mrad):**

**Longitudinal (dE/E[%] x RF[deg.]):**

**USES**

**Basic Research (%)**: 5

**Development (%)**:

**Therapy (%)**:

**Isotope Production (%)**: 95

**Other Application (%)**:

**Maintenance (%)**:

**Beam Tuning (%)**:

**Total Time (h/year)**:

#### TECHNICAL DATA

**(a)Magnet**

**Type:** compact

**Kb (MeV)**: 18

**Kf (MeV/A)**: 18

**Average Field (min./max. T)**: 1.35 (0.35/1.9)

**Number of Sectors**: 4

**Hill Angular Width (deg.)**: 57

**Spiral (deg.)**: 0

**Pole Diameter (m)**: 1.08

**Injection Radius (m)**: 0.03

**Extraction Radius (m)**: 0.48

**Hill Gap (m)**: 0.03

**Valley Gap (m)**: 0.67

**Trim Coils**

**Number**: 0

**Maximum Current (A-turns)**: N/A

**Harmonic Coils**

**Number**: 0

**Maximum Current (A-turns)**: N/A

**Main Coils**

**Number**: 2

**Total Ampere Turns**: 112000

**Maximum Current (A)**: 200

**Stored Energy (MJ)**: -

**Total Iron Weight (tons)**: 20

**Total Coil Weight (tons)**: 2

**Power**

**Main Coils (total KW)**: 15

**Trim Coils (total, maximum, KW)**: -

**Refrigerator (cryogenic, KW)**: -

**(b)RF**

**Acceleration**

**Frequency Range (MHz)**: 42

**Harmonic Modes**: 2p/ 4d

**Number of Dees**: 2

**Number of Cavities**: 4

**Dee Angular Width (deg.)**: 30

**Voltage**

**At Injection (peak to ground, KV)**: 32

**At Extraction (peak to ground, KV)**: 32

**Peak (peak to ground, KV)**: 32

**Line Power (max, KW)**: 10

**Phase Stability (deg.)**: 0.1

**Voltage Stability (%)**: 0.1

**(c)Injection**

**Ion Source**: 2 PIG internal

**Source Bias Voltage (kV)**: 0

**External Injection**: N/A

**Buncher Type**: N/A

**Injection Energy (MeV/n)**: N/A

**Component**:

**Injection Efficiency (%)**:

**Injector**:

**(d)Extraction**

**Elements, Characteristic**: carbon stripper

**Typical Efficiency (%)**: 100

**Best Efficiency (%)**: 100

**(e)Vacuum**

**Pumps**: 4 x Oil diffusion

**Achieved Vacuum (Pa)**: 7 e-5

**REFERENCES** EPAC 1990, Y Jongen, Nice 1990

#### EXPERIMENTAL FACILITIES

**COMMENTS** 52 units sold, self-shielded version available

