

Tandem Operation

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In 2007 the tandem accelerator (MP8 from HVEC) was running 7000 hours (290 days) for experiments. For maintenance each week 6-8 hours were scheduled but not used always. In August and September we had a 3 week routine maintenance period. Only a few idler pulleys were replaced after we changed quite a lot last year.

The pelletron charging chains on HE side installed in September 1990 are still in operation. In 2005 we had to replace the chains on the LE side, which were younger but close to a chain rupture due to abrasion.

Only a few days for unscheduled tank openings were necessary for:

- replacement of four idler wheels (27/28 March),
- removing a screw of a resistor from the tank floor (30 July),
- replacing an all metall angle valve in the terminal (10-13 September),
- cleaning a polluted charging chain on LE side (7/8 November),
- removing a broken shorting rod (19/20 November).

Operating statistics are shown in fig. 1 and table 1. The maximum terminal voltage applied for experiments is shown in fig. 1. About 40% of the available beam time is devoted to nuclear physics. In the field of applied physics the available beamtime is distributed to AMS (20.2%), materials analysis (18.5%) and biology (18%). The small rest of about 3% served for detector tests for CRESST or detector tests of the Max-Planck-Institute for extraterrestrial physics for the BeppiColombo space mission to mercury. The instrument most frequently in use, with about 30% of available beam time, was the Q3D magnetic spectrograph for nuclear physics as well as applied physics. A fraction of 18% is used for the AMS studies at the GAMS magnet. The Microprobe SNAKE accounts for 13% of beamtime due to studies in single ion radiation of living cells.

The control system based on an ARCNET network with about 60 node computers was running very stable all the year. This control system is now working since 1988! At the control desk nearly all stand alone PCs are now replaced by Thin Clients having access to the ARCNET-Server. A problem of our aging electronics is that it becomes more and more difficult to purchase spare parts.

Some redesign of PCBs is necessary to solve this problem for the near future. For a longer time of operation the change to an other up to date controlsystem, perhaps based on PLCs is under discussion. This system change will be expensive and time consuming and can be implemented only in a step by step procedure, where the old and the new system are running in parallel. A new high voltage power supply with 150 kV max. for the NII injector was aquired. This supply will replace the old 300 kV supply, which is in an unreliable state after several repairs. Our experience has shown, that 150 kV is sufficient for all purposes. Such a supply is much cheaper than a 300 kV version.

No new beam lines were implemented and no existing removed.

The neutron generator based on a D-T reaction was in operation only for a few days in Target room II. The high energetic neutrons of 14 MeV are usefull for detector tests for CRESST.

In 2007 we had 745 visitors in groups most from schools and 407 visitors at the open house.

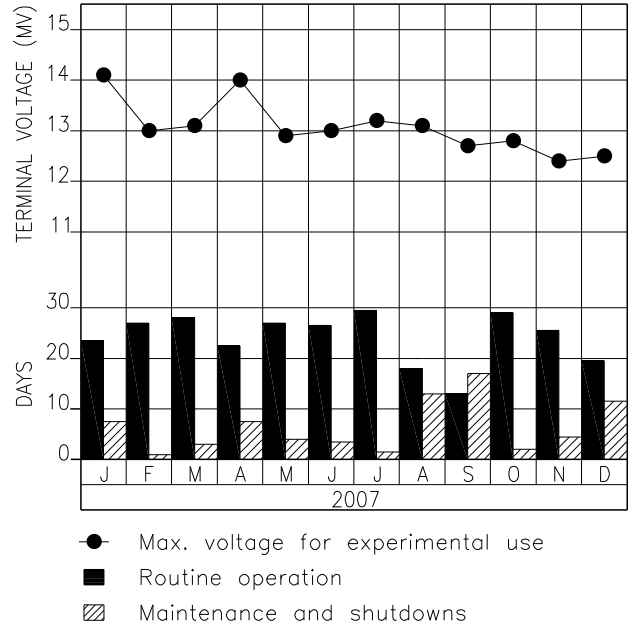


Fig. 1: Operating statistics 2007

ION	¹ H	² H	³ He	⁴ He	⁷ Li	¹¹ B	¹² C	¹⁶ O	²⁵ Mg	³⁵ Cl
%	19.0	6.9	7.6	1.2	7.6	2.2	4.5	5.4	2.9	3.8
ION	³⁶ Cl*	⁴⁰ Ca	⁵³ Mn*	⁵⁸ Ni	⁶³ Ni*	⁶⁴ Ni	⁹³ Mo*	¹²⁷ I	¹⁹⁷ Au	others
%	1.0	7.8	5.9	4.0	2.2	2.4	1.0	5.0	7.6	2.0

Table 1: 2007 ion beam time in percent of total available beam time. The isotopes marked with an * were measured in AMS studies. The ion source for polarized protons and deuterons delivered about 70% of all protons and deuterons in a runnig time of about 1600h.