C30vg4-Mo conditioning history

Maximum Input Power (MW)

Time (h)

30 100/70 240 100 16/25/30 ns
C30vg4-Mo conditioning history

Time (h) vs Gradient first cell (MV/m)

- Time (h): 0, 100, 200, 300, 400, 500, 600, 700
- Gradient first cell (MV/m): 0, 10, 20, 30, 40, 50, 60, 70, 80, 90

Note: The data points are marked with vertical green lines at specific time intervals.
C30vg4-Mo conditioning history

Average Gradient (MV/m) vs. Time (h)

- Time (h): 0, 100, 200, 300, 400, 500, 600
- Average Gradient (MV/m): 0, 10, 20, 30, 40, 50, 60, 70, 80

- Key points: 30, 100/70, 240, 100, 16/25/30 ns
C30vg4-Mo conditioning history

Last 100 ns run

- Missing Energy vs Breakdown Position (cell #)
- Missing Energy vs Time of Breakdown (ns)
- Reflected Power vs Reflected Phase (deg)
- Breakdown Position (cell #) vs Time (hr)

32-32 C30vg4-Mo: Pulse Width (ns): 28 / 117 / 76
C3Ovg4-Mo conditioning history

Former 100 ns run

Last 100 ns run
C30vg4-Mo dark currents

![Graph showing dark currents for C30vg4-Mo diodes with different labels indicating beta values.](image)

- Beta C30vg4-Mo (50 ns) diode: 11
- Beta C30vg4-Mo (50 ns) VEETEST: 14
- Beta C30vg4-Mo (50 ns) END: 32
**C30vg4-Mo conditioning history**

- Rep Rate change from 60 to 10 had no influence
- For short pulse (30 ns) power limit of 140 MW was reached
- Gas activity went down towards the end of conditioning
- Dark current was reduced and beta higher (14 to 30)
- No evidence for damage from RF-data
- Breakdown counter stopped at 28500 but may be a factor 4 more
- Total run time: 700 h
Conditioning rates

Mo-C30vg 4
Cu-H60vg3R17
Breakdown rates

Slopes:
100 ns; 6.1
50 ns; 10.6
Pulse length dependence

Maximum surface field (MV/m)

- Cu 30 GHz
- W 30 GHz
- Mo 30 GHz
- Cu 11 GHz
- Mo 11 GHz

Pulse length (ns)
Why is it not better, as expected?

- What is different compared to CERN?
  - Frequency, Pulse length, Power level, Rep. Rate

- What is different compared to NLC-structures
  - Material, construction technology, no excessive bake

1. “This particular structure has a problem”
   - behaves very normal with respect to many parameters

2. “it is just pulse length dependence”
   - data doesn’t connect at short pulses

3. “Higher frequency is better”
   - copper data doesn’t show a big dependence

4. “Mo-is not as good as we thought”
   - well, a single test is probably not sufficient

5. “clamping technique”
   - hopefully one see something inside

6. “Number of breakdowns is important”