
Module Assembly
Quality Control
High Voltage

Ohio State Status Report

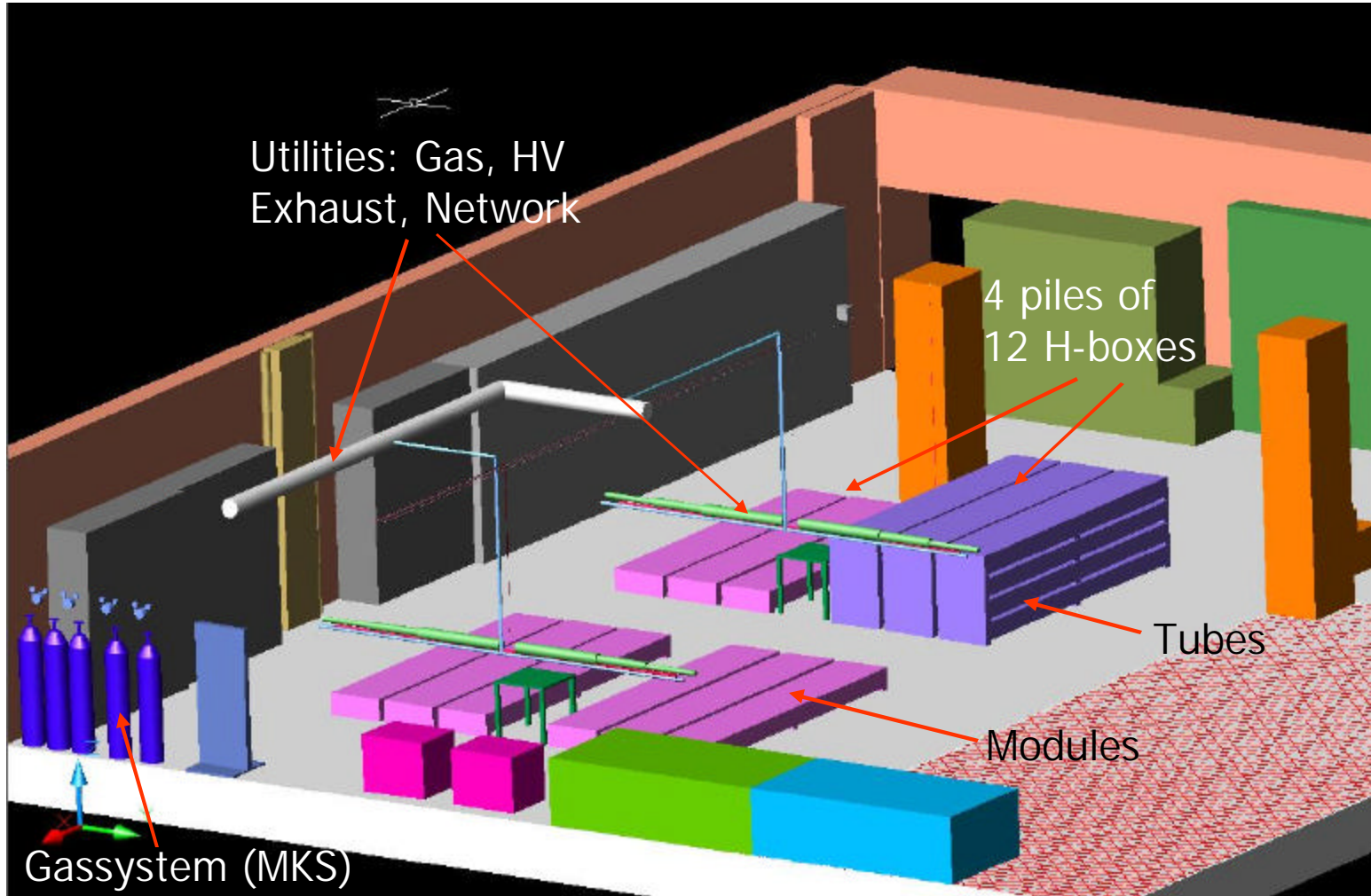
Module Assembly: Facilities

Van De Graaf Lab:

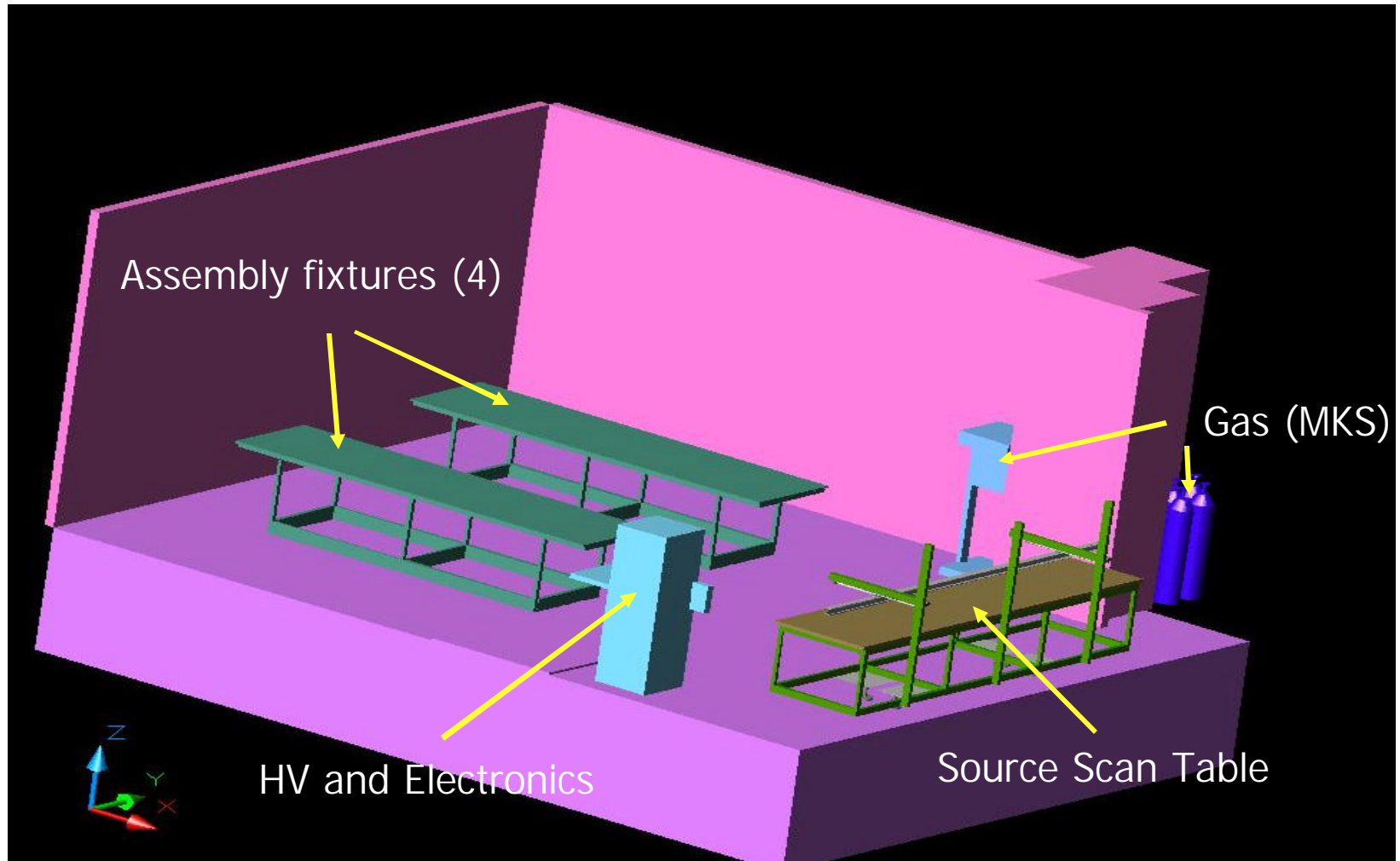
Shipping and receiving
Initial QC (R,C, singles rates)
Long term test



Module Assembly: Facilities (VDG)



Module Assembly: Facilities (Smith)



Module Assembly: Fixtures

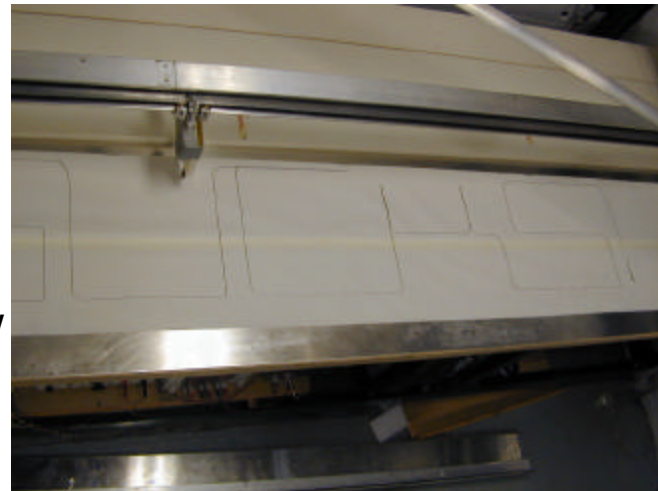
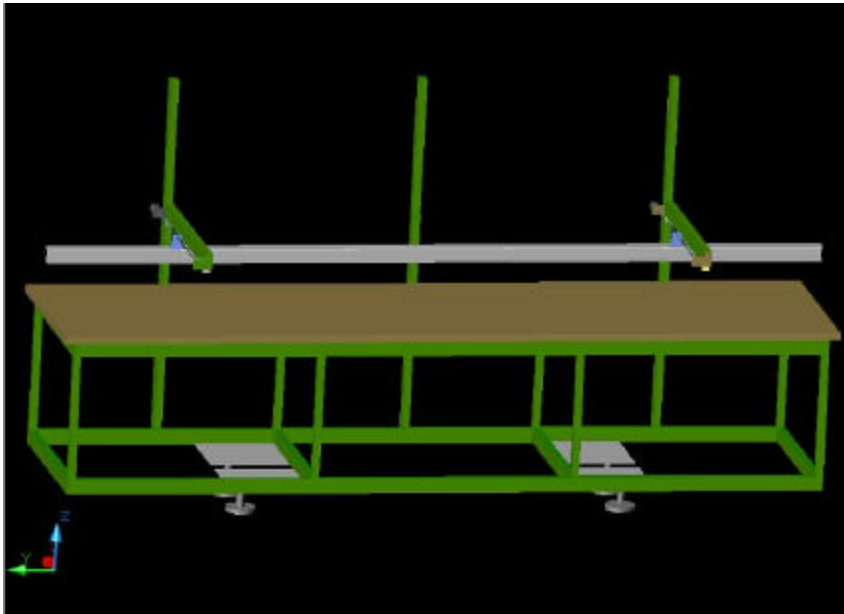


- Two complete assembly fixtures

- Parts for remaining 2 fixtures machined, ready to assemble

- Tube and module carrier designed, currently being machined

Quality Control: Source Scan

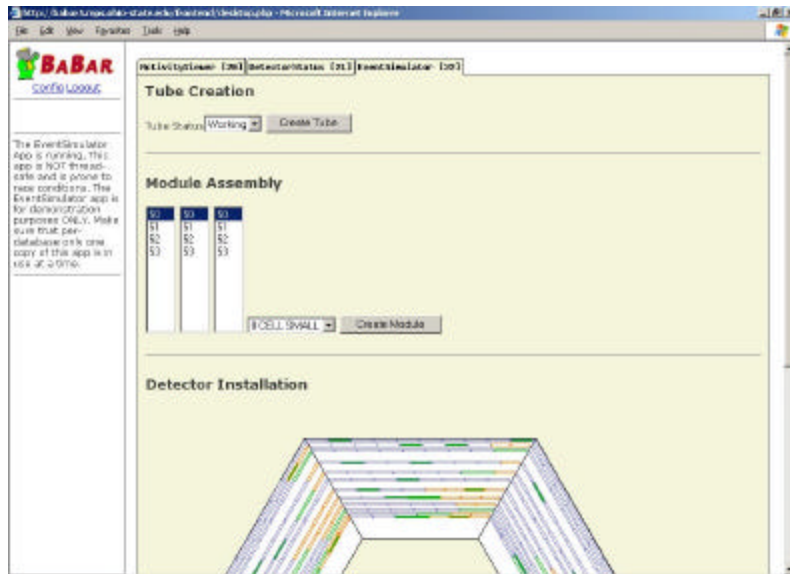


Source Scan Table complete and operational

Scans of 3 large-cell prototype tubes underway

Quality Control: Database

- mySQL based
- Web browsing tools (php based)
- Complete tube+module history
- all (QC) test data
- INFN/PHT information will be integrated
- first version before Dec 25



The screenshot shows the BABAR web interface displaying a table of activity data. The table has columns for 'ID', 'ACTIVITY_ID', 'ACTIVITY_TYPE', 'INITIATED', 'COMPLETED', 'PART_ID', and 'PART_TYPE'. The data rows show a sequence of 'MODULE_ASSEMBLY' activities, each with a unique ID and corresponding timestamps. The 'PART_ID' column contains values from 1 to 14, and the 'PART_TYPE' column is consistently 'TUBE'.

ID	ACTIVITY_ID	ACTIVITY_TYPE	INITIATED	COMPLETED	PART_ID	PART_TYPE
91	1	MODULE_ASSEMBLY	20030904200320	20030904200620	1	TUBE
92	1	MODULE_ASSEMBLY	20030904200420	20030904200620	2	TUBE
96	2	MODULE_ASSEMBLY	20030904200320	20030904200620	3	TUBE
97	2	MODULE_ASSEMBLY	20030904200320	20030904200620	4	TUBE
101	3	MODULE_ASSEMBLY	20030904200320	20030904200620	5	TUBE
102	3	MODULE_ASSEMBLY	20030904200320	20030904200620	6	TUBE
106	4	MODULE_ASSEMBLY	20030904200320	20030904200620	7	TUBE
107	4	MODULE_ASSEMBLY	20030904200320	20030904200620	8	TUBE
111	5	MODULE_ASSEMBLY	20030904200320	20030904200620	9	TUBE
112	5	MODULE_ASSEMBLY	20030904200320	20030904200620	10	TUBE
116	6	MODULE_ASSEMBLY	20030904200320	20030904200620	11	TUBE
117	6	MODULE_ASSEMBLY	20030904200320	20030904200620	12	TUBE
121	7	MODULE_ASSEMBLY	20030904200320	20030904200620	13	TUBE
122	7	MODULE_ASSEMBLY	20030904200320	20030904200620	14	TUBE
126	8	MODULE_ASSEMBLY	20030904200320	20030904200620	15	TUBE
127	8	MODULE_ASSEMBLY	20030904200320	20030904200620	16	TUBE
131	9	MODULE_ASSEMBLY	20030904200320	20030904200620	17	TUBE
132	9	MODULE_ASSEMBLY	20030904200320	20030904200620	18	TUBE
136	10	MODULE_ASSEMBLY	20030904200320	20030904200620	19	TUBE
137	10	MODULE_ASSEMBLY	20030904200320	20030904200620	20	TUBE
141	11	MODULE_ASSEMBLY	20030904200320	20030904200620	21	TUBE
142	11	MODULE_ASSEMBLY	20030904200320	20030904200620	22	TUBE
146	12	MODULE_ASSEMBLY	20030904200320	20030904200620	23	TUBE
147	12	MODULE_ASSEMBLY	20030904200320	20030904200620	24	TUBE
151	13	MODULE_ASSEMBLY	20030904200320	20030904200620	25	TUBE
152	13	MODULE_ASSEMBLY	20030904200320	20030904200620	26	TUBE
156	14	MODULE_ASSEMBLY	20030904200320	20030904200620	27	TUBE
157	14	MODULE_ASSEMBLY	20030904200320	20030904200620	28	TUBE

Quality Control: Status and Summary

DONE:

- Source Scan Table ready
- Barcode Scanner (tube and box id's) ready
- (Automatic) resistance and capacitance measurement ready
- Gas system monitor ready
- Weather station monitor ready
- Singles rates electronics

TO DO:

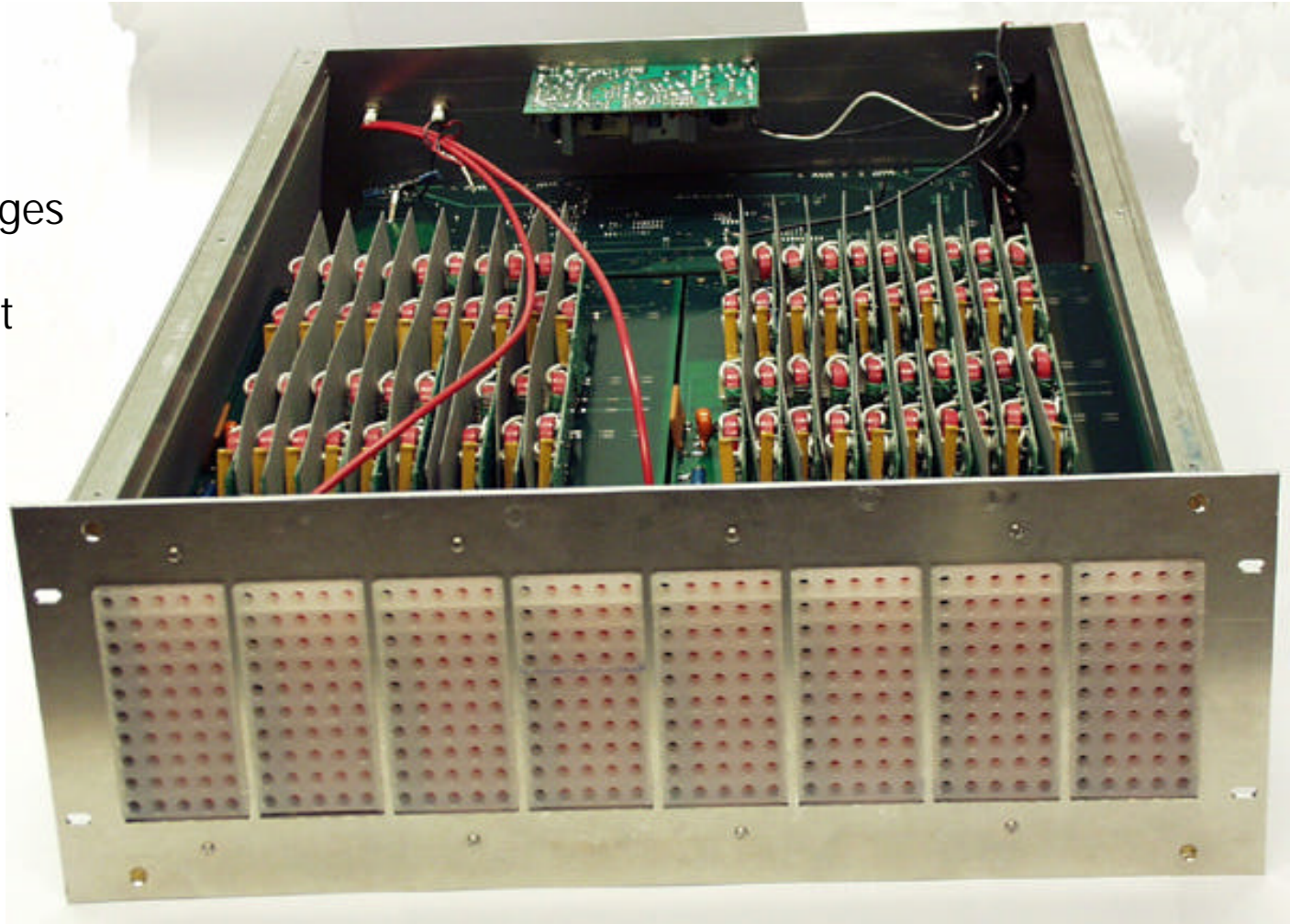
- Source Scan – HV integration, singles rates – HV integration
- Long term test software
- Database integration
- Barcode (software) for module tags

QUESTIONS:

- QC on “phi strips”? Laminated cables?

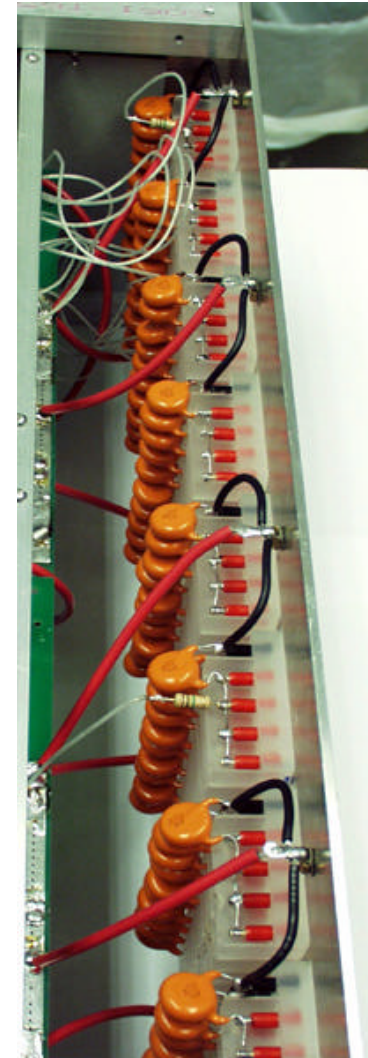
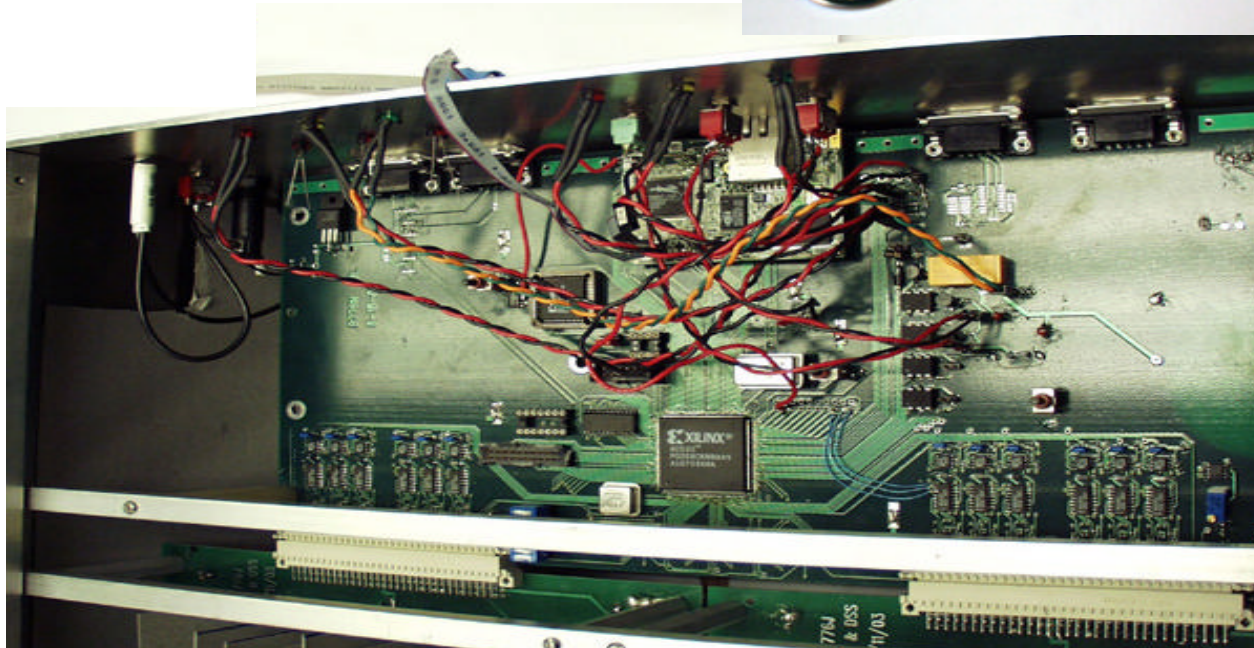
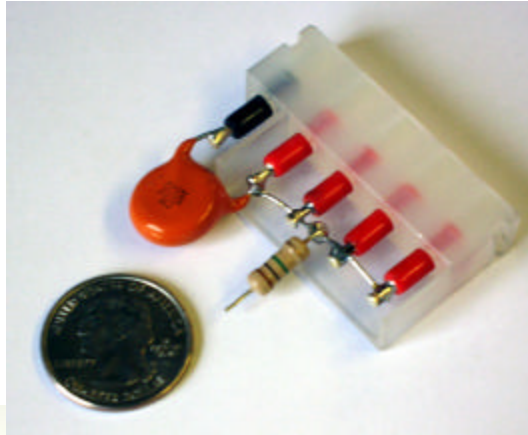
High Voltage: Power Supply

80 channels
1:4 Fan out
Up to 4 diff. voltages
Current Monitor
ZEUS over-current
protection
Canbus, Ethernet
Interlocks
External HV

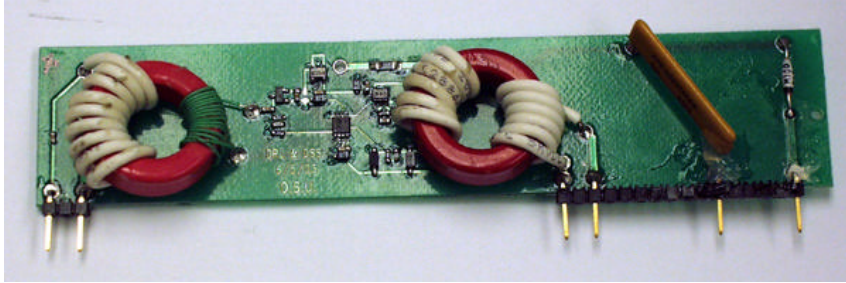


High Voltage: Power Supply

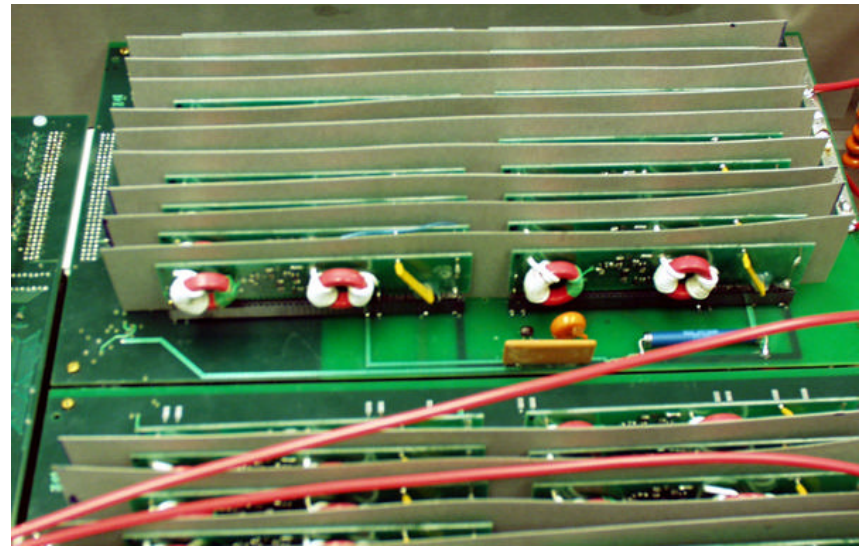
- All parts ordered
- PC boards designed, ordered (2/3)
- Modular connector, injection molded
- Digital part needs more work (canbus, software)



High Voltage: Power Supply, Current Monitor



- 2000 PCBs ordered
- Transformer being wound
- Assembly starts Dec 15



High Voltage: Controls and Interlocks

- Can-bus interface (to be tested)
- (Fast) Ethernet
- HV enable switch (local)
- “Interlocks”:
 - all opto-isolated
 - current design uses isolated BNC
 - all signals (except TRIP can be daisy-chained)
 - HV Enable (Input)
 - Goto V_0 (Injection, Input)
 - At V_0 (Output)
 - Over-current, Trip (Output)
 - Ramping (Output)

⇒ need to talk to Walt, Ray

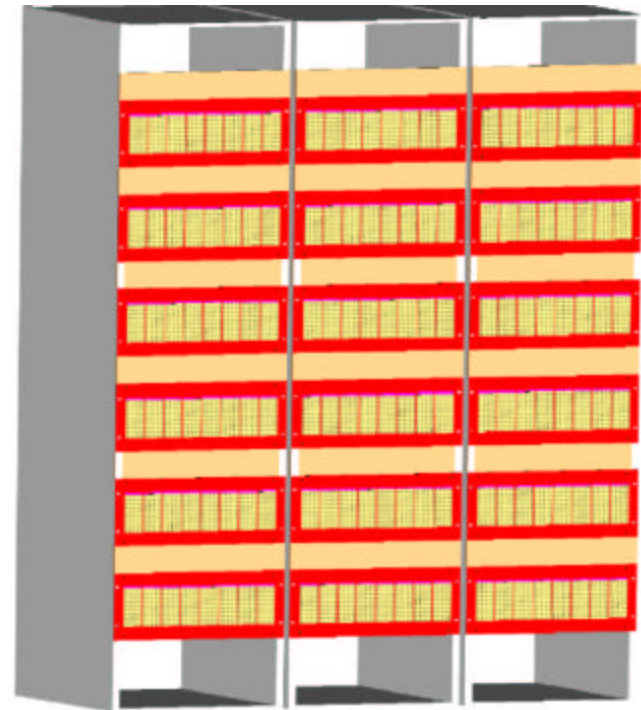
⇒ new OSU Post Doc



High Voltage: System Design

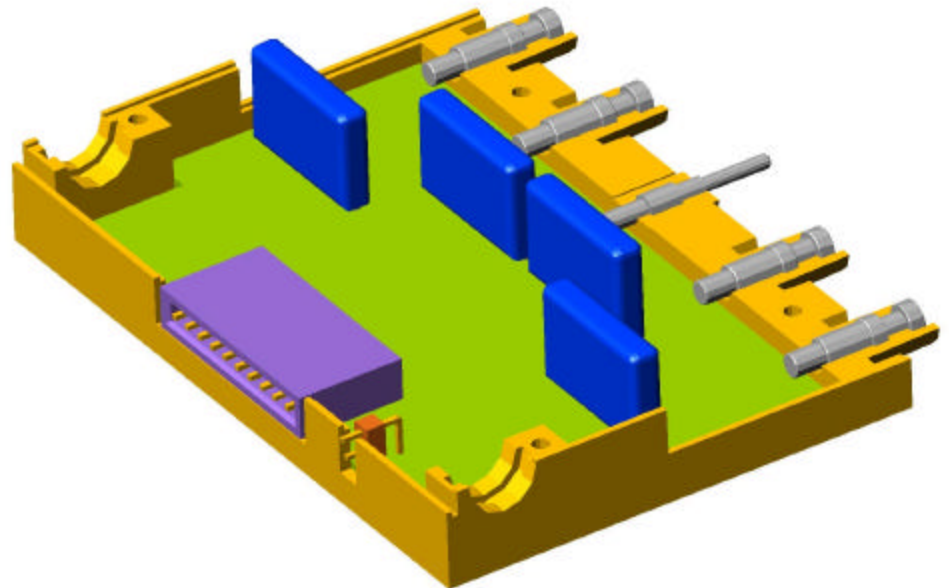
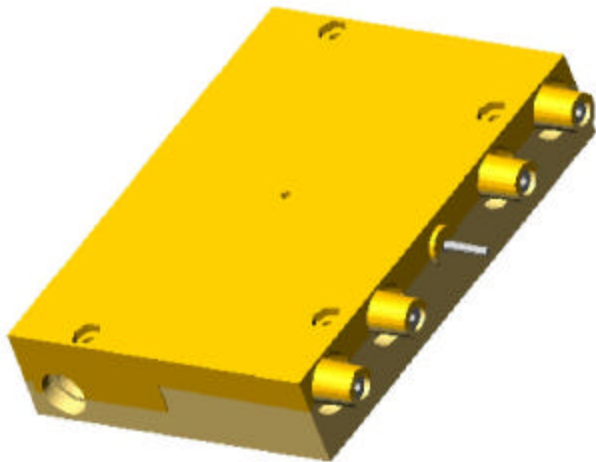
- 3x HV power supplies per sextant
- 3x 1u ground strips per sextant
- ⇒ 15u rack space per sextant

- ⇒ 3 racks in total



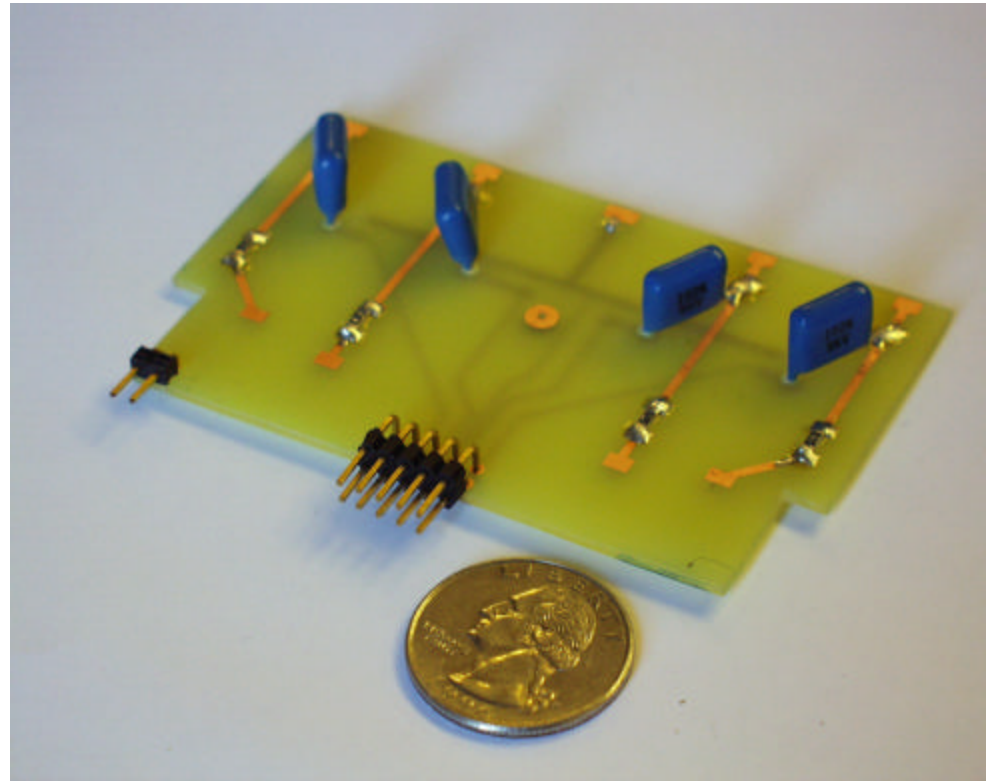
High Voltage: HV Box/Connector

- (half shell) design complete
- HV PC board designed
- HV capacitors ordered (INFN)
- Radial pins available
- AMP connector integrated
- Extra ground connector

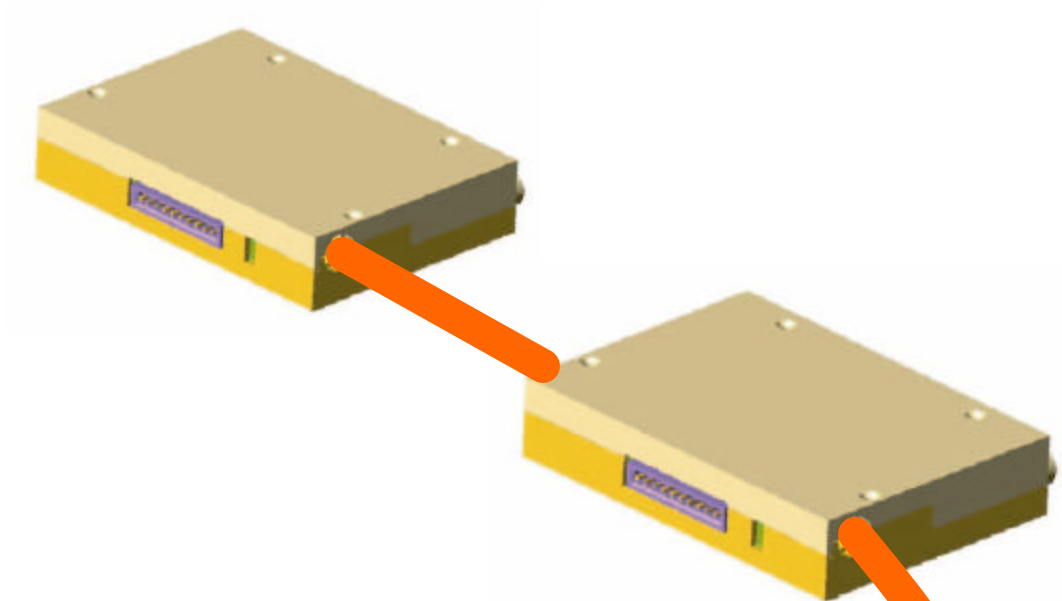


High Voltage: HV PC Board

- Simple 2 layer PC board
- HV tests have started
 - conformal coating?
 - pot entire connector?
- 1 M Ω resistor in series
- "Signal" resistor
 - 100 Ω (in theory)
 - 10 K (in test module)
 - need to decide. How?
- Novacap HV capacitor

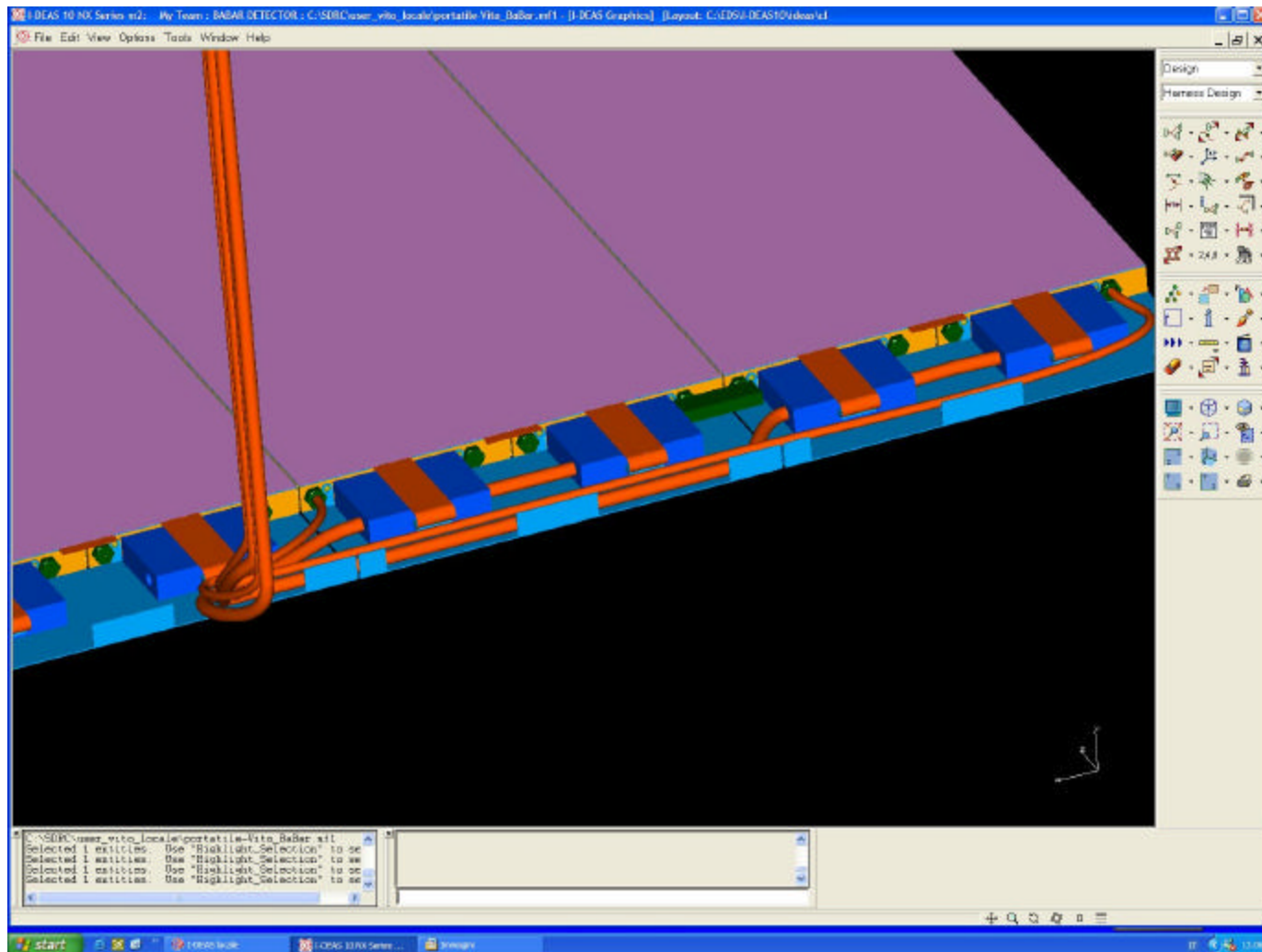


High Voltage: HV Infrastructure



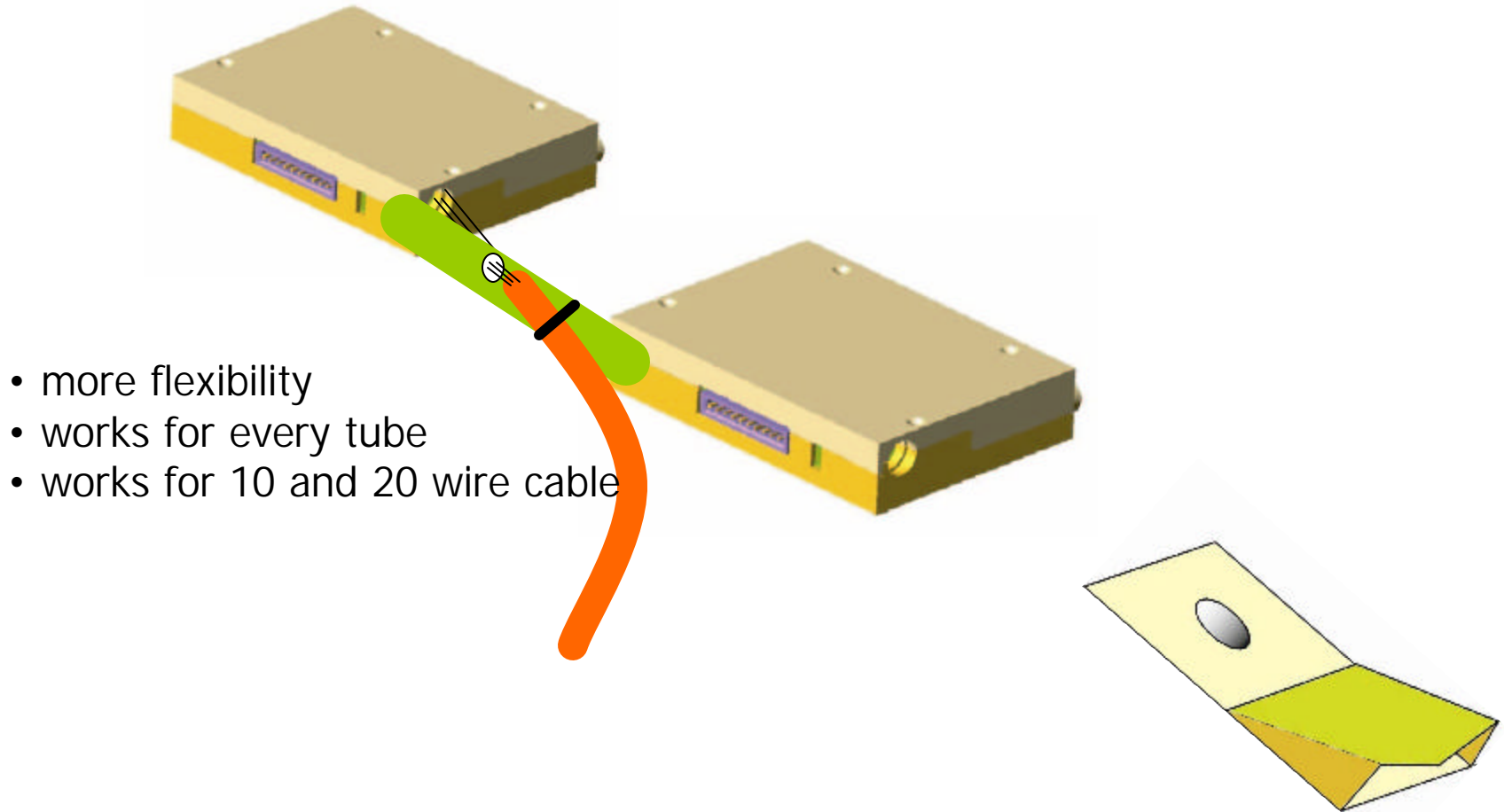
baseline – until this morning...

High Voltage: HV Infrastructure II



(from
Vito)

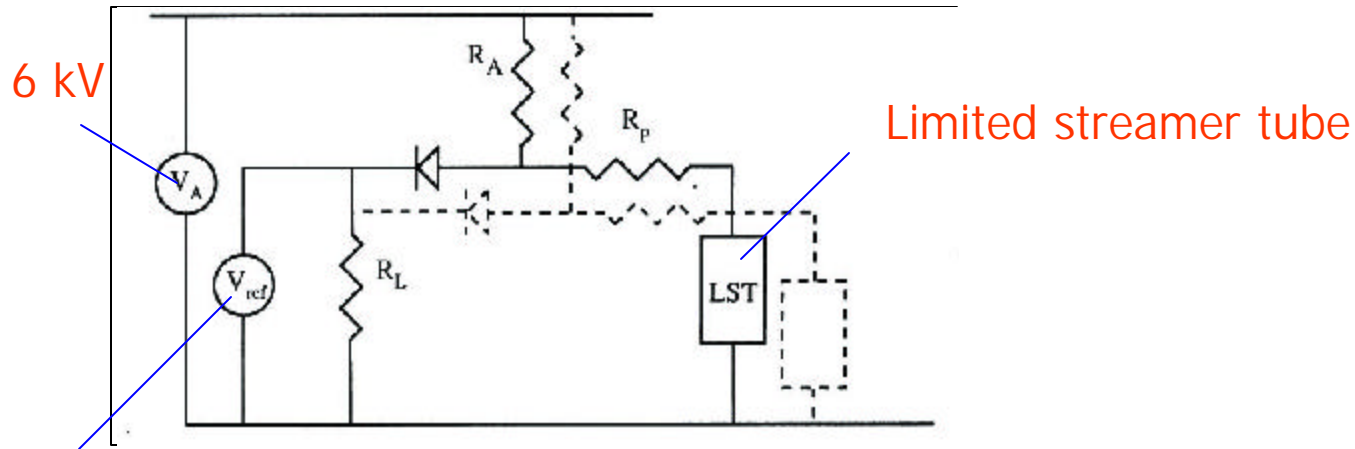
High Voltage: HV Infrastructure III



Status and Summary

- Preparation for module assembly on track
- Good progress on QC tests
 - Source scan table ready
- HV Power Supply design complete
 - working prototype, close to production version
 - lot's of assembly and test labor required...
- HV Box/Connector designed
 - improved cable routing
 - freeze design next week

Over-current protection (ZEUS)



LST Voltage

Voltage

Current

