



QUAD status

New testbox

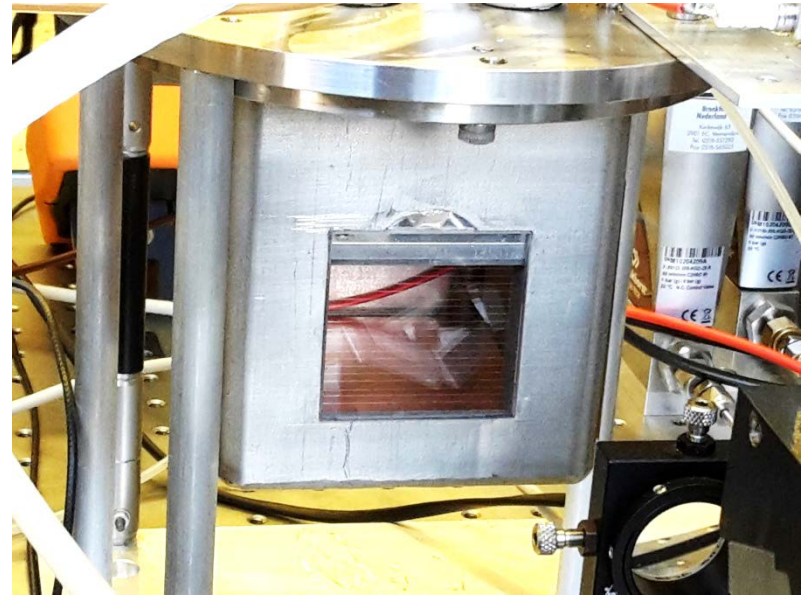
Fred Hartjes
NIKHEF

Nikhef/Bonn LepCol meeting
July 2, 2018

Laser setup single QUAD

- Still waiting for the Putty parameters for connection to arawana still to be inserted
- Kevin just gave the right values

- Still problems with liquid cooling
 - Water => antifreeze => glycol
- Chamber opened, QUAD taken out
 - Cooling plate thoroughly cleaned
 - 90 deg connectors replaced (brass on aluminium => heavy corrosion)
 - Underpressure is much smaller than before
 - 0.14 bar vs 2.0 bar

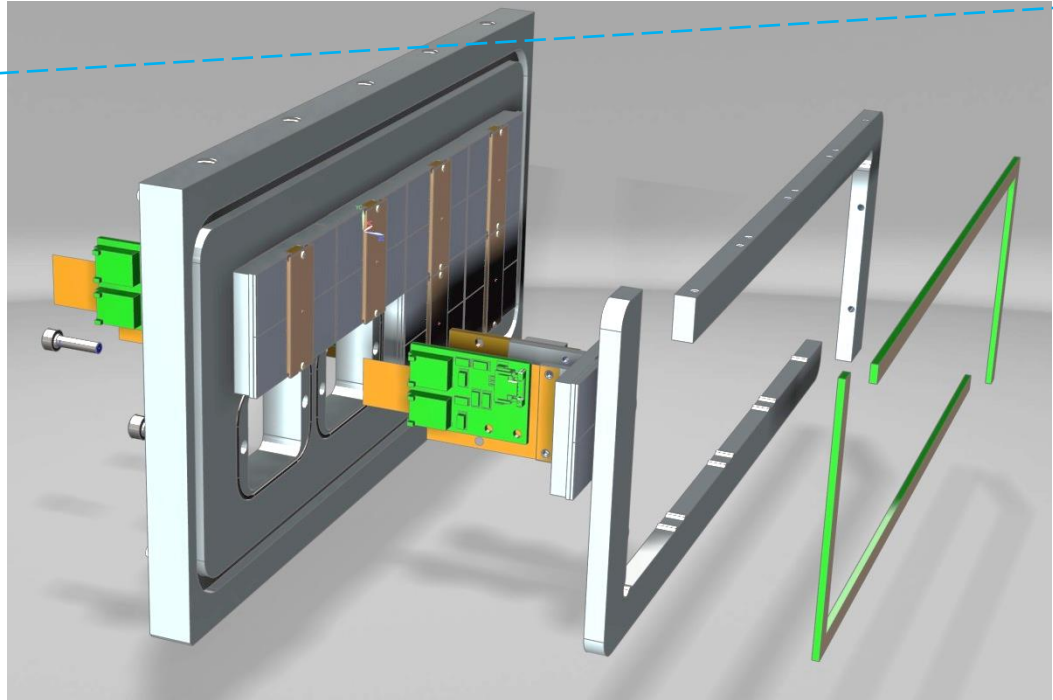


New QUAD production

- 15 wirebond PCBs still need aftermachining (Oscar)
 - Back from holidays next week
- QUAD gas test device designed
 - Applied before mounting the chips
- Starting around mid July?
- Possible delay when moving to another clean-room
 - When??

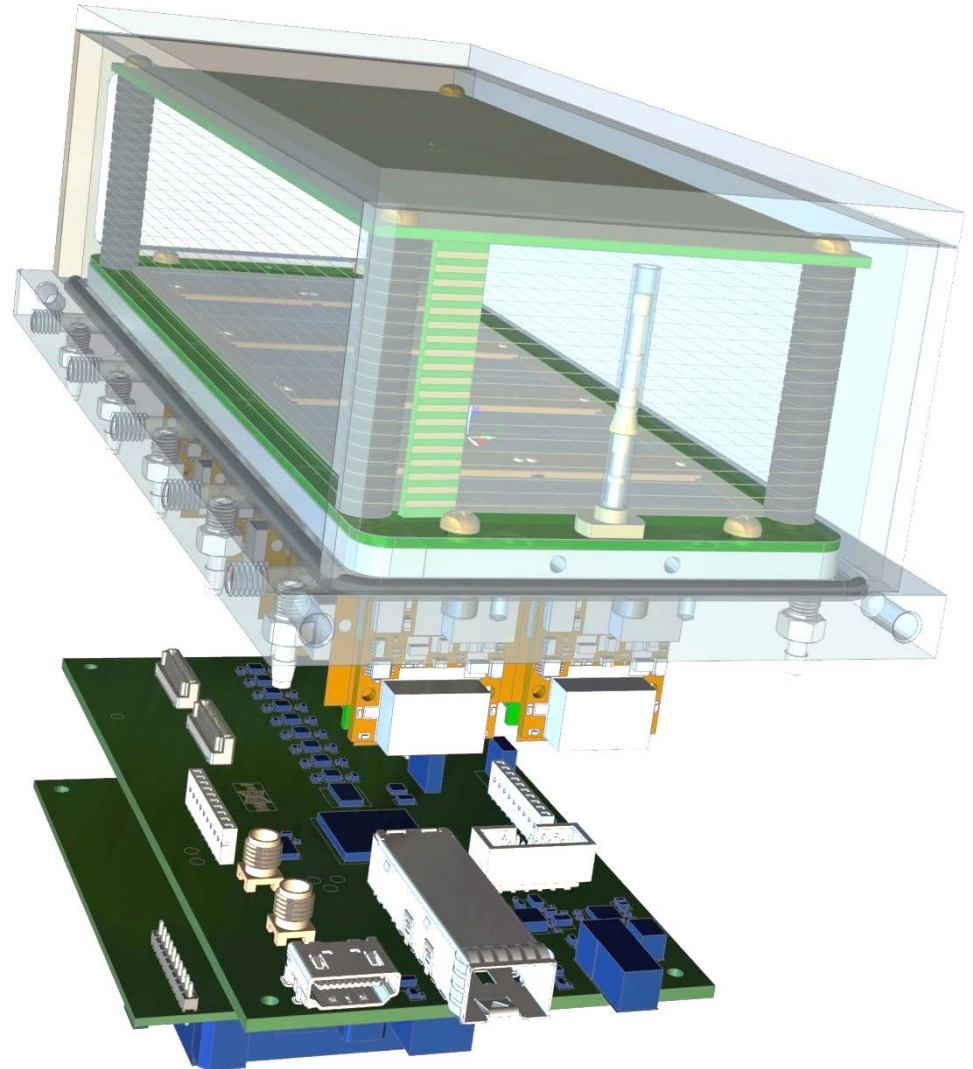
QUAD installation in new testbox

- 2 x 4 QUADs
- Alignment by two L-shaped bars
 - One having reference notches to align the QUADs
 - One having compression screws to push the QUADs to the alignment bar
- 4 mm wide guard strips glued onto the L-bars



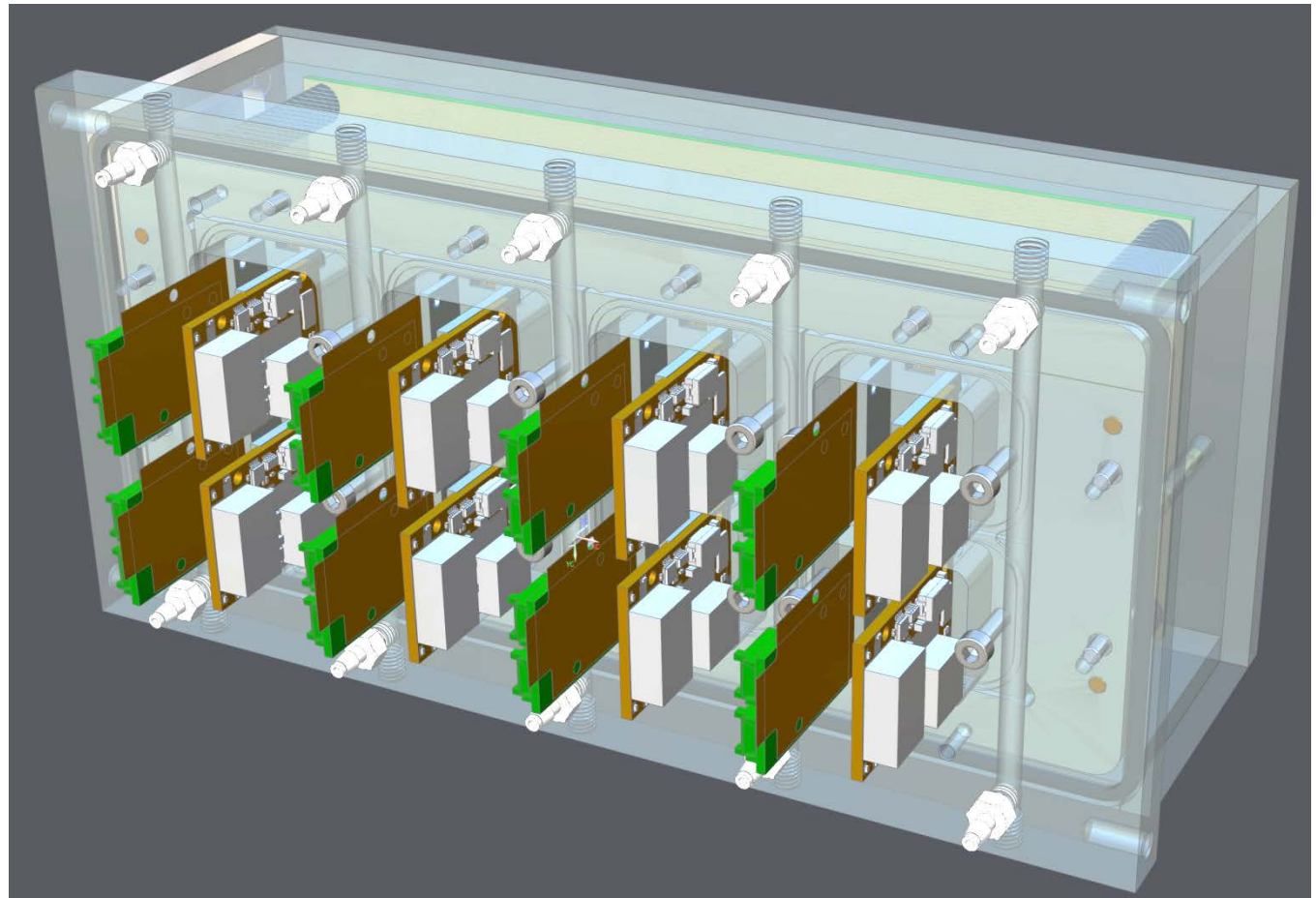
Field cage and gas envelope

- PCB frame put on the L-bars
- Carrying 4 pillars and the cathode plate
- Wires strung 2 mm apart on the 4 rods
- Gas envelope from 3 glass plates, a plastic frame and a plastic top plate.
 - Glass plates optically flat
- Possible design error with the main power board
 - Flex connectors are blocked



New test box design

- Liquid cooling by drilled channels, connected by silicon tubing
 - Most reliable in this stage of prototyping



Tooling

- Test of 1 mm O-ring
 - What is the optimal O-ring groove?
 - Following parameters tried
 - 0.7 mm deep
 - 1.2 mm wide
 - No after treatment
 - Test result
 - No penetration of O₂ could be measured
 - No leak could be measured
 - Does not easily fall out
- Leak/diffusion test box for QUADs
 - To be used just before putting chips on
 - To be applied to each QUAD during production
 - Designed, waiting for manufacture
- Dummy QUADs
 - Aluminium plate covered by PCB
 - To be used if we have not sufficient QUADs to populate a full test box
 - In design

