MKD generator consolidation

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Principal directions

• Dust protection
  – Separation of side panels to 2 parts (for maintenance) – top without perforation; bottom with perforation (PTU) – in production – ~4wks
  – Installing blinding foam between bottom and top part of generator – foam ready

• Reducing air flow around GTO stack
  – Change of fan flow direction: ~15 min/gen; no material needed (reduced air flow and cooling efficiency but better than just convection)
  – Fan disconnection – natural convection efficiency to be tested – Peltier in place – avoiding extreme situations (too cold)
  – Total cooling removal: removal of insulation foams obligatory ~ 4h/gen, risk of GTO stack pollution
Principal directions

• Modification of the feed through (not separate tube but part of the stack top insulator)
• Modifications of the geometry underneath the principal capacitors – increase of distance to Alu plate, modification of the spacer
• GTO stack modifications (goal E< 2 MV/m @ 7 TeV = 50% margin)
  – Increased distance of return rods (+10 mm)
  – Insulation of HV deflectors
  – Modifications of top 4 deflectors (reduction of diameter)
  – Modification of top 4 snubber capacitor deflectors
  – Modification of the HV contact (increasing its diameter from 20 to 28 mm)
GTO in 2009

E-field up to 8.1 MV/m at 7 TeV
GTO in 2009

Result: sparking within stack ~ 2/min
GTO in 2009

Proposed solution – insulation of deflectors and displacement of return rod by 8 mm – $E \sim 2.3$ MV/m; not accepted due to manpower request;
GTO in 2009

Two solution tested – both resulting in ~ few sparks /24 h
Present situation