MKP-L status

Present Serigraphy (V4)

- Four serigraphy fingers per plate (2 coats of silver per finger, baked between coats)
- ‘Slot’ (bottom plate) & ‘groove’ (top plate)
- Serigraphy offset towards HV busbar: (7.75mm more available on U-chambers)

Length of serigraphy fingers (15mm between centres):
- #1 & #3 from pulse output end, 457mm (was 600mm in V3)
- #2 & #4, from pulse input end, 581mm (was 600mm in V3)
HV Conditioning of MKP-L (V4 serigraphy)

HV ACOND:
- Completed ramp-up to 54.5kV
- Completed enlarging, at 53.5kV, from 1µs to 3µs

Sparks at 40.2kV (S), 50.9kV (W) & 53.5kV (S):
- Analyses shows that sparks are very unlikely to be due to serigraphy

- With V3 serigraphy, corona just visible at 25kV through Hublot.
- With V4 serigraphy, corona just visible at 50kV through Hublot.
Histogram for comparison slot vs groove (53.8kV)

- Same settings for the camera
- Two pulses captured per exposure
- Same number of pixels considered for comparison
- We look at the cumulated histogram of blue colour, from high intensities to low intensities

<table>
<thead>
<tr>
<th></th>
<th>Number of pixels with blue intensity&gt;150</th>
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</thead>
<tbody>
<tr>
<td>Bottom (slot)</td>
<td>10979</td>
</tr>
<tr>
<td>Top (groove)</td>
<td>6663</td>
</tr>
</tbody>
</table>

Intensities higher than 150 are clearly due to the discharges

Number of points with intense blue is higher for the slot
Serigraphy

Further impedance simulations (Carlo) carried out to simulate additional reduction in length of serigraphy of fingers #1 & #3

- Unfortunately finger#3 cannot be removed as this would result in a significant less efficient shielding;
- It is advantageous to keep the length of finger#1 and finger#3 equal (to avoid an impedance resonance @ ~60MHz);
- Fingers #1 and finger#3 can have a length of 11.5 cells (i.e., shorten these fingers by the equivalent of 3 cells (93mm) in comparison with the present design).
Low-impedance prototype planning

• Additional pulse conditioning of low impedance magnet with V4 serigraphy (~6 days at ~50+/kV PFN)
• Examination of alumina plates for signs of damage

In parallel, machining of groove in one alumina U-chamber at position of shorter serigraphy:
• Serigraph and bake both U-chambers
• Install U-chambers in magnet
  • Measure beam coupling impedance
  • HV DC condition
  • HV pulse condition
  • Conclusion re groove (baseline) and no-groove versions
4-module planning

Vasco has updated MKP-L planning:
- Planning derived working backwards from installation in WB 12/12/2022 (end of week to allow some cooldown?)
  - Important to pump down over Christmas
  - ECR required (to be written)!
  - Assembly of 1st module starts 1st July – no contingency in planning
  - Must have all critical parts available before opening 4-modules
  - Management “OK to open spare” will be required in June

Last beam in SPS 12 December
Spare slide
Analysis of strong spark at 53.47kV

Breakdown near centre of MKP-L