CF metrology
a first look

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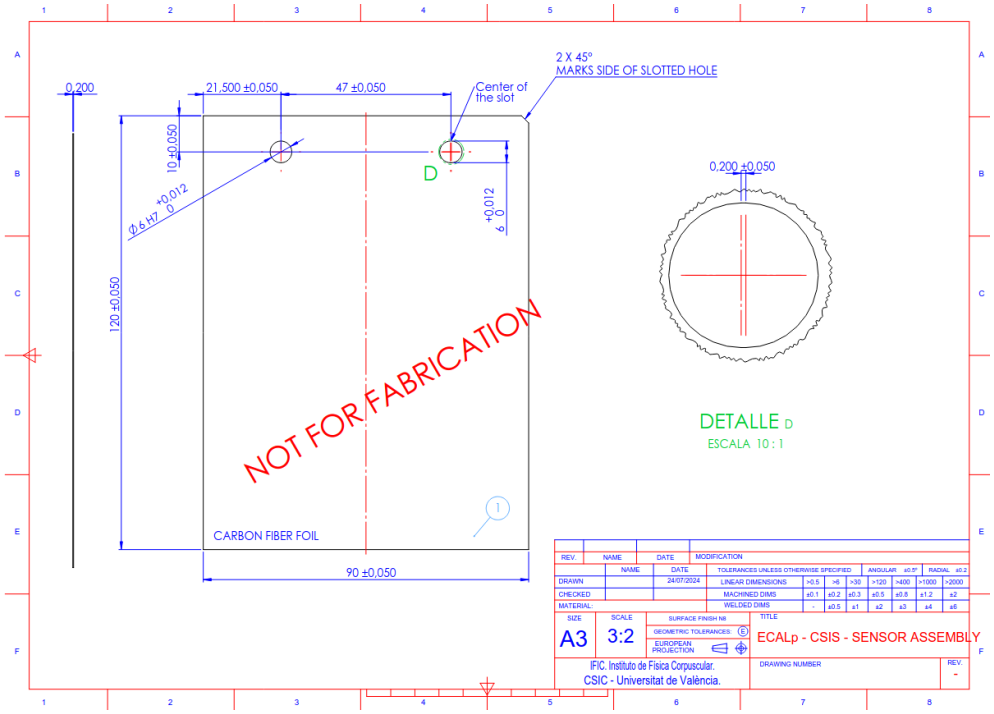
First look to metrology

Two types of CF requested

- 10 x Low Quality
  - Same overall precision as first try in 2023 but using reamer for brush up the holes
- 10 x High Quality
  - “Extraordinary precision” and using reamer too



First look – using CMM camera

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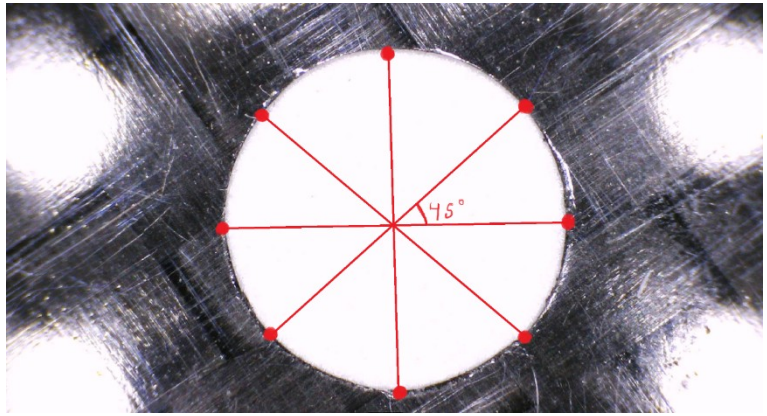
- The goal is to measure
  - the hole (C1) and sloted hole (C2) dimensions
  - The overal dimensions of the CF
  - The thickness
  - WORK IN PROGRESS

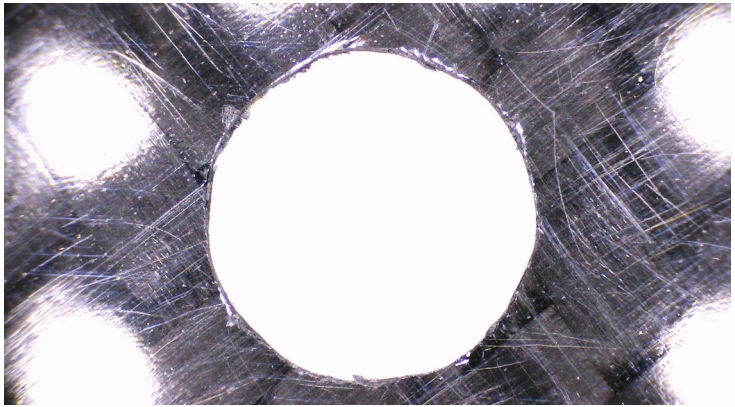


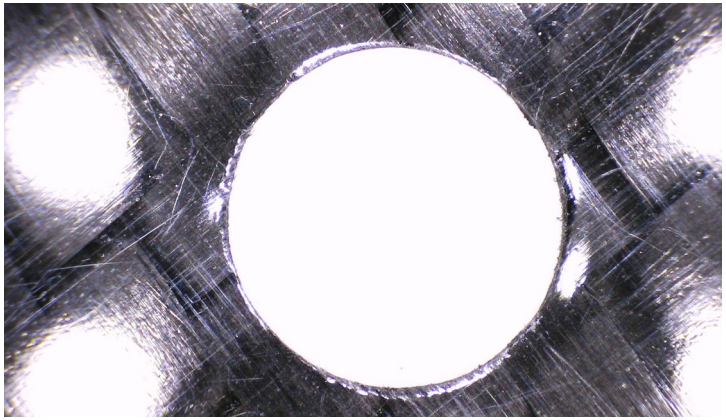
- First look
  - Visual inspection of the holes
  - Manual tests of CF-Tframe connection.

First look – HQ CF

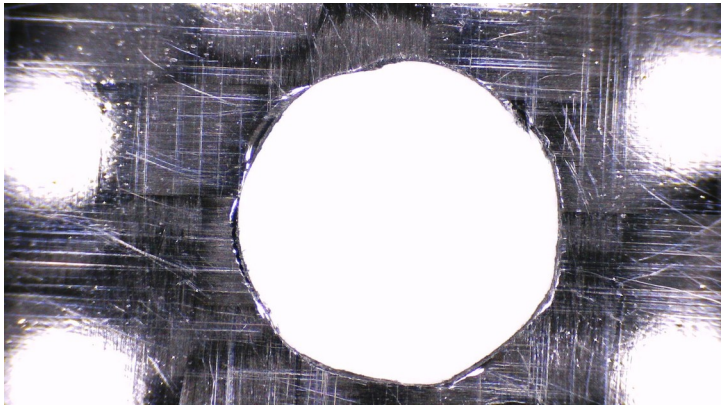
the hole (C1) and sloted hole (C2) dimensions

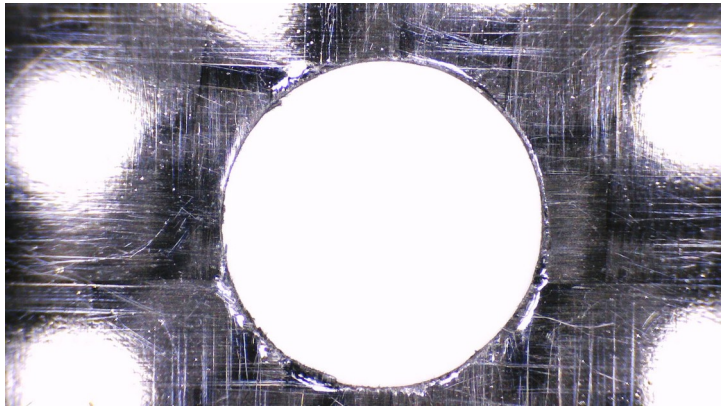
CF4





CF2

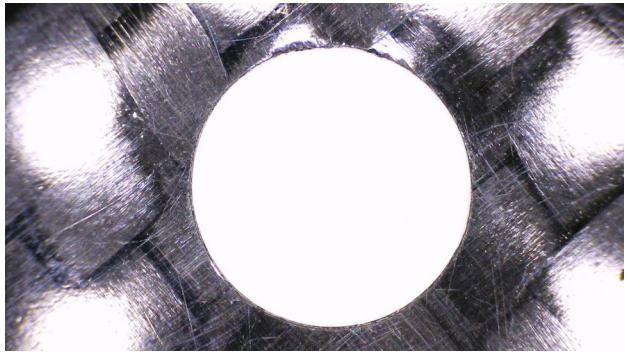


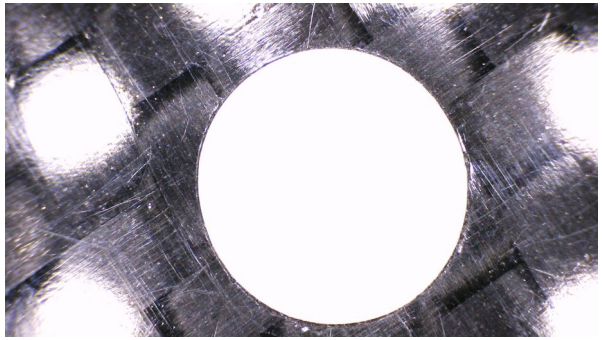


First look – LQ CF

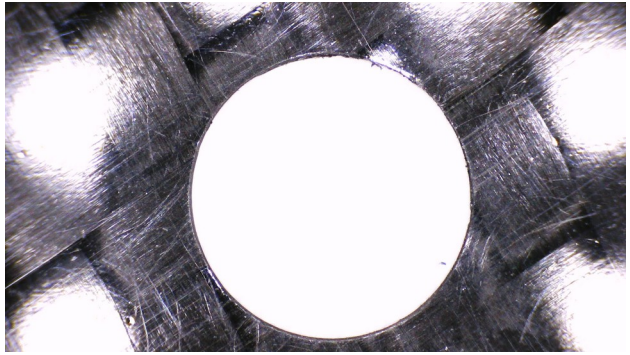
the hole (C1) and sloted hole (C2) dimensions

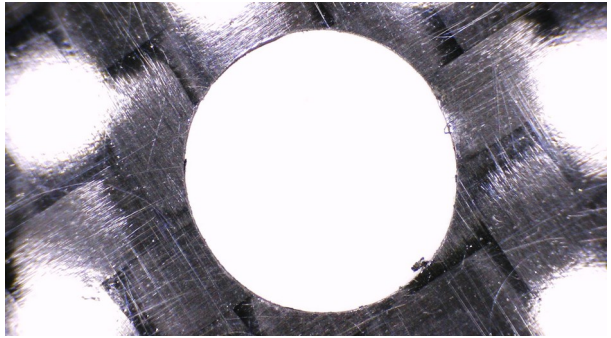
CF1





CF2





LQ vs HQ (visual inspection?)

- All CF made with LQ seem to have more spherical holes...

LQ vs HQ adjustements

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- We made adjustement tests with the T-FRAME and “measured” how tight they are fixed (but manual tests)
- HQ → Tight fit
  - https://www.youtube.com/watch?v=ubgcJJOubSg
  - 6/10 CF fit (With some pressure) in the holes
  - 4/10 CF the C1 does not fit… (can we enlarge it at IFIC ?? to be tested)
- LQ → loose fit
  - https://youtube.com/shorts/3T6rWKYwsY4
  - All of them have loose fit

Summary – next steps

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- Not ideal qualities… but enough for the Beam Test.

- Detailed metrologies in progress
  - To be followed with discussions with the company.

- If the quality are bad…
  - Other companies?
  - Other solutions ? (i.e. using a very thick HVorFanout-kapton instead of a thin one and replacing the CF?)
  - Modifications of the design of the CF?
  - Alternatives to the “CF+pin+screw”?

  - But let’s first finish the metrologies and have the beam test experience.