

WCTE Meeting

CDS Mechanical Development

Oliver Jeremy

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CDS Development

X Axis - 60% complete

- Modification to arm stiffness
- To be remade in SS316 and select an appropriate finish

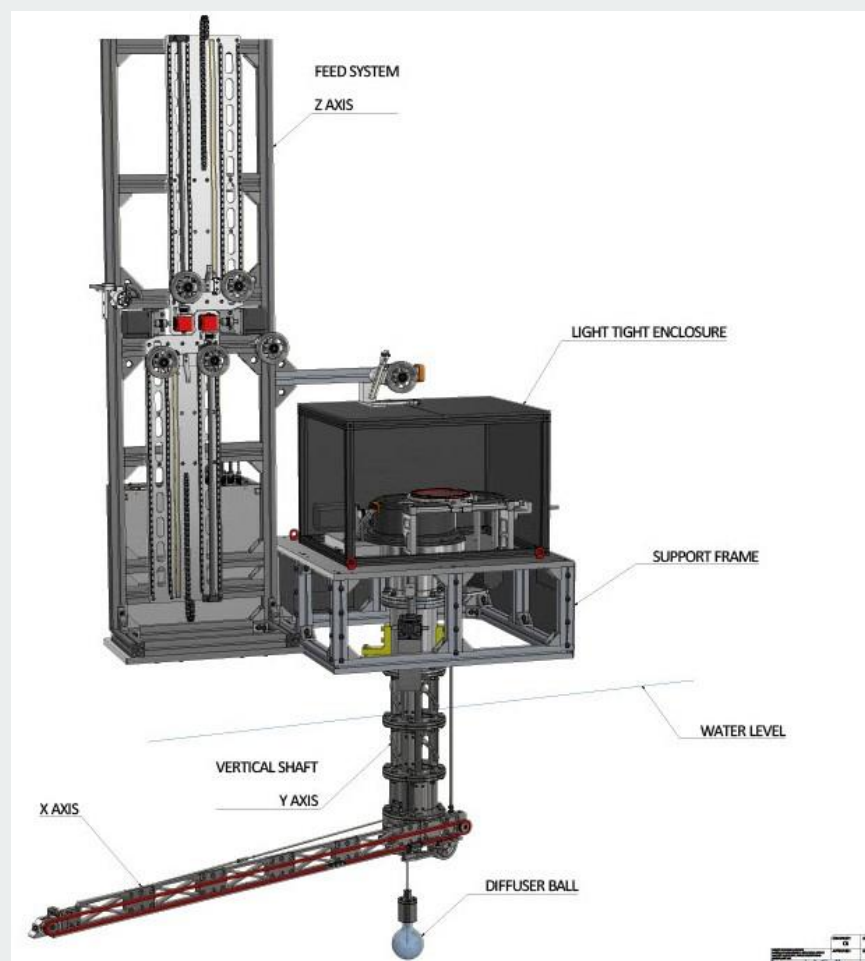
Y Axis – 70% complete

- Vert shaft to be manuf.
- Light tight enclosure to be built / small frame to raise up
- Encoder currently being fitted

Z Axis – 90% complete

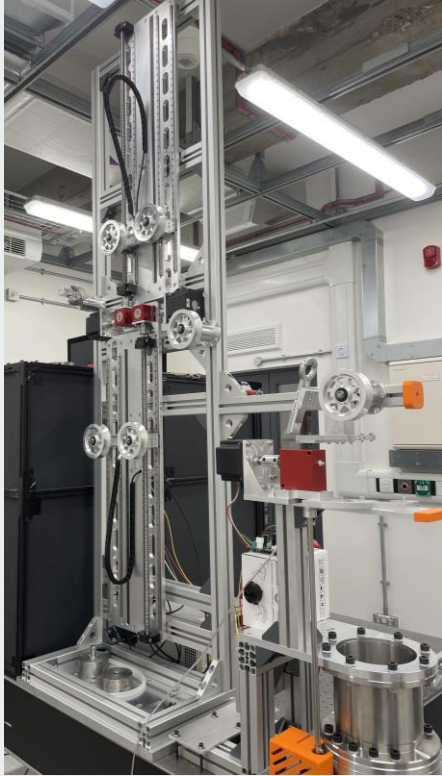
- Elec cabinet to be added
- Door to cover rollers

Software and GUI to be developed by LA / OJ & Alie, Yassine

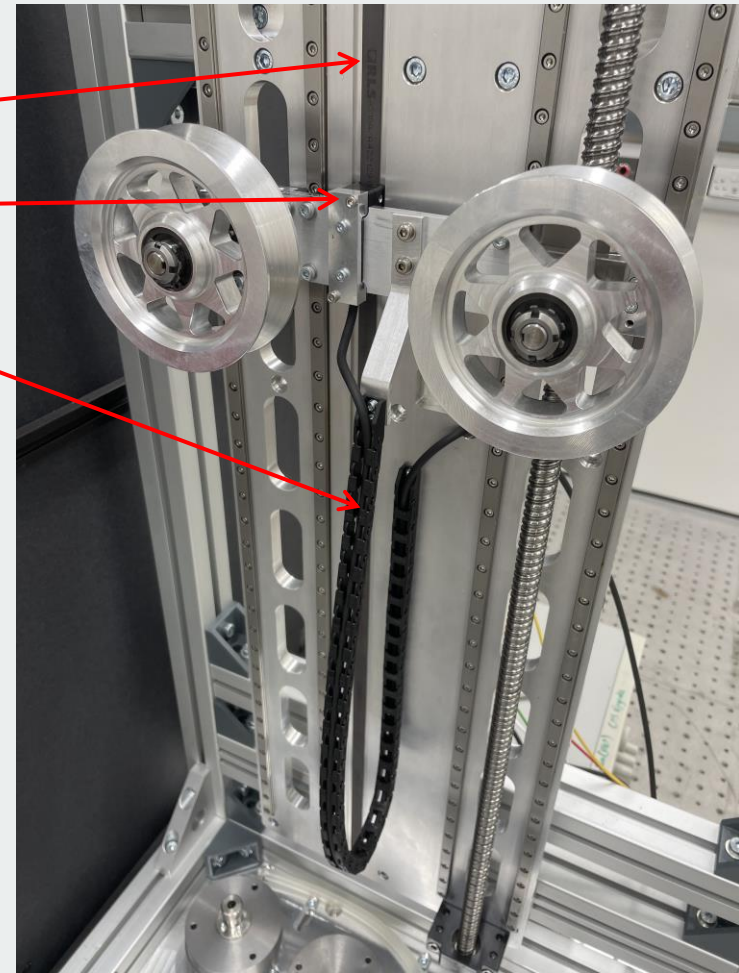


Z Axis

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- Magnetic Strip
- Encoder Read Head
- Cable Chain
- Polycarbonate door to cover moving rollers

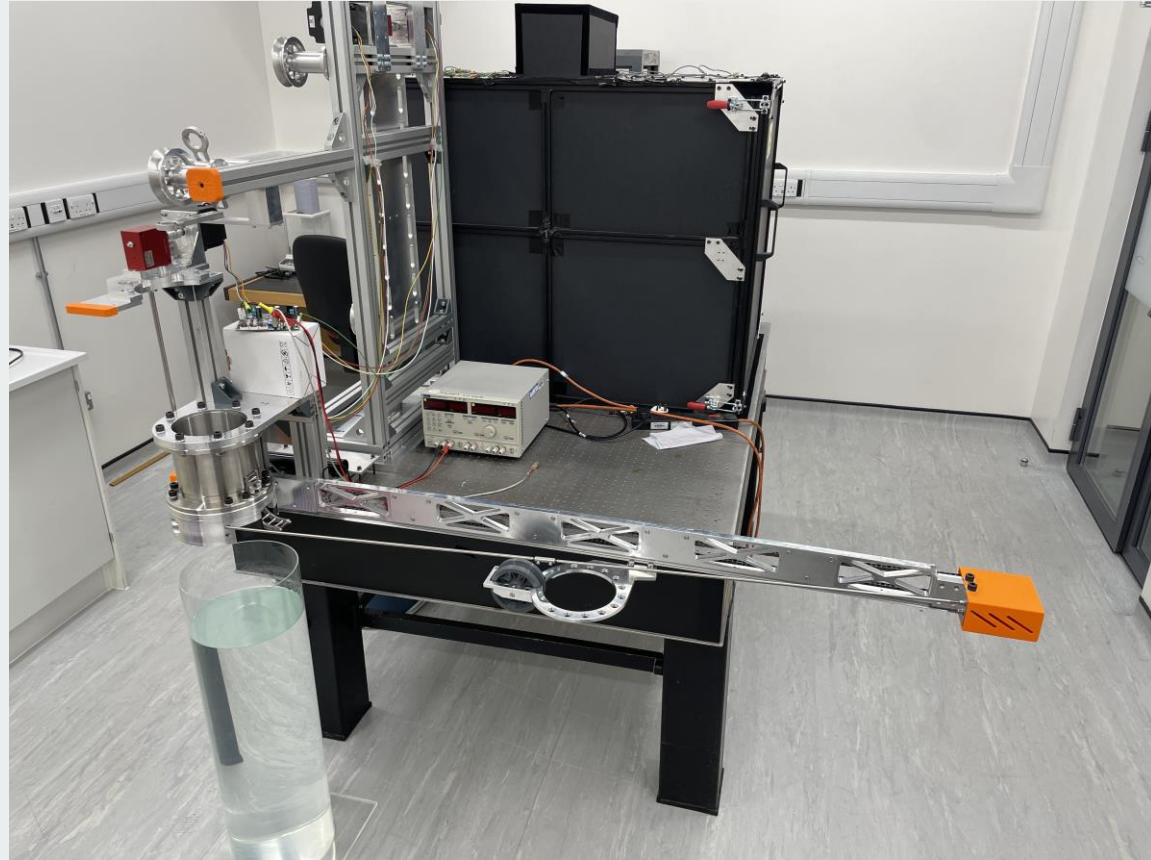


Z Axis

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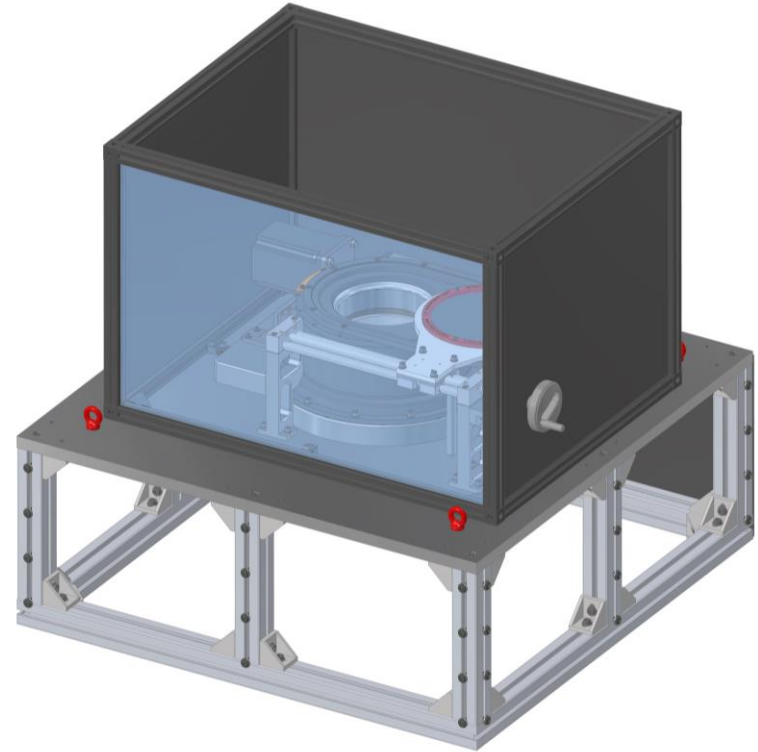
Feed system and arm in lab, with dark box for LB characterization



Y Axis



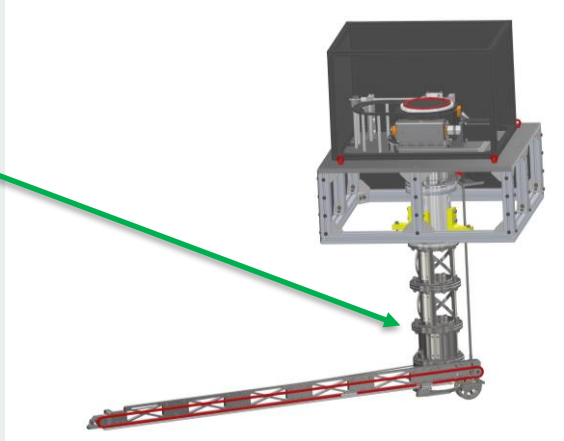
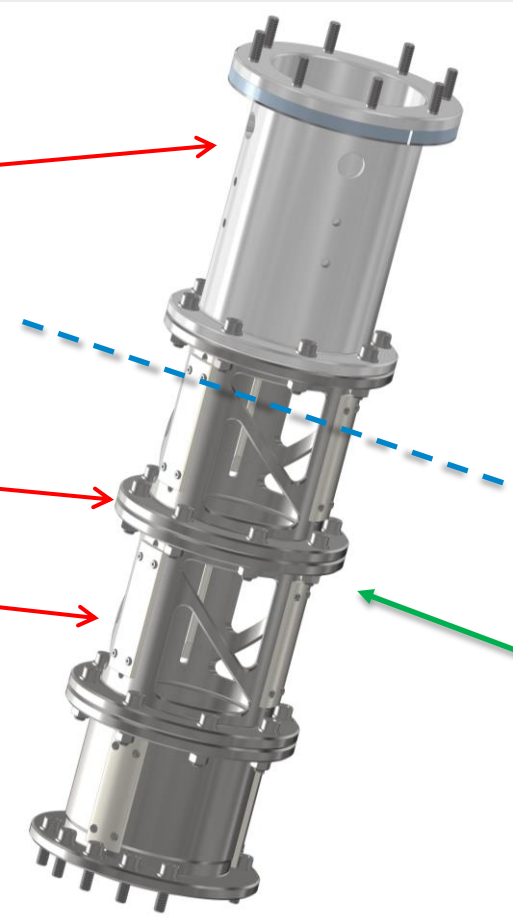
Light tight enclosure to be designed and fitted



Vertical Shaft

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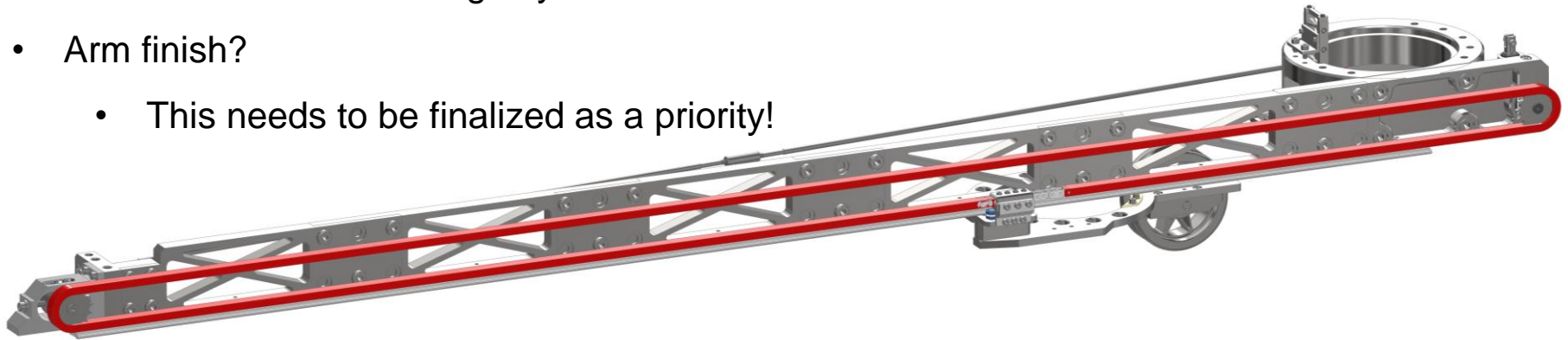
- Aluminum
- Water Line
- 316 SS
- PTFE Inserts



X AXIS

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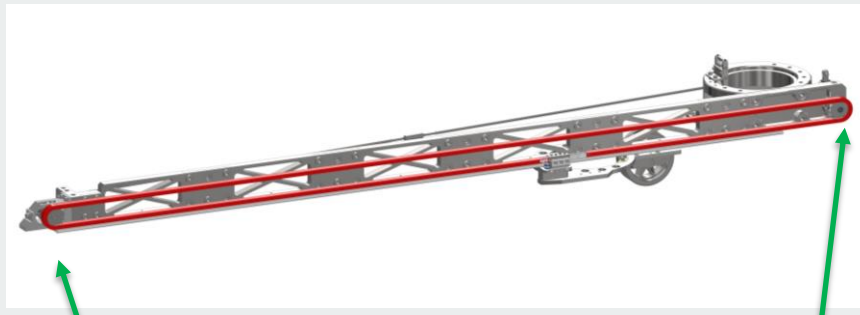
- Bearing type / material
- Chain type
- Gear material
- Umbilical transition through system
- Arm finish?
 - This needs to be finalized as a priority!



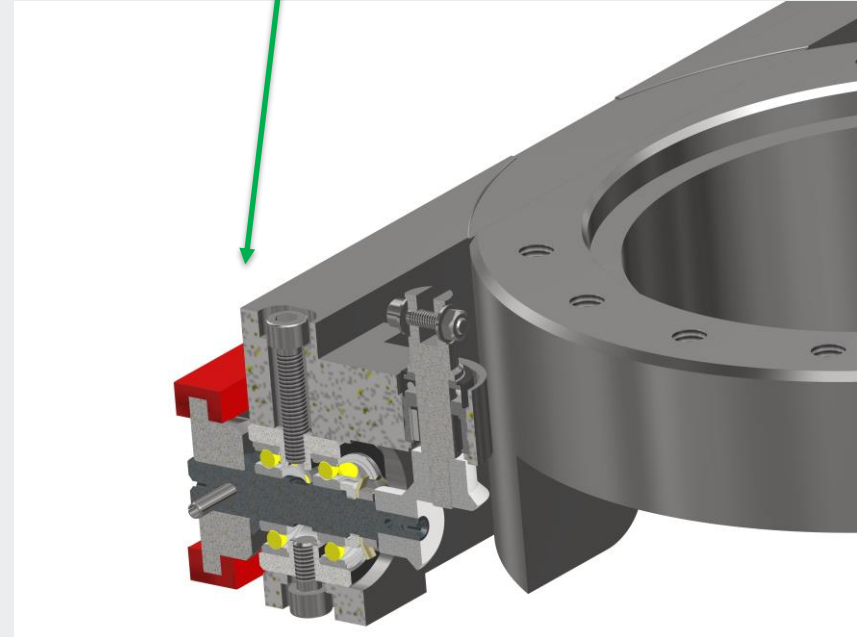
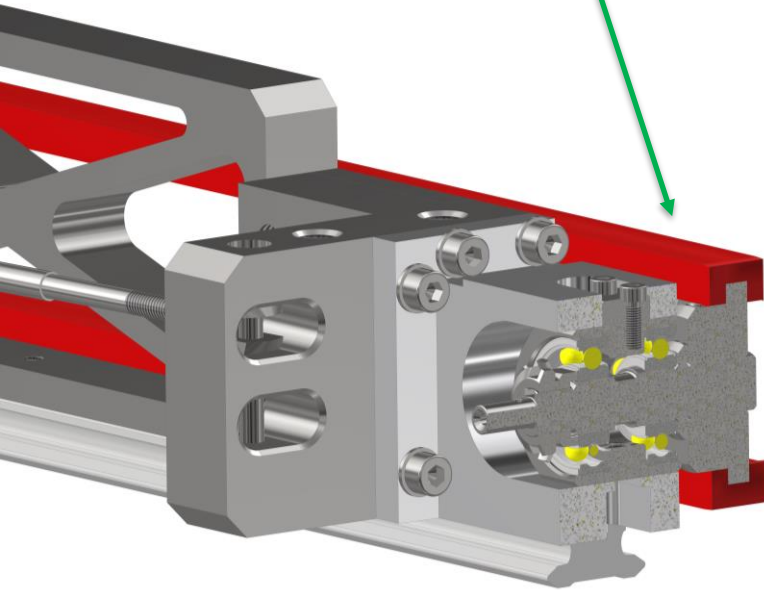
X AXIS

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Standard deep groove ball bearings used on prototype



Bearing housings are 316 SS
Can be re-used



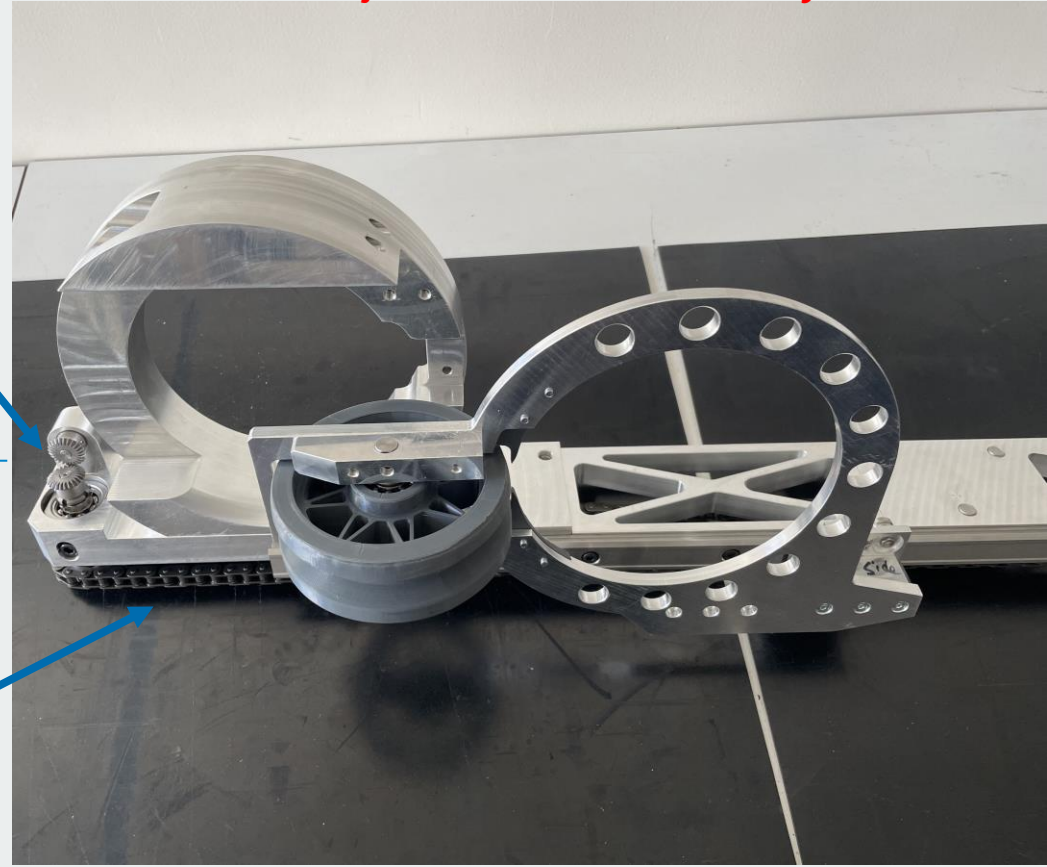
X AXIS

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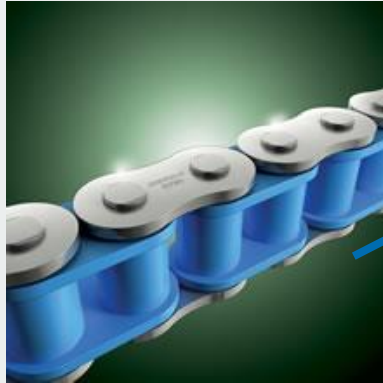
- Bearing Material: SS Deep groove Ball BRG or Polymer Plain Bearing
- Gears Stainless Steel - 316

All Materials subject to soak test analysis



Currently we have a regular steel chain, for WCTE we could:

- A custom made 316 chain
- Polymer / SS Chain



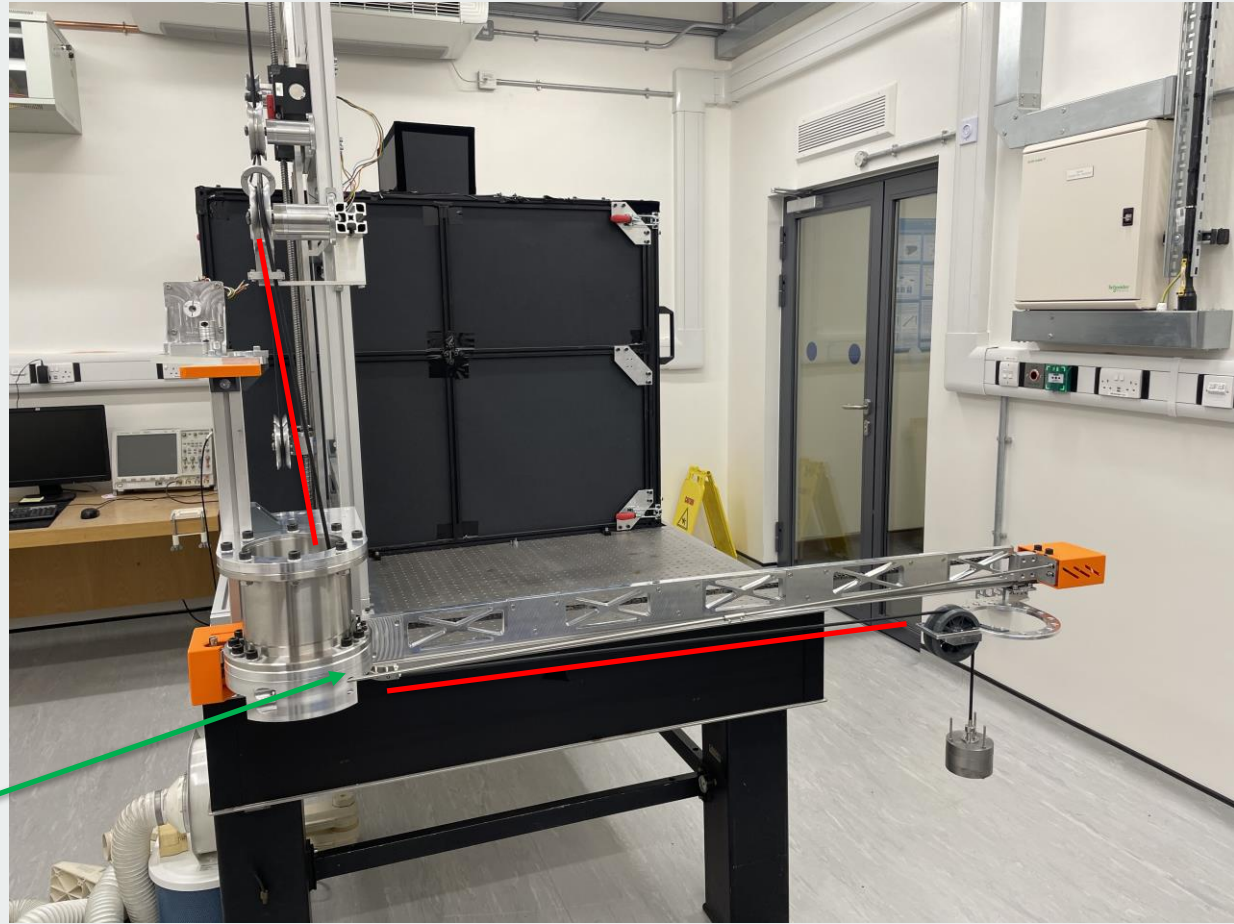
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Transition of umbilical has worked well, the preload on the laser ball @ 2.5 Kg is more than enough.

Possibly go to 2 Kg for second iteration

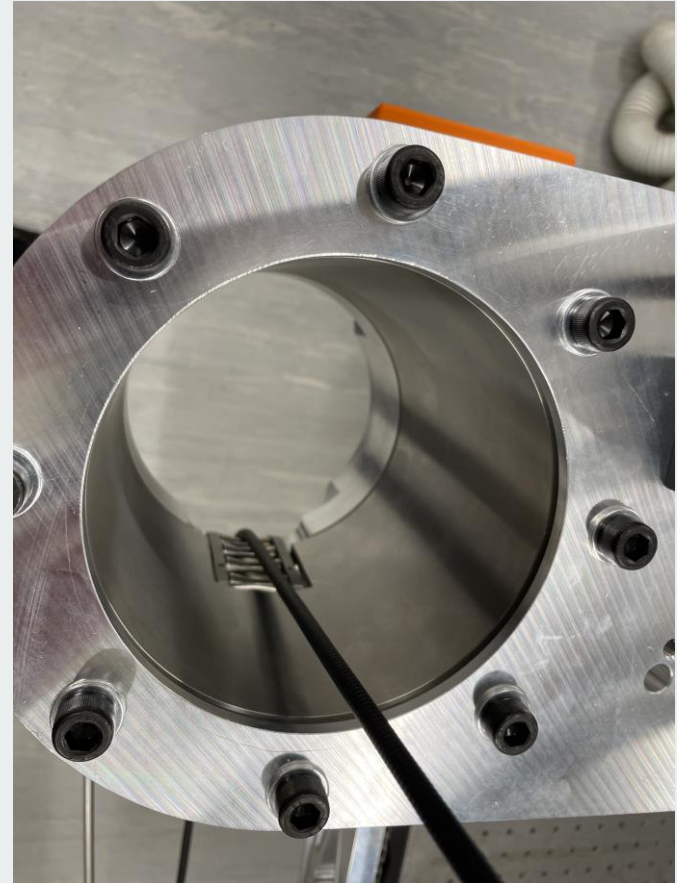
Arm more than capable of loads around around 6 Kg

90 deg bend @ 120R



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- Umbilical transitions through the 90 deg bend along rollers
- Rollers pin on polymer bushing
- Management of umbilical through system works well



Next steps

- Development of Arm design
- Select appropriate materials, bearings and finish
- Continue developing control software
- Design camera system, as shown here alongside laser ball iteration 2

