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MINES**

# Optical Fibers Update

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# OPTICAL FIBERS

- 2 fibers types ordered:

Molex: Optical fiber without FC/PC connectors



MH-GoPower optical fibers	
Core diameter	62.5 um
Cladding diameter	200 um
Coating diameter	230 um
Buffer diameter	500 um
Black Jacket outer diameter	1.5 mm

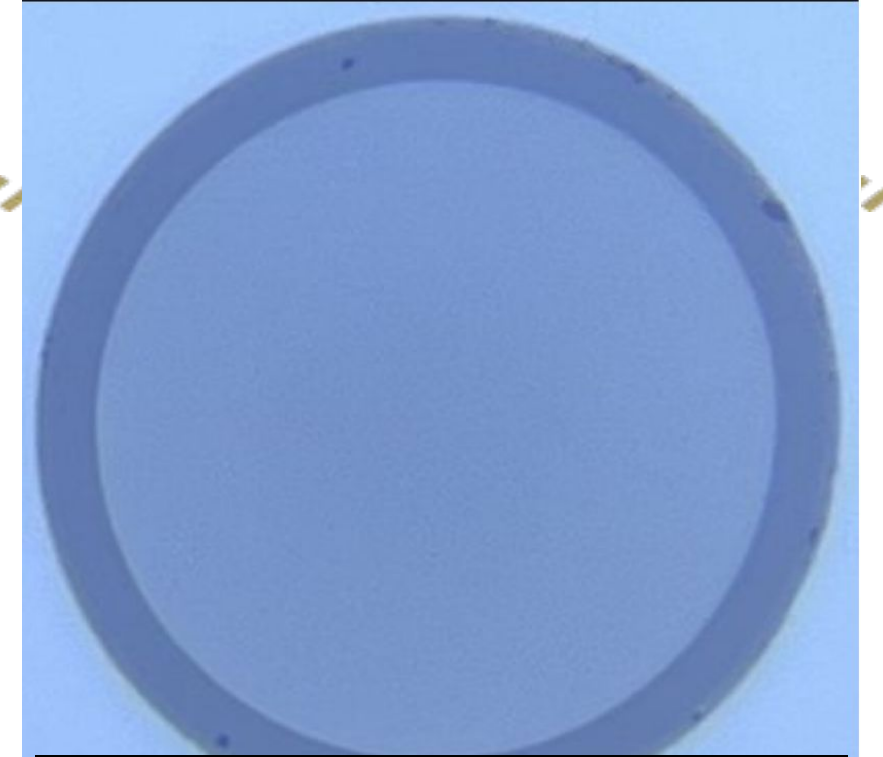
Polymicro Molex optical fibers	
Core diameter	105 um
Cladding diameter	125 um
Polyimide Buffer	140 um
Black Jacket outer diameter	1.5 mm

		Molex (105um core)	GoPower (62.5um core)
Purchase Status		500 meters (delivered last Friday at SDSMT)	8000 meters (To be delivered today)
Optical Fibers	Assembly	By SDSMT	By the company
	Number of fibers	8-16 fibers	200 fibers
	Fiber length	~30m (TBD)	40m per fiber
<b>Assembly Timeline</b>	<b>October (2nd week) - November (3rd week) [Molex]</b>		

# OPTICAL FIBERS - QA/QC

	Moxel (105um core)	GoPower (62.5um core)
General Inspection		- Optical fiber ends - Jacket surface
Evaluation of fiber quality		- Transparency test (using a LED of 810 nm)
Fiber performance with Power		- Power test 1: ~0.6W - Power test 2: ~1.0W
<b>Testing Timeline</b>	<b>November (3rd week) - December (3rd week)</b>	

Fiber of 105 um core

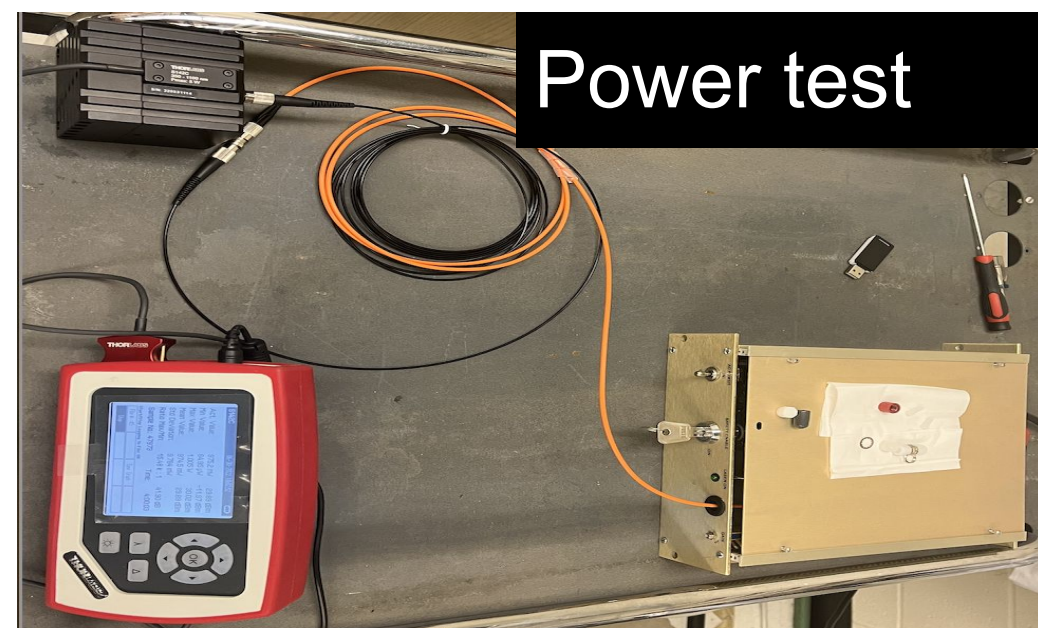


Fiber end inspection



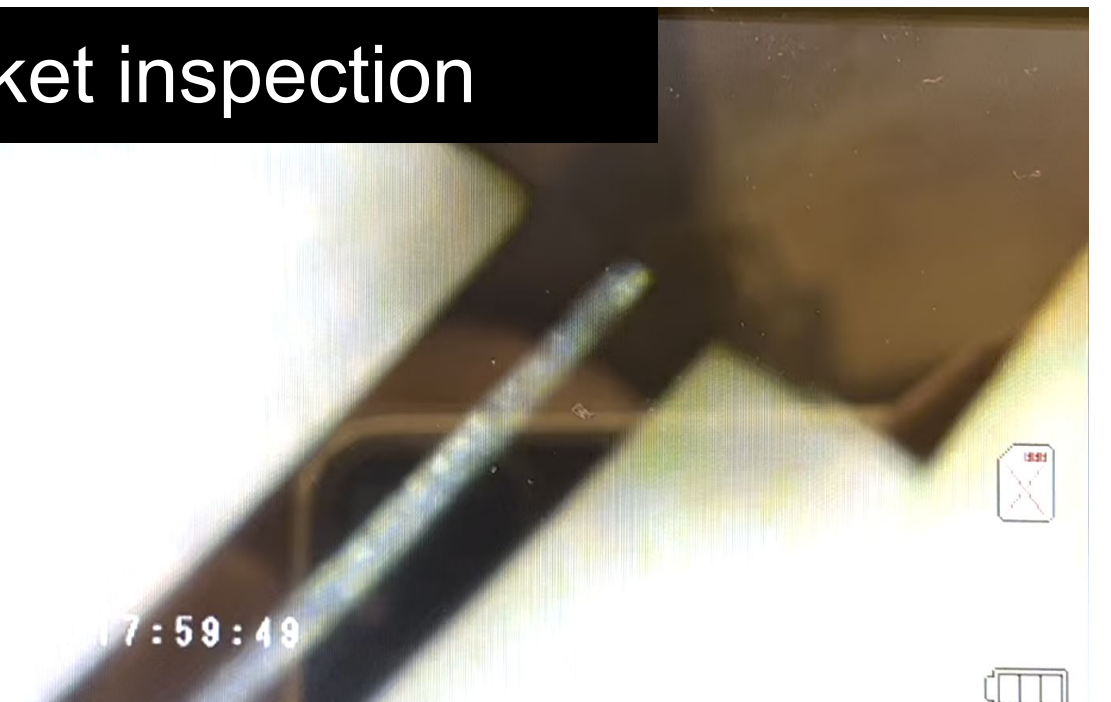
Transparency test

tested fiber



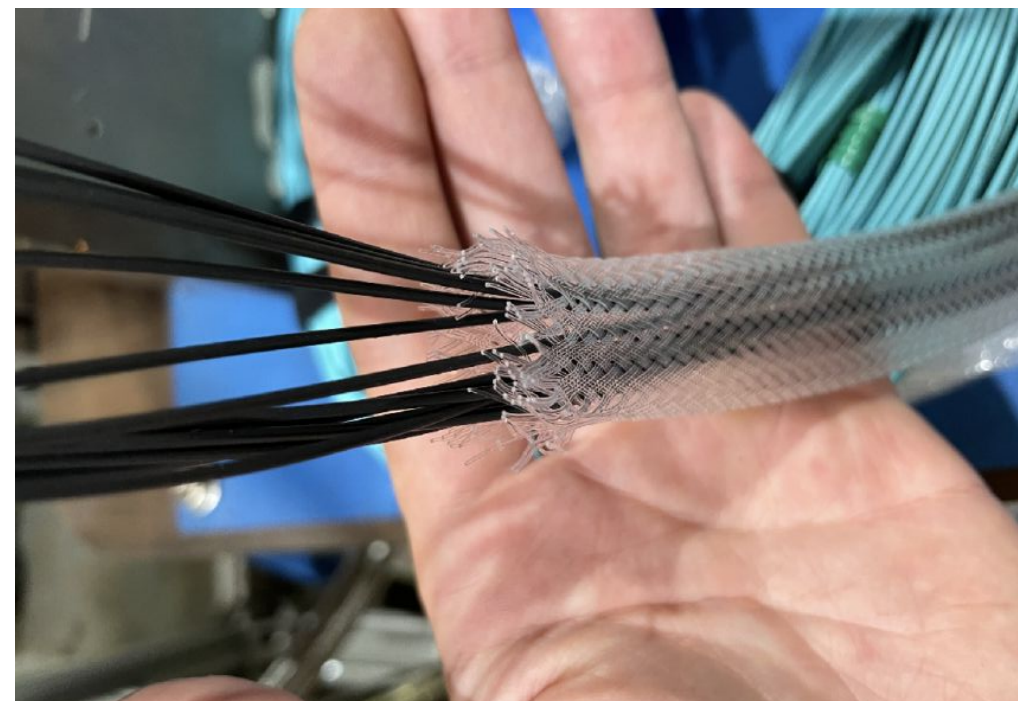
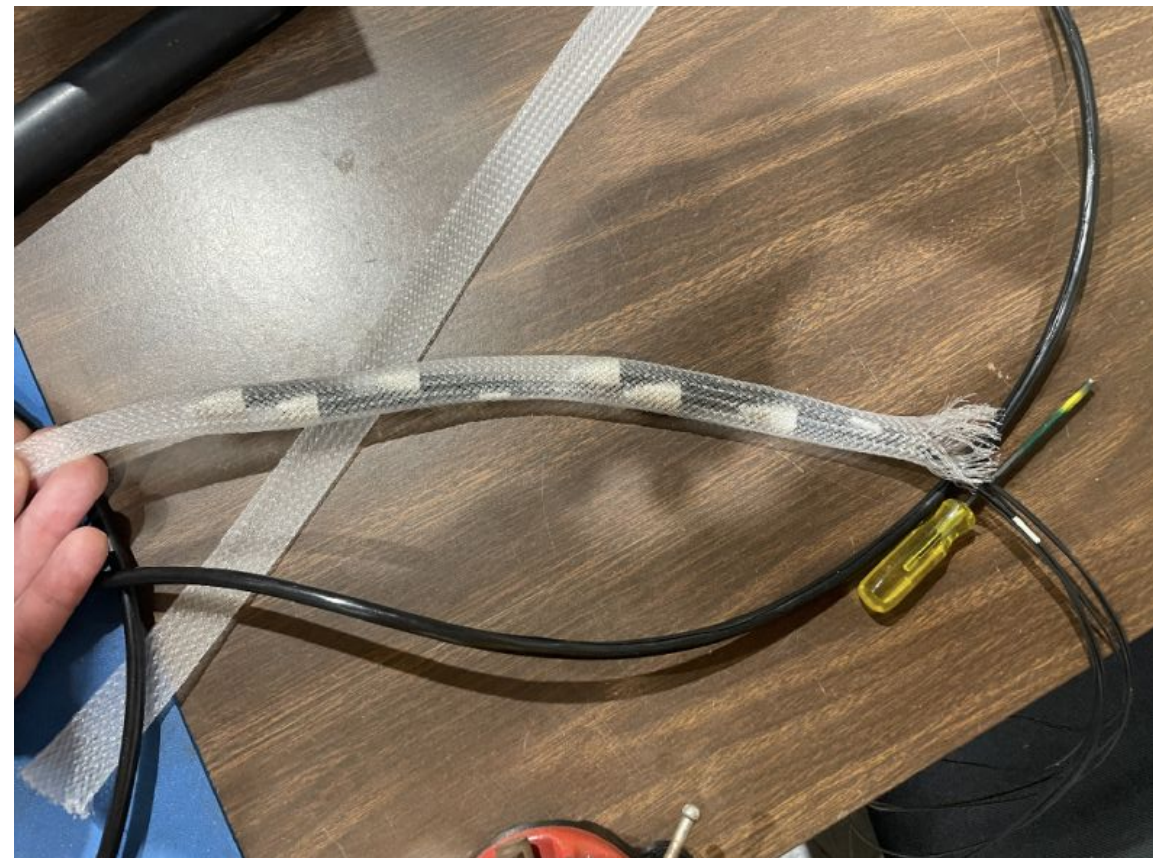
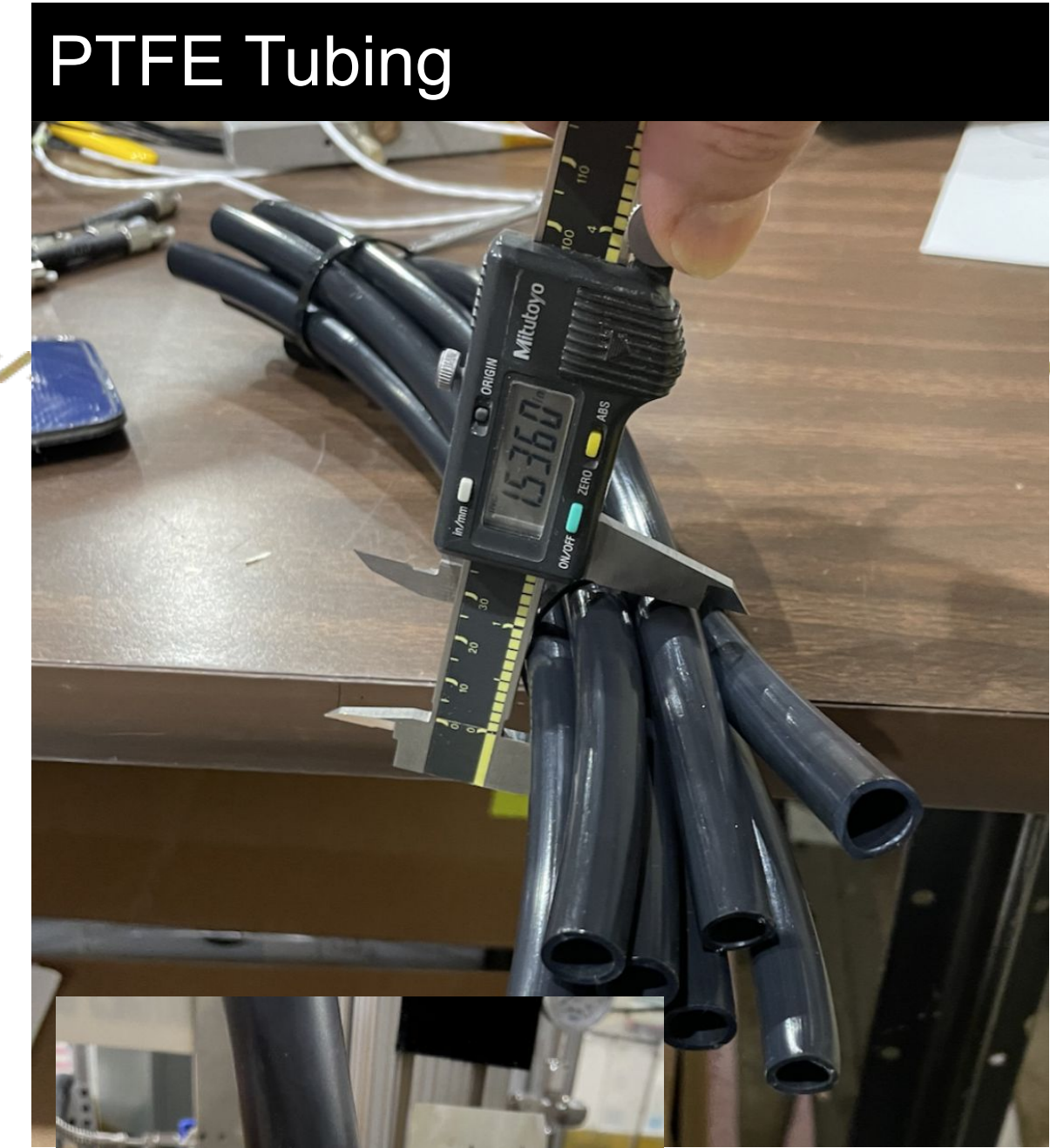
Power test

Jacket inspection



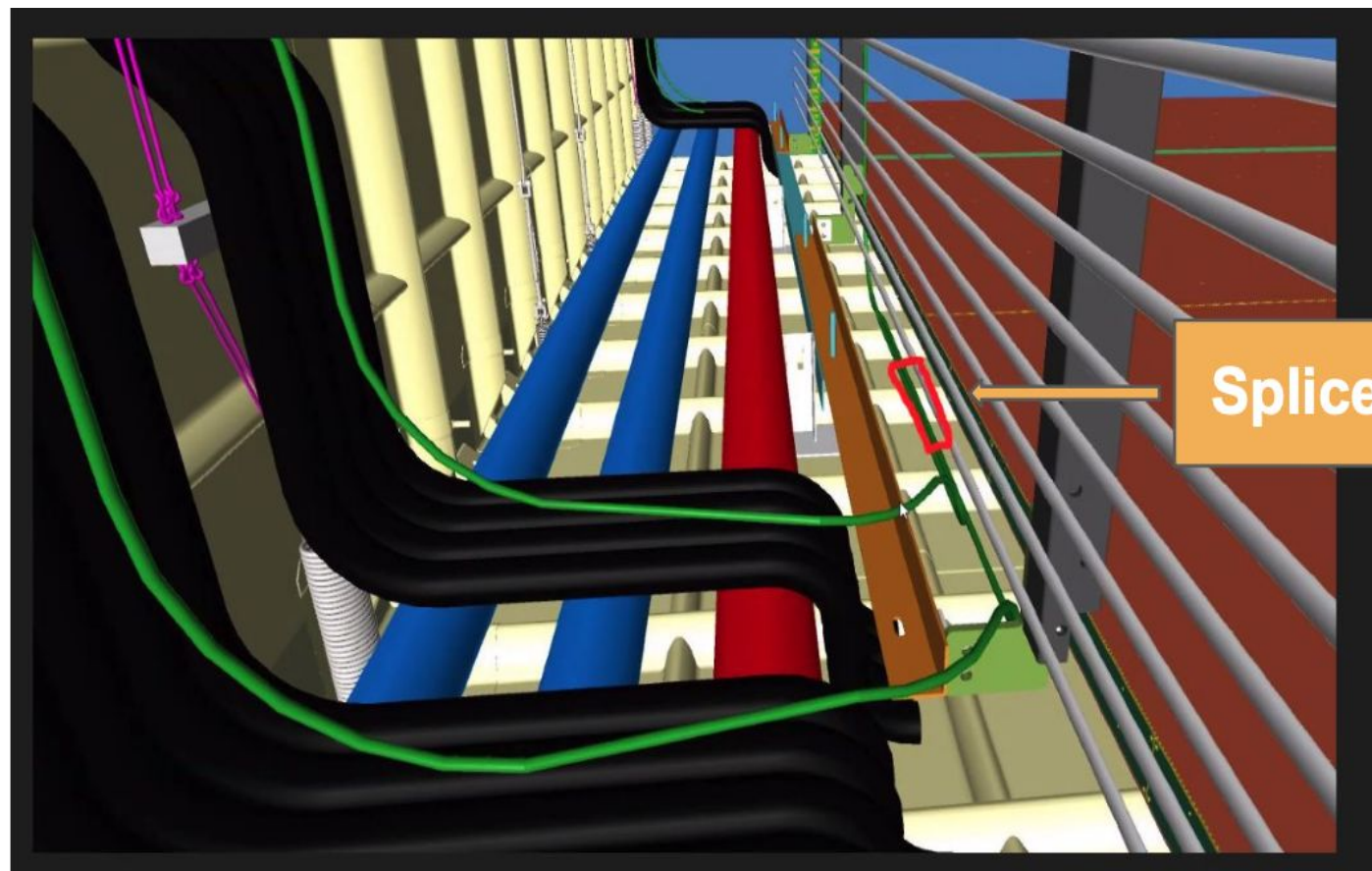
# PROCUREMENT

Tubing (waiting on Fermi procurement)	<b>October (2nd week) - November (2nd week)</b>
Warm-side and Cold-side (pull cord - NOT identified)	
Bundling mesh (not ordered - Identified)	
Splicing Machine (not ordered - Identified)	<b>October (2nd week) - November (4th week)</b>



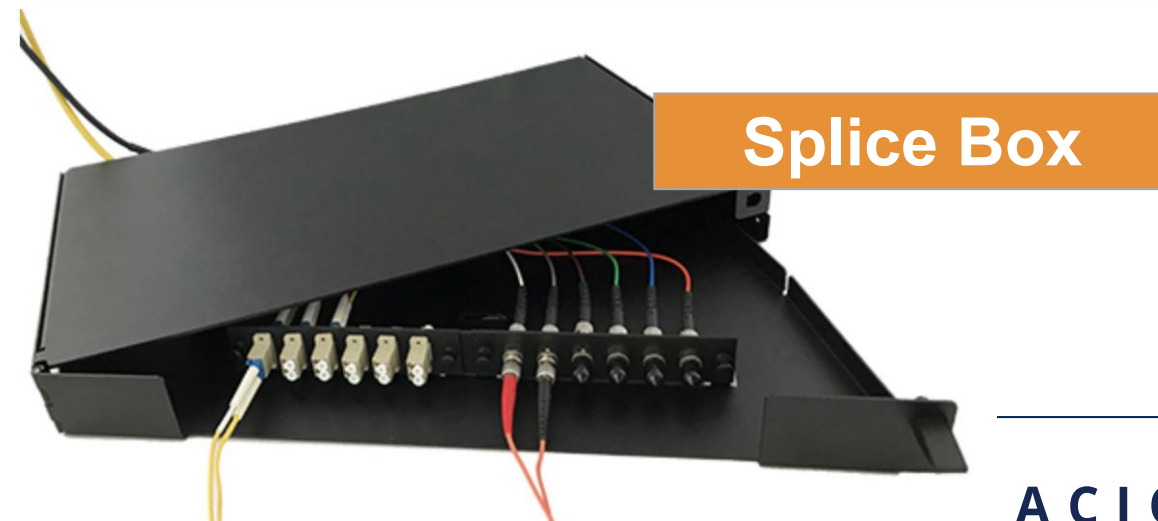
# OPTICAL FIBERS - SHIPPING AND INSTALLATION

Tubing + Mesh + Pull cord at SDSMT (full assembly testing)	November (4th week) - December (2nd week)
Shipping (fibers, tubing, mesh, splice machine, etc)	December (3rd week) - January (1st/2nd week)
Installation at CERN	January (3rd/4th week) - February (2nd/3rd week)



Splice box

	Molex (105um core)	GoPower (62.5um core)
No. of fibers	8 fibers	56 fibers
Length per fiber	~ 30m (TBD)	40m
	Splice on the cryostat floor (ongoing R&D)	Pull up all the way to feedthrough (ongoing R&D)
Total fibers to be delivered = 64 + spares		



Splice Box



# BACKUP



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PTFE  $\frac{3}{8}$ " ID  $\frac{1}{2}$ " OD black tubing order

- Enforces min bending of 10cm
- Procedure is slit and install 8 fibers

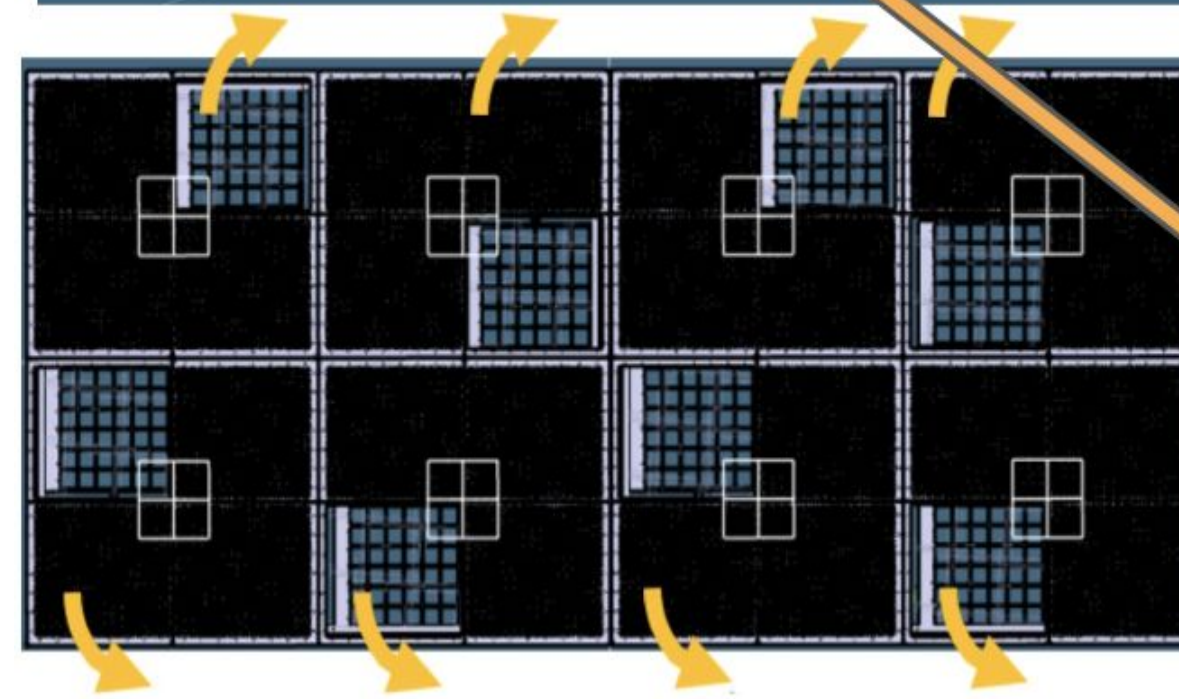
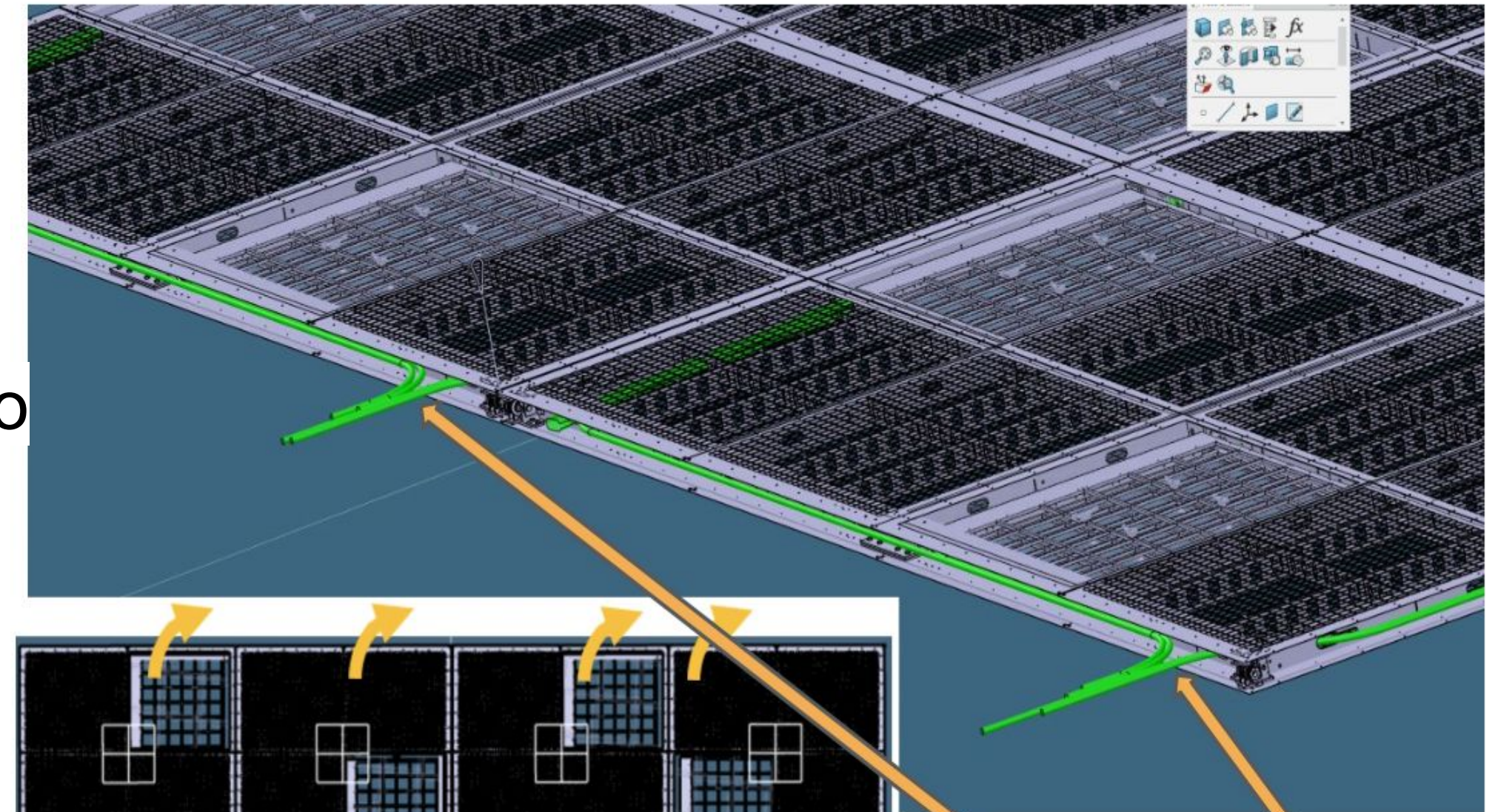
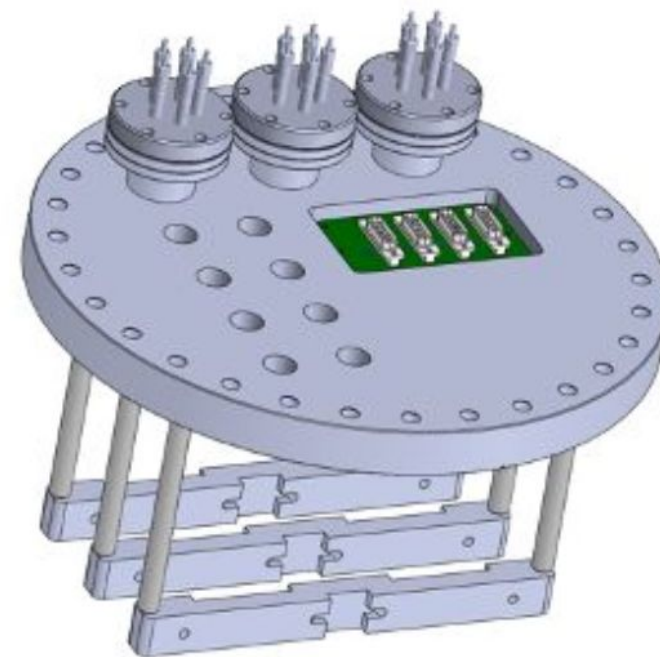
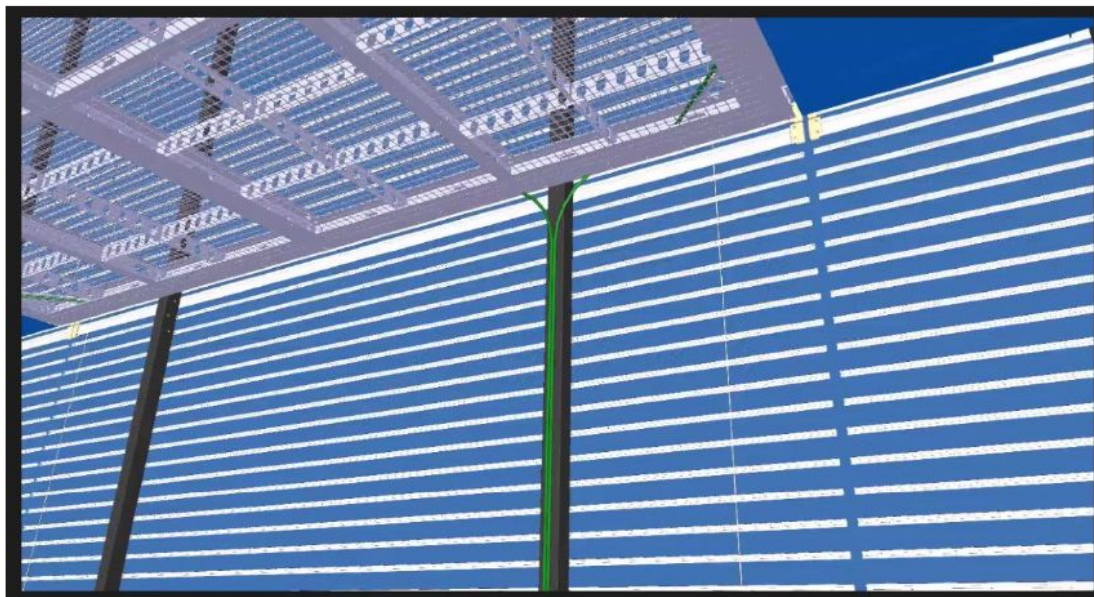


From: Ryan Rivera



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- 8 fibers per XA (2 PoF + 2 SoF + 4 spare)
- 8 fibers per 3/4" feedthrough
- 8 fibers per PTFE tube
- Fiber spliced on floor **or** pulled all the way to feedthrough



4x tubes

From: Ryan Rivera