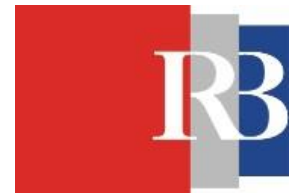


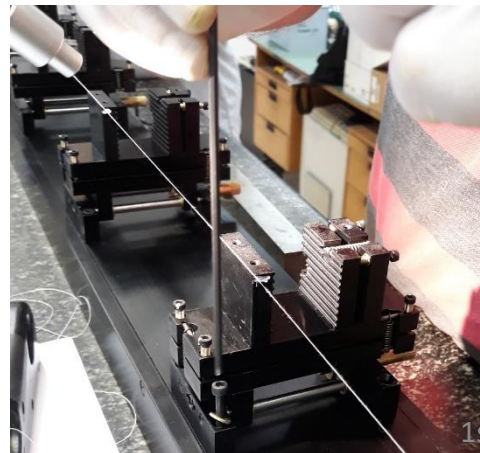
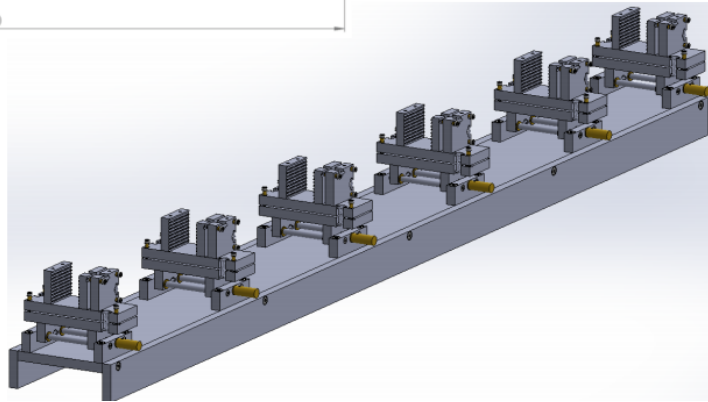
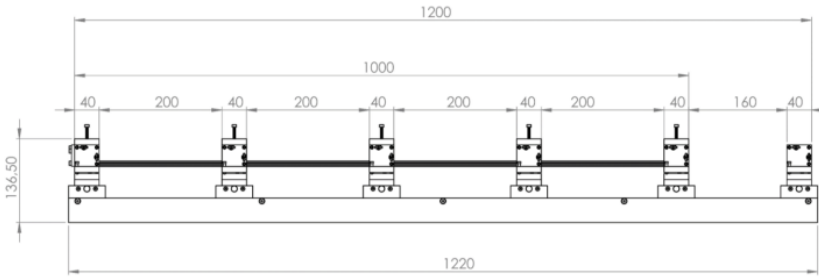
Status of the Assembly station and Bucatini Prototype for next Beam Test

Aneliya , Valery, Željko et al.
Ruder Boskovic Institute, Zagreb, Croatia

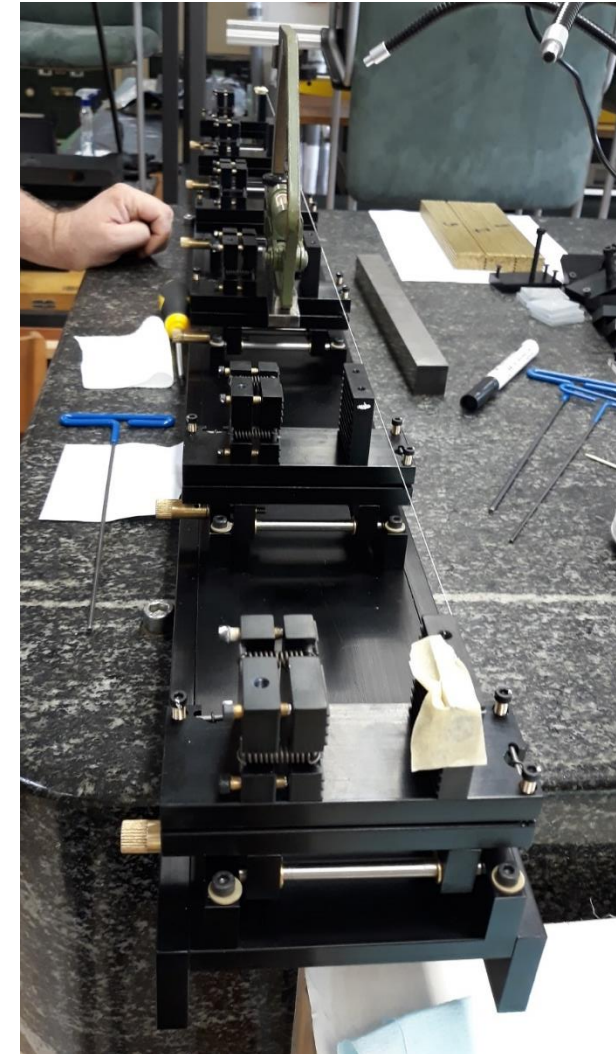


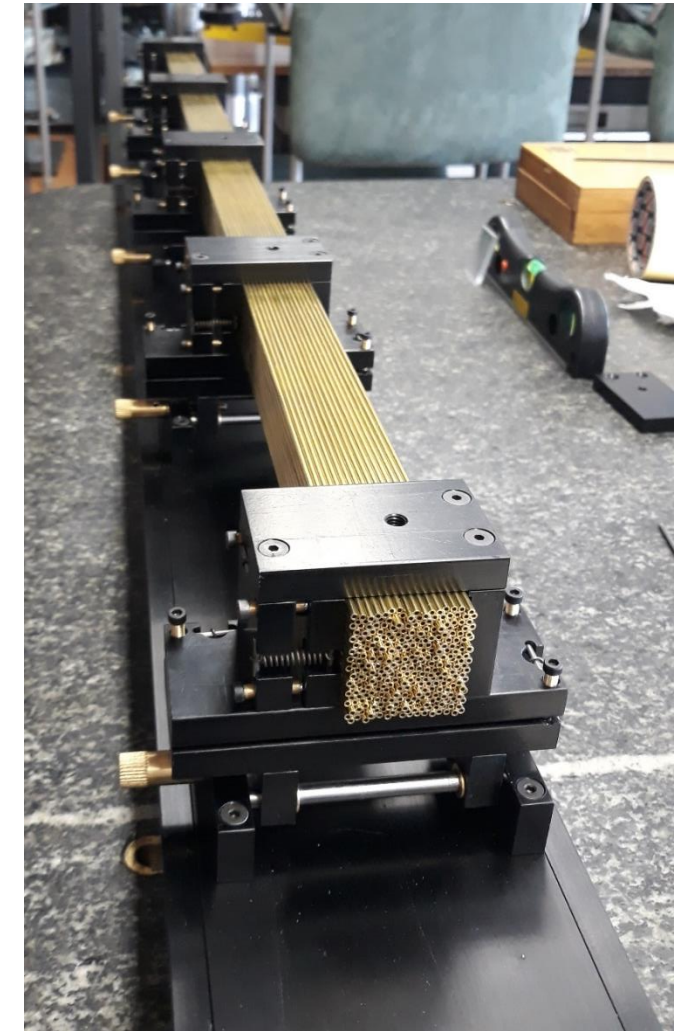
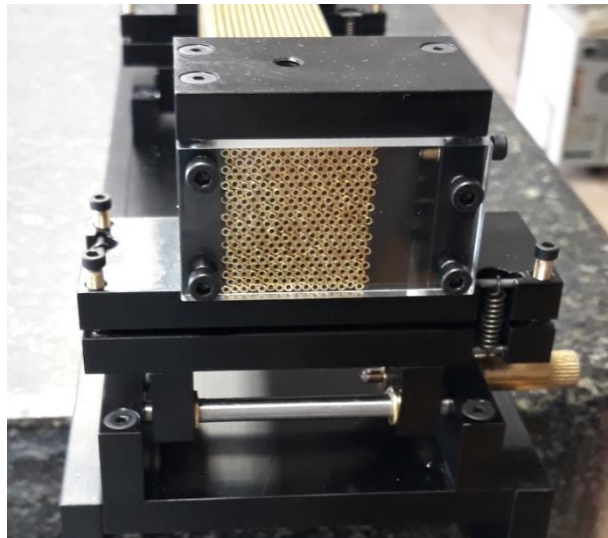
1st July 2020

Aligning all elements of the 6 gluing stations

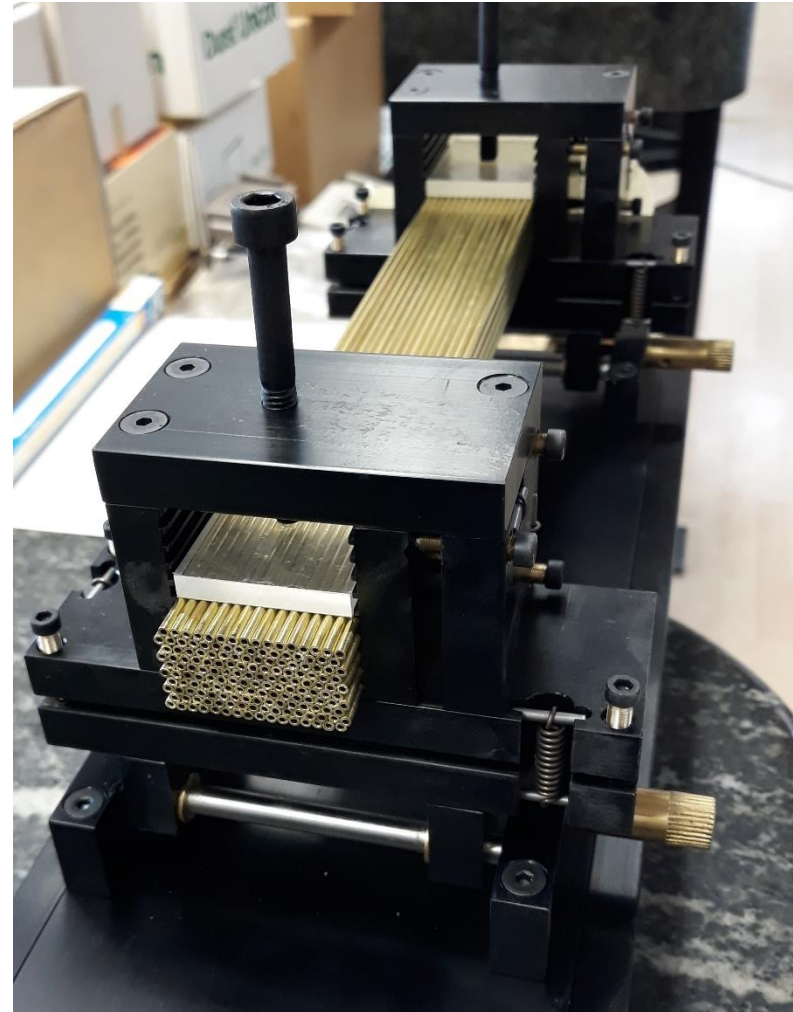


1st July 2020





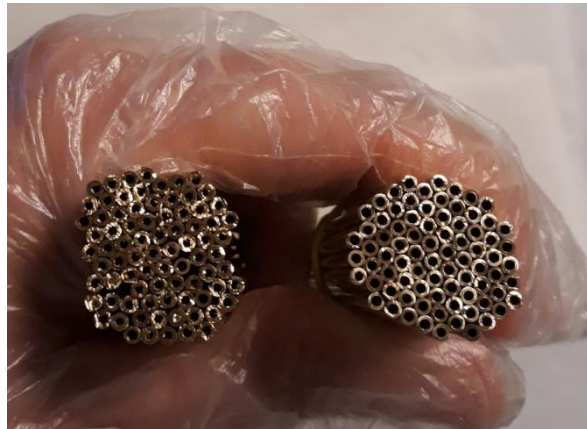
1st July 2020



Three different gluing methods were used in the assembly of the 3 Dummies

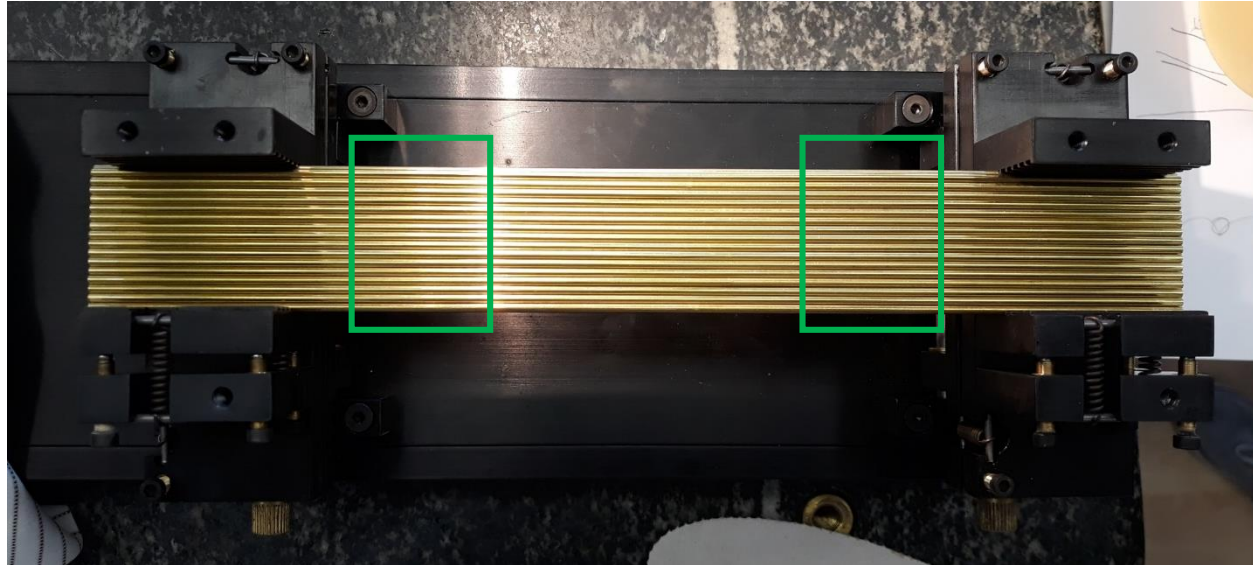
The same 2 Gluing stations were used for this test

Dry run was performed before gluing each Dummy



Cleaning the burr from the edges with files and sandpaper

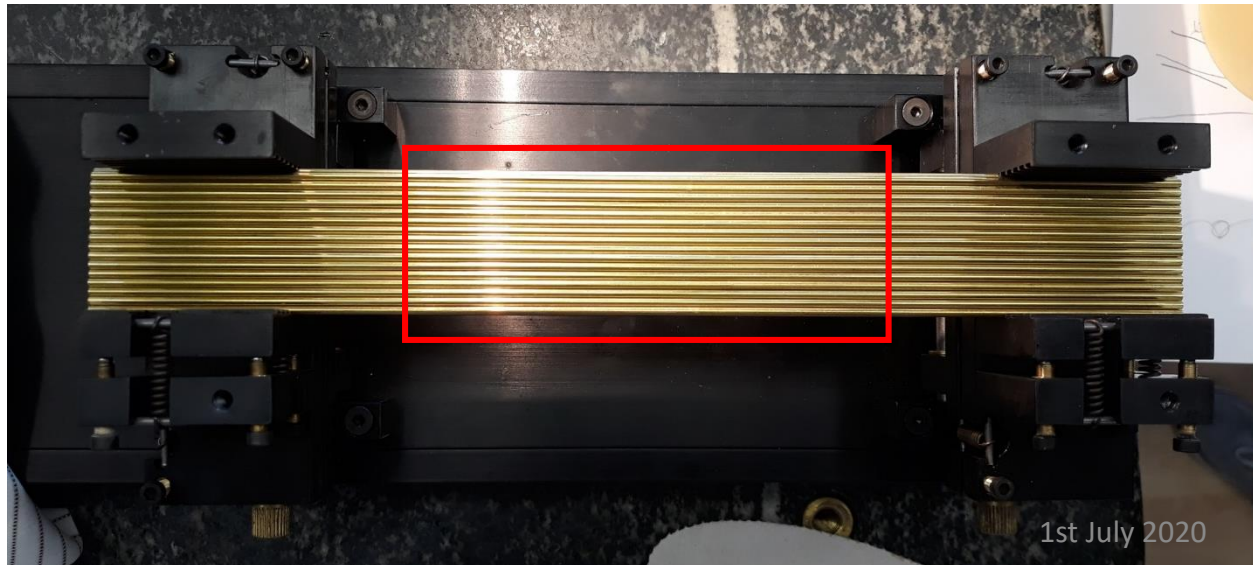




Method 1 – Glue was applied only in the green areas and left to cure for about 22h

The glue was applied with a plastic spatula

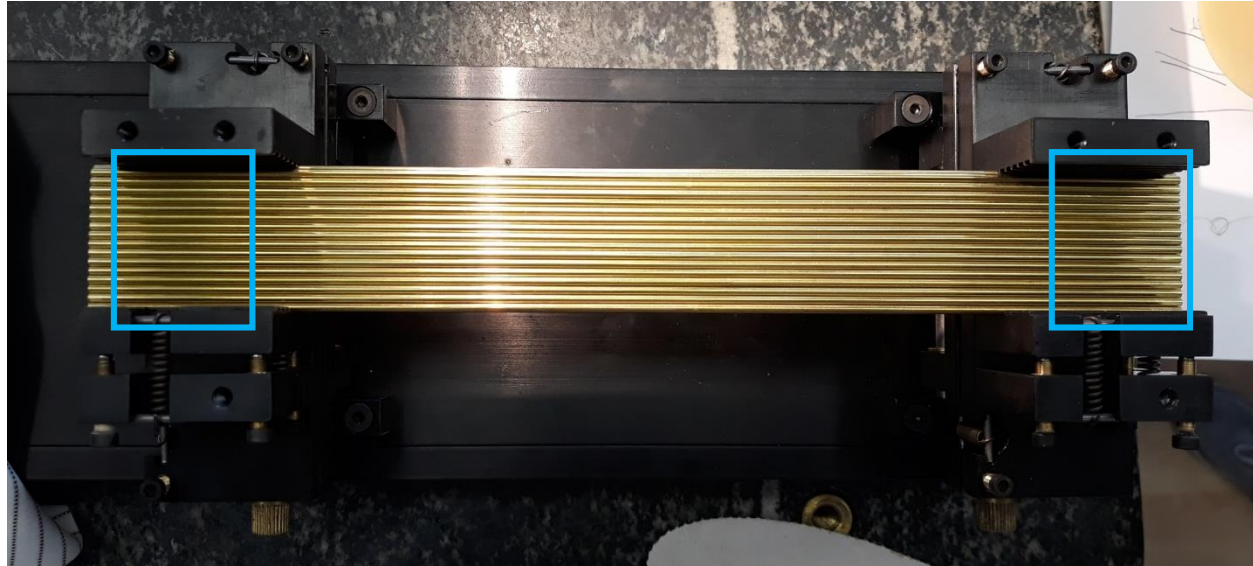
RESULT: 1st Dummy had a small bend due to the leveling of the 2 gluing stations. Corrected for the assembly of the 2nd Dummy



Method 2 – Glue was applied only in the red area and left to cure for about 23h

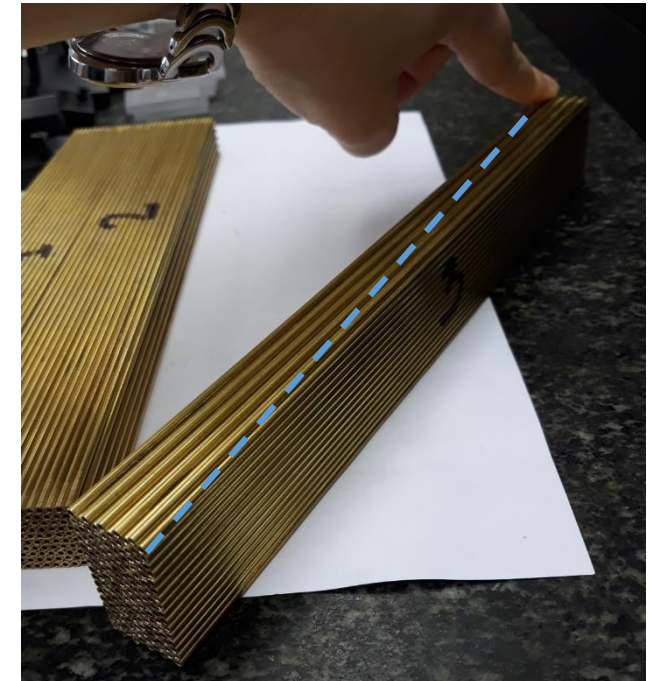
The glue was applied with a plastic spatula

RESULT: 2nd Dummy had expanded in all directions in the central area => **It was decided that for the 3rd Dummy the glue will be applied inside the gluing stations**



Method 3 – Glue was applied only in the blue areas and left to cure for 5 days due to national holidays

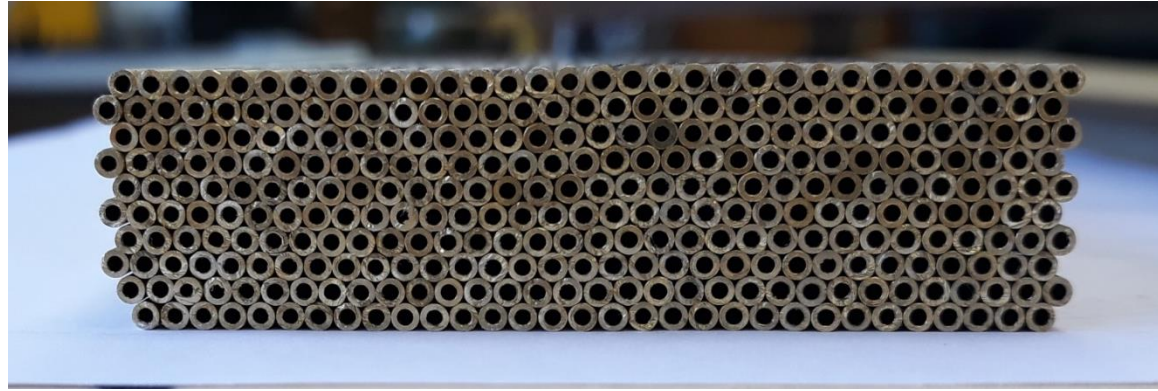
The glue was mixed in a small plastic plate and applied with a wooden toothpick between the tubes



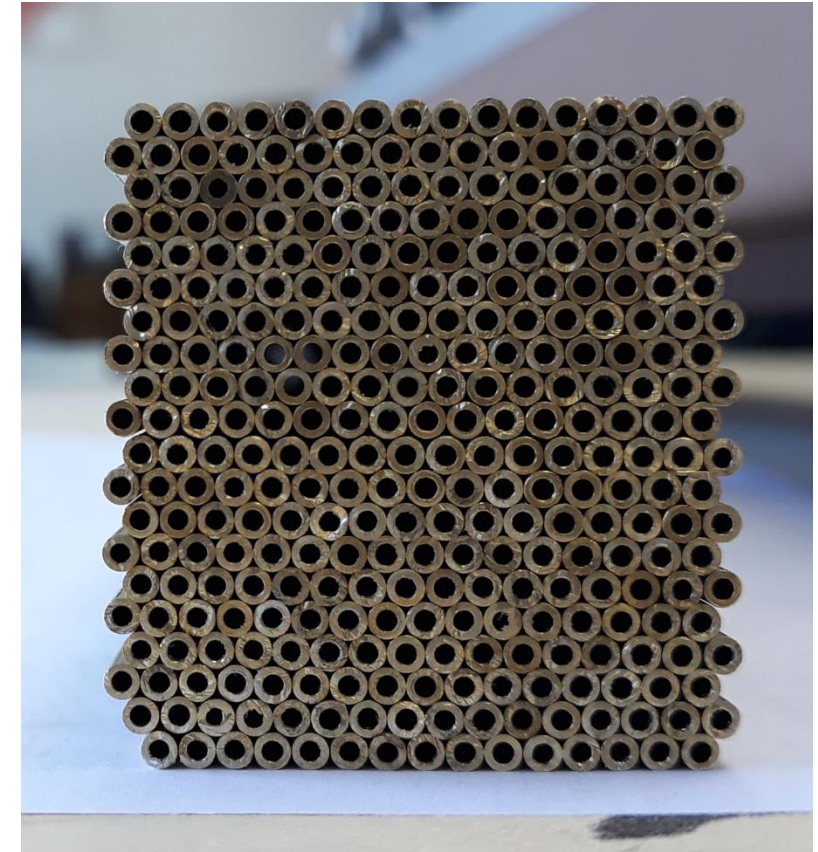
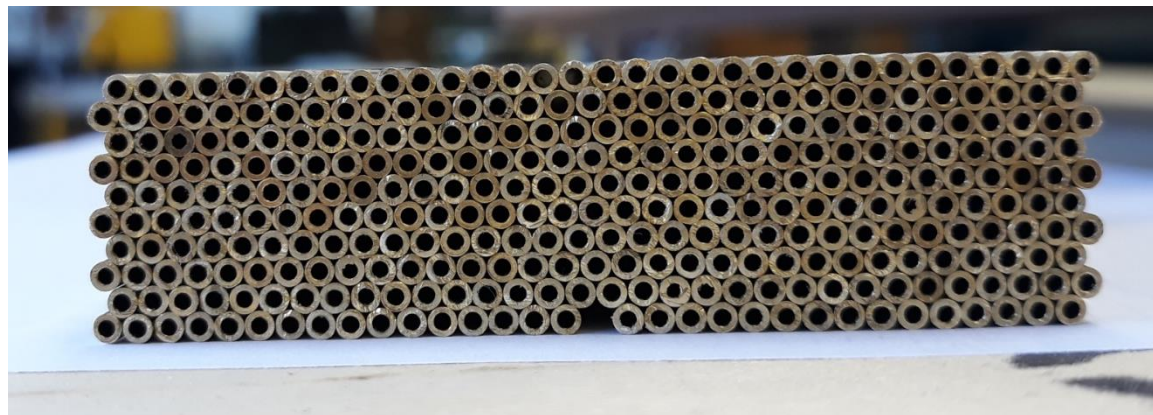
RESULT: 3rd Dummy had a small longitudinal (long diagonal) twist, possibly caused by twist in the position of the 2 gluing stations. Corrected on June 15th

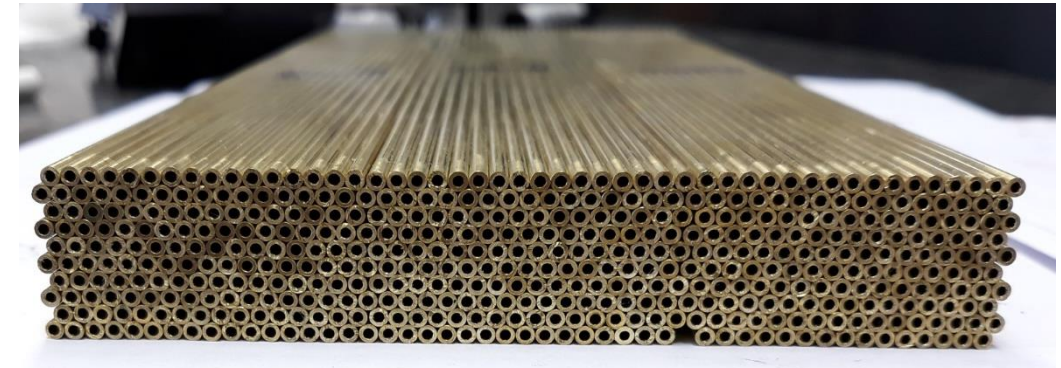
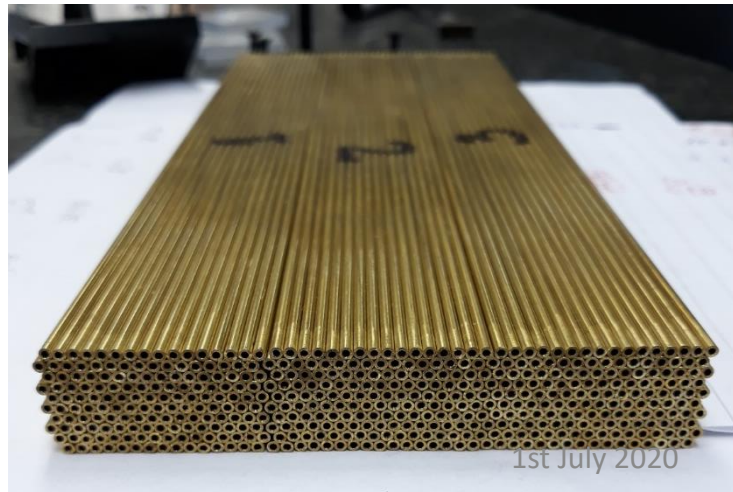
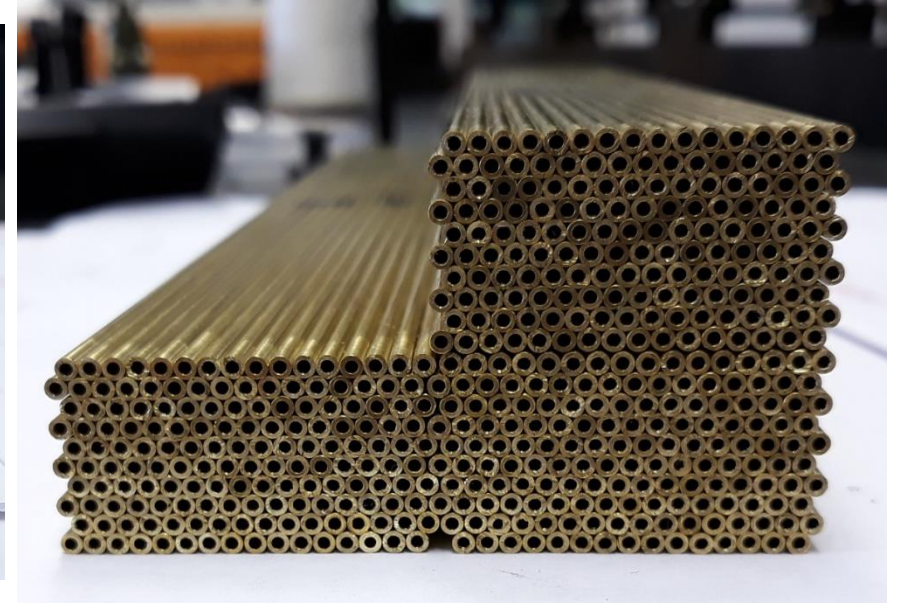
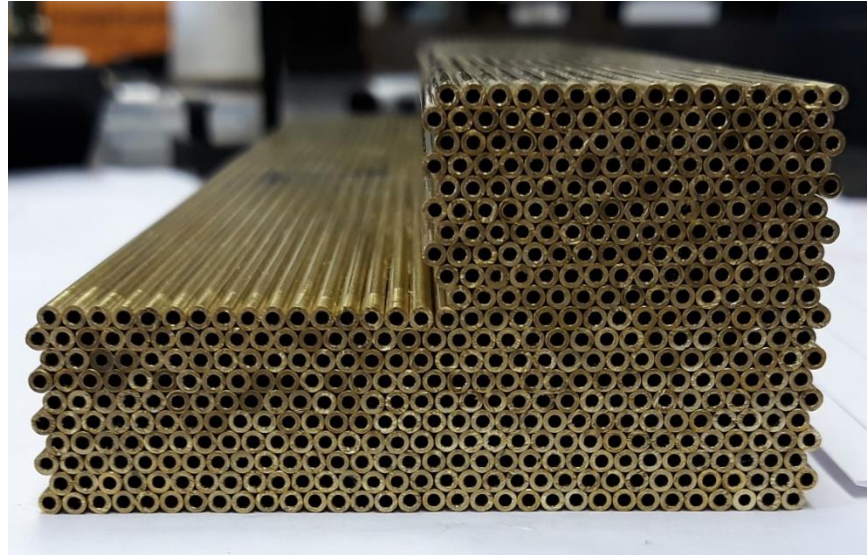
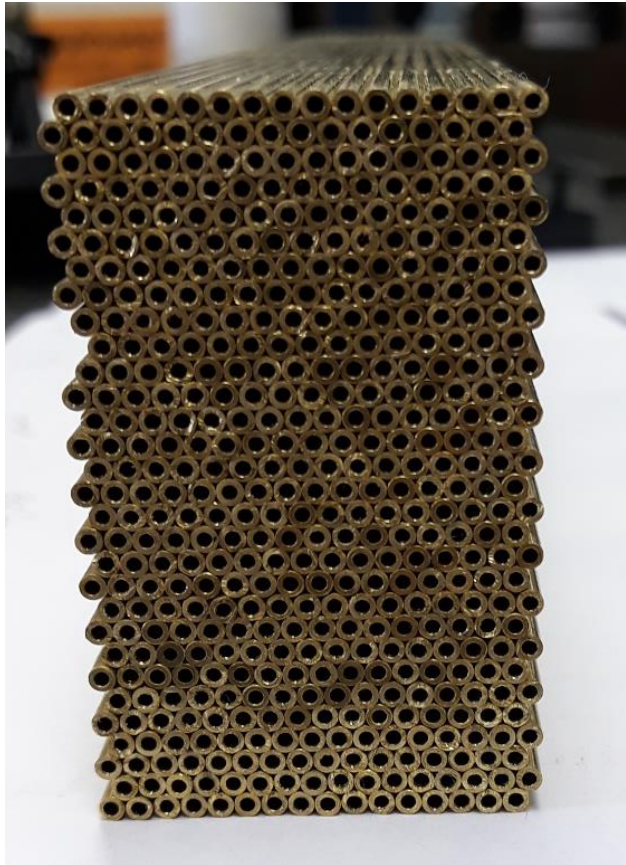
The 3rd Method prove to be the best of the three therefore a 1m long 16 x 10 Dummy was assembled on 16th of June. The glue was mixed by the Araldite mixer and applied with a hypodermic needle between the tubes



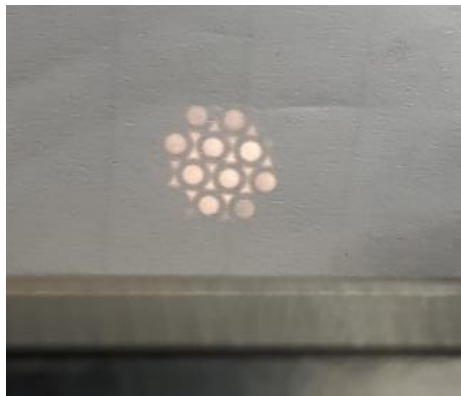
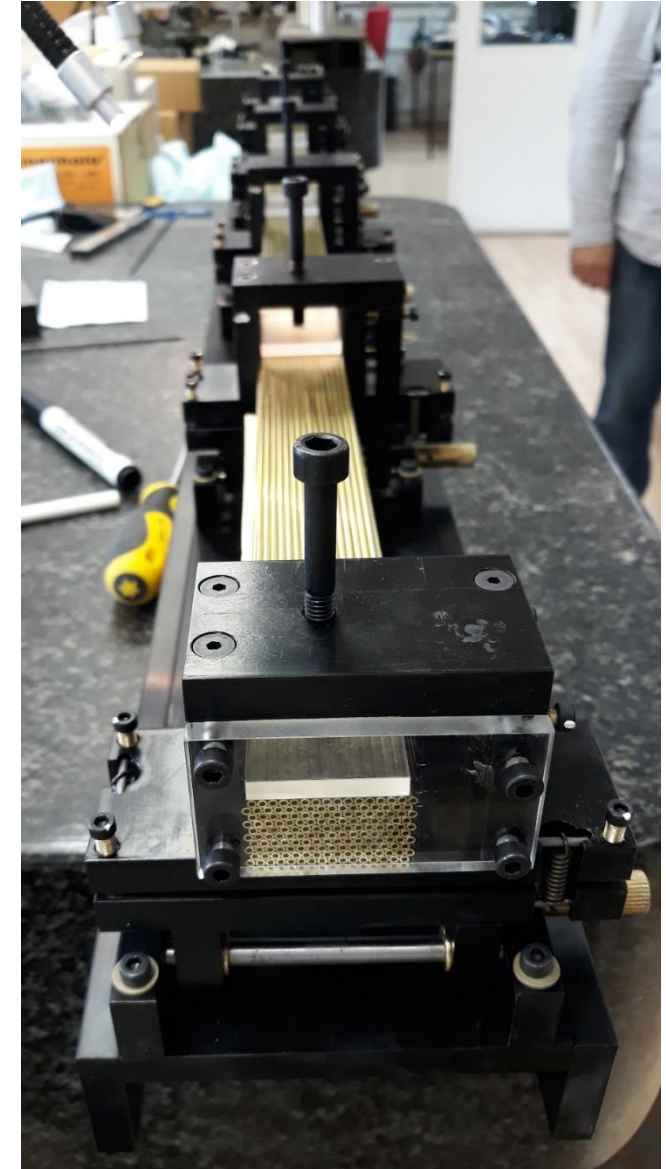
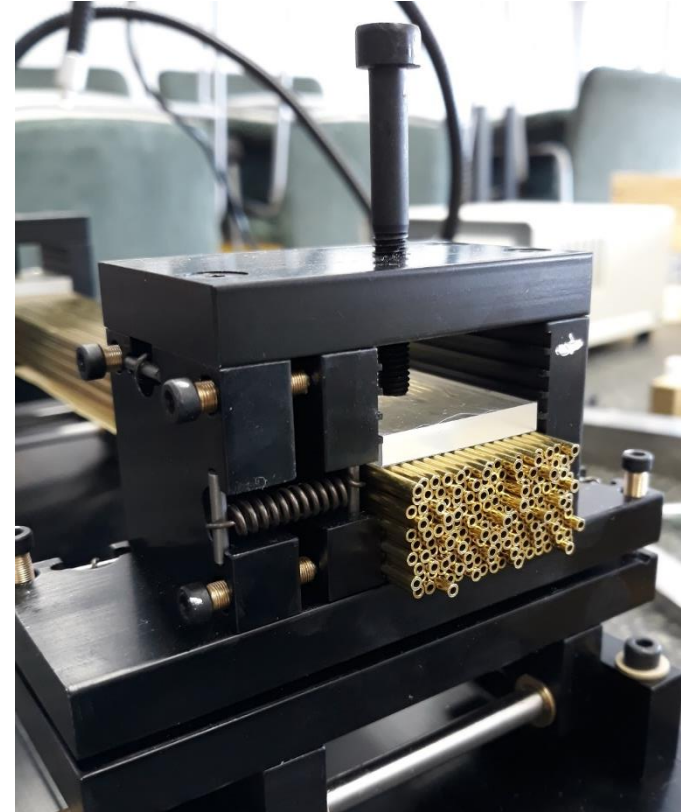
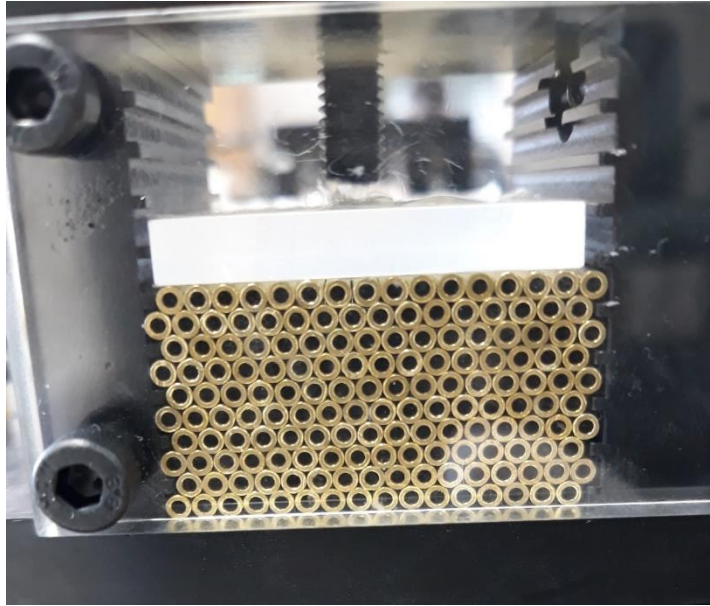


1 tube was removed by accident





1m long Dummies(?) 16 x 10 tubes June 15th – 19th



Before applying the glue

After applying the glue

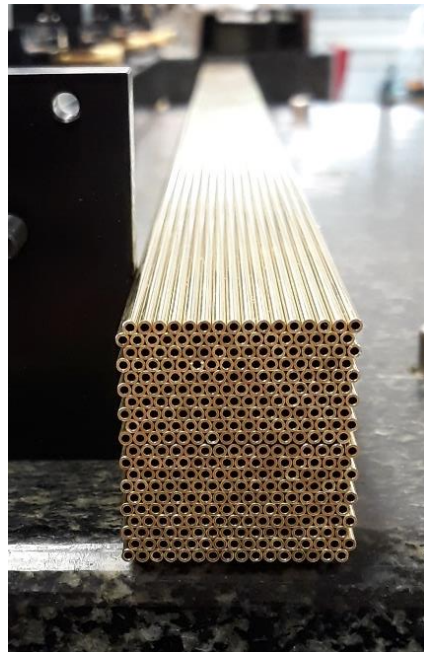
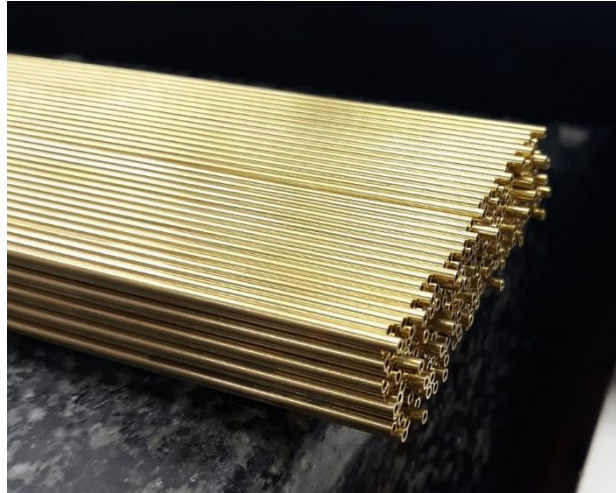
1st July 2020



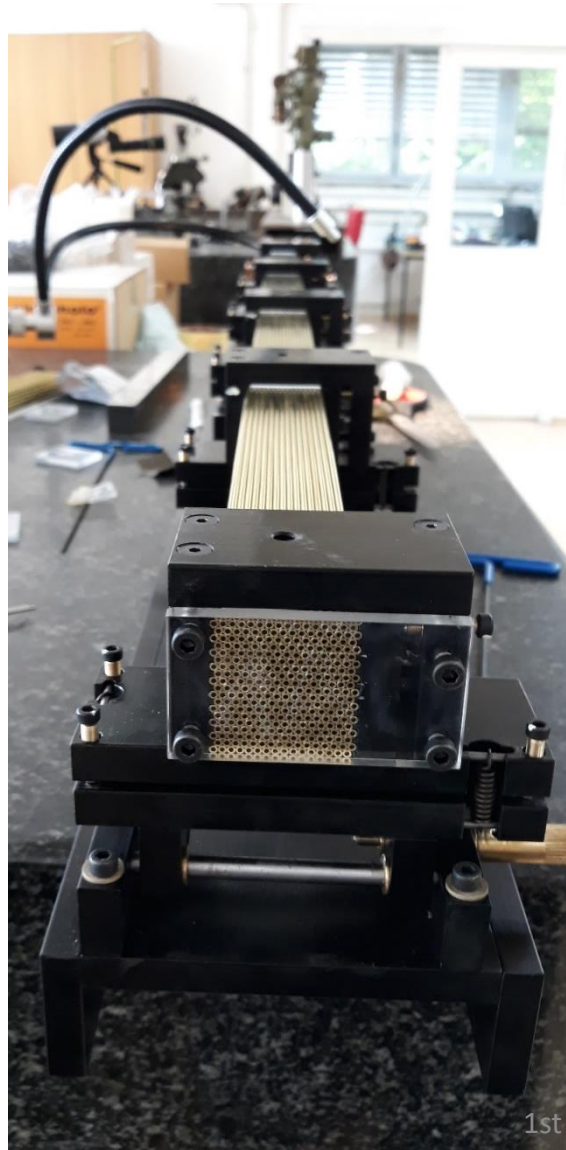
1m long Dummies (?) 16 x 10 tubes June 15th – 19th



After the success of the 1st 1m long Dummy a 2nd one was constructed using the same assembly methodology



From Dummy to 1st Module June 15th – 19th



Another 160 1m long tubes were cleaned and added layer by layer to the already glued half Dummy => 1st Module





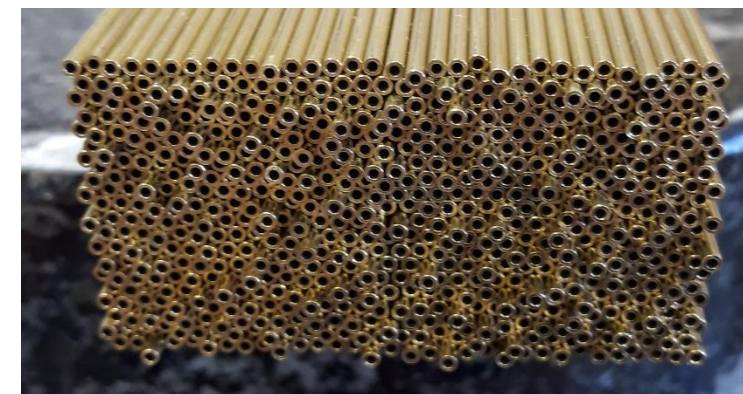
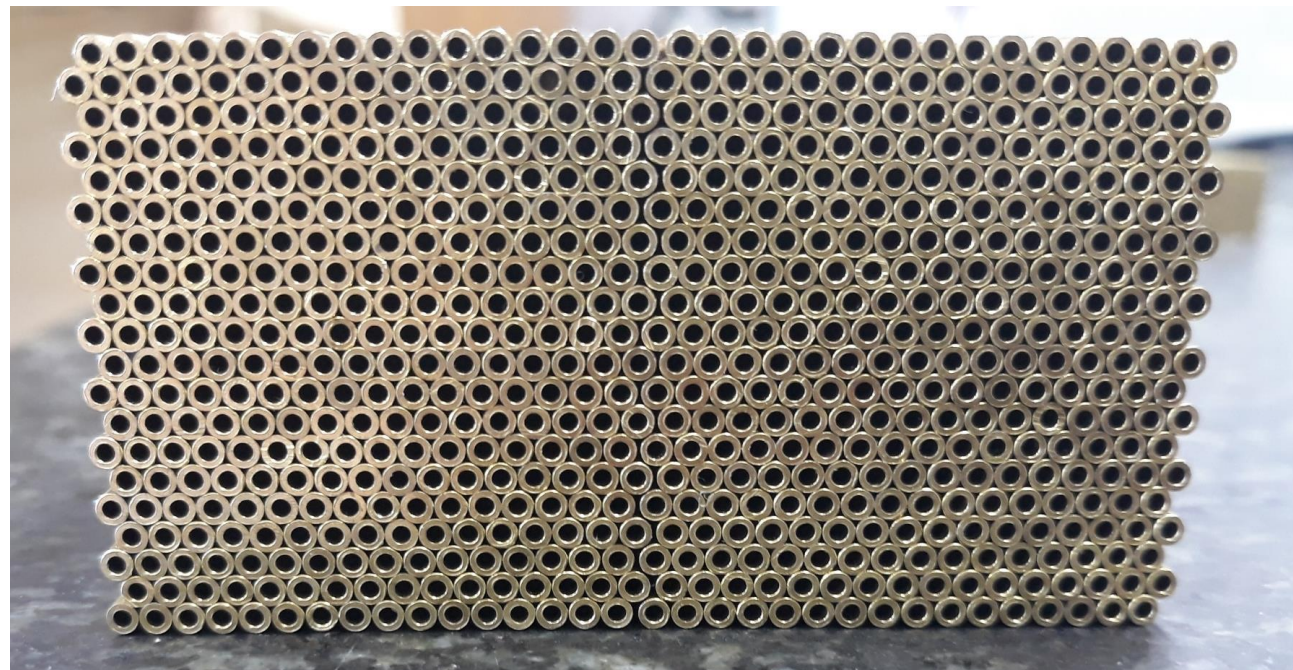
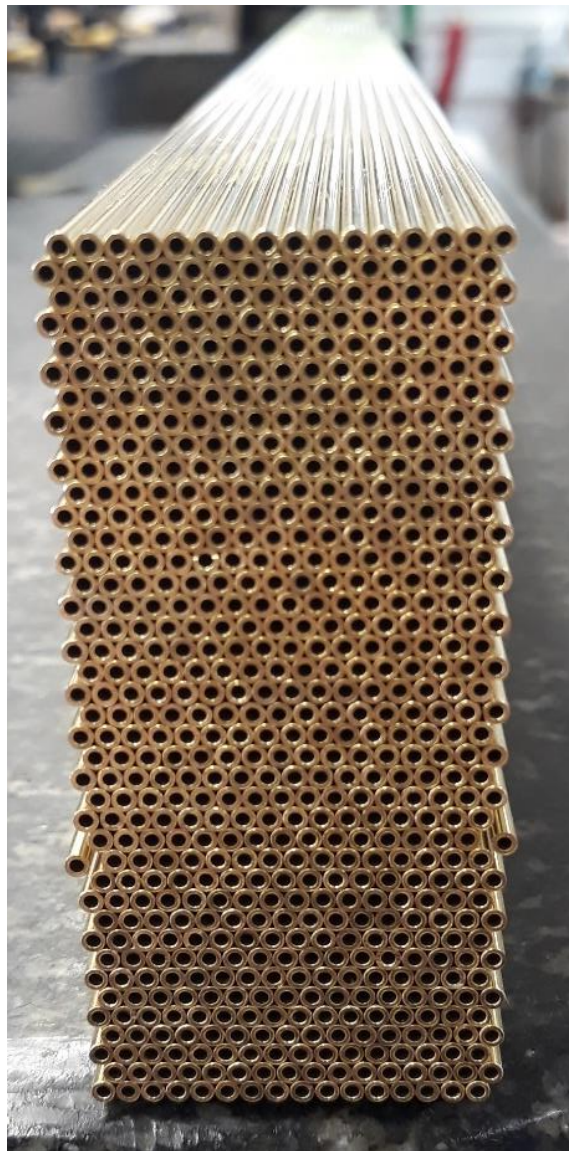
Sometimes 1 – 2 tubes are not fully glued to the rest of the structure => Not too difficult to fix, just time consuming as the structure need to be returned inside the gluing station for proper support while glue currying

- We learned to properly aligned the individual gluing stations. Including assembling the whole gluing stations set up twice, due to alignment issues - now fixed
- 3 short (25cm) 16 x 10 tubes Dummies were assembled using three different glue application methods
- It was found that gluing inside the gluing stations gives the best result => important for production repeatability
- 2 long (1m) 16 x 10 tubes “Dummies” were assembled and compared to each other
- The very first Module was assembled using one of the 1m long Dummies and additional tubes (18th June)
- The second Module was assembled using the other 1m long Dummy and additional tubes (19th June)
- The RBI team was on vacation during June 20th – 28th

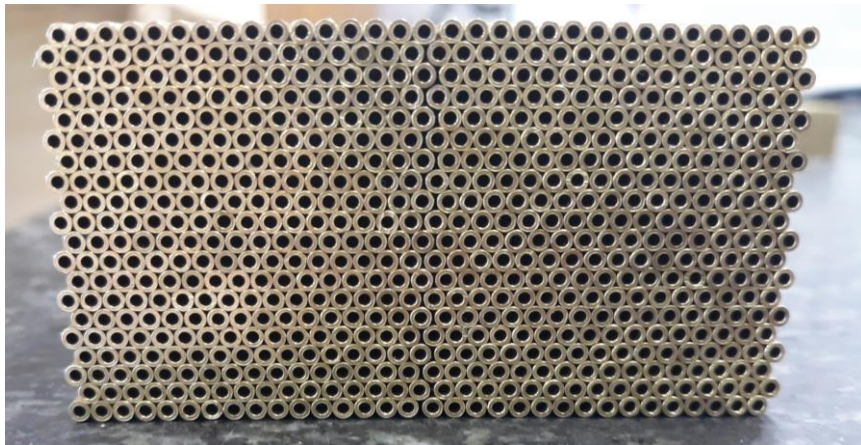
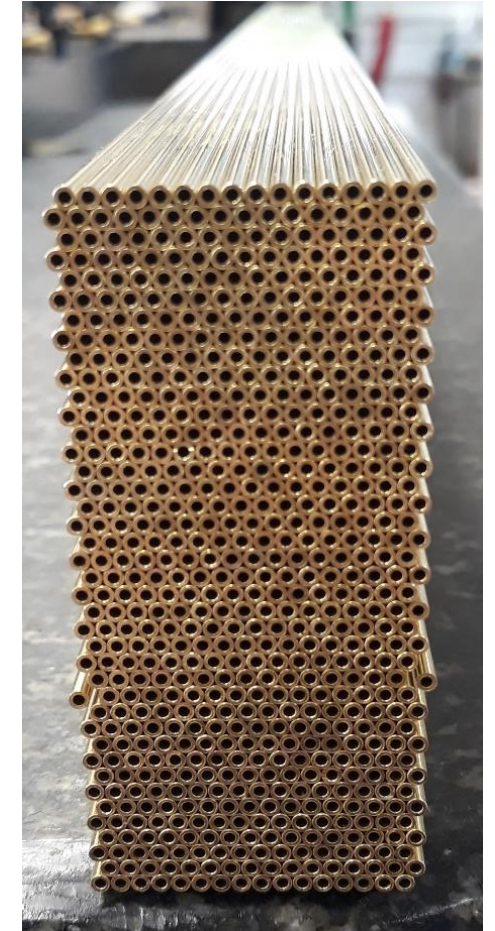


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Module 1 & 2 – June 18th – 29th



1st July 2020



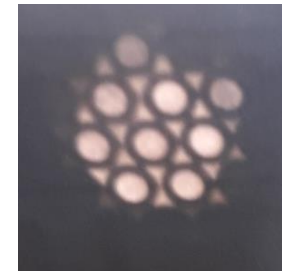
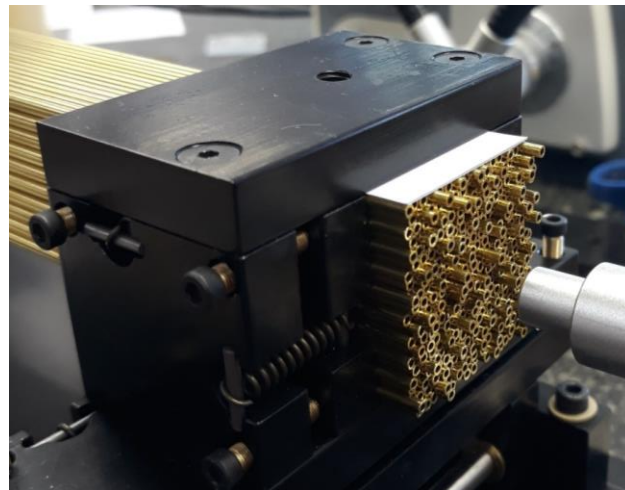
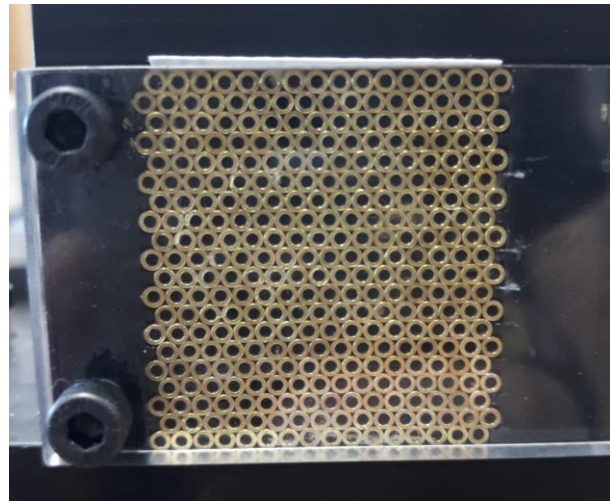
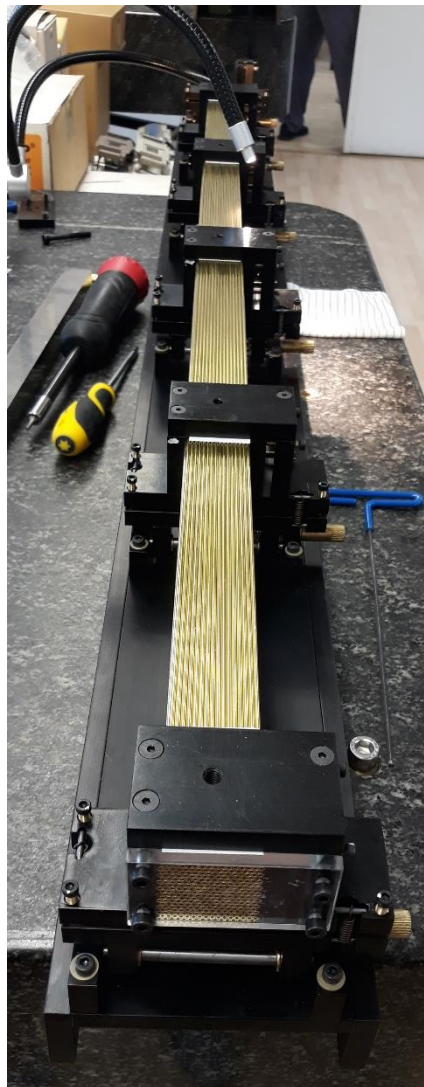
	Width		
Module 1	33.25	33.13	33.01
Module 2	33.20	33.12	33.05
M1 + M2	65.49	65.50	65.23
M2 + M1	65.51	65.35	65.20

	Height		
M1 + M2	69.43	69.59	69.57
M2 + M1	69.45	69.56	69.64



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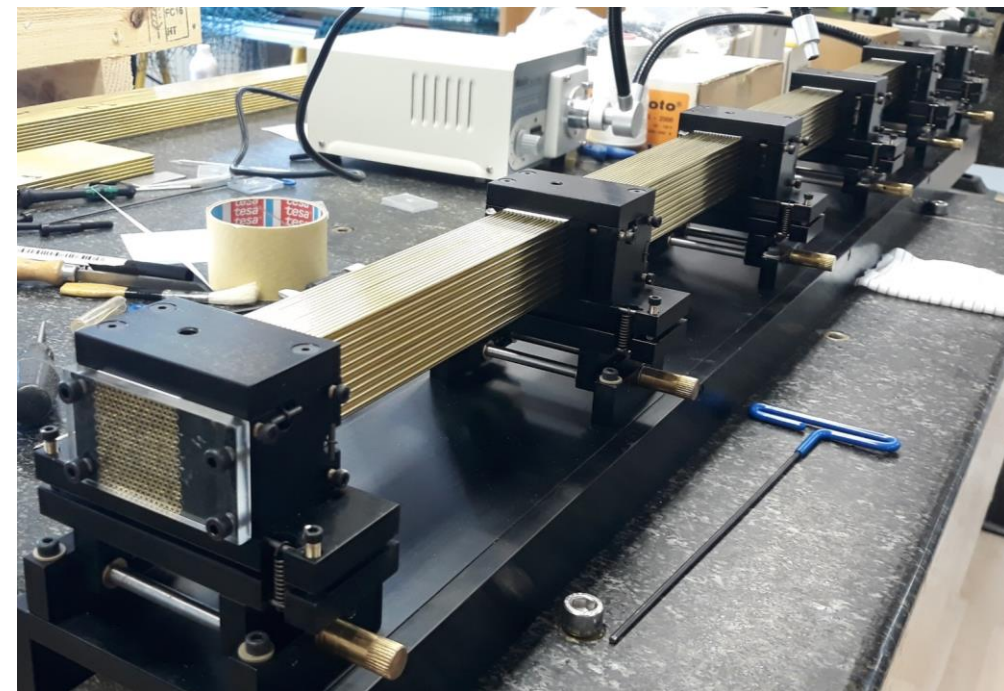
Module 3 – June 30th



Before applying the glue



After applying the glue



1st July 2020



Width of Module 3								
Before glue	32.94	32.93	32.95	32.92	32.94	32.93	32.93	32.93
After glue	32.95	32.93	32.95	32.93	32.95	32.94	32.94	32.93

Height of Module 3								
Before glue	34.92	34.90	34.92	34.89	34.91	34.99	34.99	34.99
After glue	34.87	34.90	34.90	34.89	34.88	34.91	34.93	34.91

- We are continue to improve the alignment of the individual gluing stations in respect to each other.
- Always perform a dry run and 8 point measurements (height and the width) before the gluing
- It takes about 2 ½ hours to glue a full 1m long Module
- Taking 8 point measurements (height and the width) after the gluing while still on the gluing station

- Careful removal of the Module each morning, inspecting for staginess and glue leakage, clean excessive glue from Module and gluing station(s)
- 3 point measurements of the height and the width

- Next step is to assemble the central 1.2 m long Module and later continue with the remaining 5 1m long Modules

- Construction of enclosure structure to hold all Modules together
- Construction of transportation wooden create for the whole Tower