

Annex 1.

- a) List and respective cost of components needed for the assembly and test of the HICs and Staves for the ALICE ITS Outer Barrel.

- Tooling for the Outer Barrel HIC Assembly

Nr. parts	Name of the components	Total Cost (CHF)
1	OB assembly table V3	10300
1	OB wire bonding table V2	3750
2	OB module gripper	5630
2	OB FPC gripper	9670
1	OB glue mask gripper	2550
500	OB HIC carrier plates	60000
1500	OB HIC glue masks V14_06	14400
Total		106300

- Automatic Test Equipment for OB HIC and Staves Quality Assurance

Nr. parts	Name of the components	Total Cost (CHF)
2	Custom made test crate for single HIC	2000
1	Custom made test crate for 10 HICs	2000
8	MOSAIC boards	24000
5	ALICE Custom Made Power Board	10000
3	MOSAIC Custom Crate	1500
11	Adapter Boards	1100
18	Power Adapters	1800
Total		42400

- Custom designed tooling for the assembly of ALICE ITS Outer Barrel Staves

Nr. parts	Name of the components	Total Cost (CHF)
1	HIC TAB Cutter, Gripper and Flipper	8500
2	Half-stave base	11600
7	Module Gripper	1750
1	Plate for the CMM	2500
1	HIC alignment station	2400
1	Half-stave metrology station	2400
2	Half-stave Alignment Station	8700
1	Set of vacuum valves and pipes	5000
1	Power Bus soldering jig	3500
1	Handling bar	6300
1	Mask positioner	800
1	Spatula	600
1	Module base	150

1	HS test PB	3300
2	U-arm positioner	500
3	U-arm fixing tools	2100
1	Vacuum accessories set	3000
1	Alignment accessories set	2000
3	Carbon fibre bars	2100
5	Spare bases	2500
1	Set of suction cups	2000
1	Set of u-arms	2000
Total		73700

The related documentation and technical specifications are available at the following link: <https://cernbox.cern.ch/index.php/s/WqKhmfVYhwaOocr>.

- b) Cost of a partially functional OB STAVE detector module, consisting of 196 ALPIDE chips connected by flexible printed circuit boards and assembled on a carbon fibre mechanical support structure of 1.5 m length.

Nr. parts	Name of the components	Total cost (CHF)
1	OB STAVE	60000