

## Status of the SALTRO16 readout system 11.5.2017

- On the 16.2.2017 a contract was signed with the French company NovaPack for packaging the SALTRO16 dies in capsules of size 9 x 12 mm<sup>2</sup>.
- The design of the substrate, onto which the SALTRO dies will be mounted, is completed by the company and was sent to Lund for inspection.
- The design was scrutinized and accepted by the Lund group.
- Substrates for mounting of 840 dies have been ordered by the company.
- It has been agreed on a pre-series of 35 mounted pieces for characterization purpose. Expected delivery date mid-end June. The characterization is expected to take 2 weeks.
- It has been found that the dimensions of the dies vary more than might be tolerated for a precise mounting of the die onto the substrate. Another batch of 30 pieces might be needed to find a solution to this problem.

- After successful characterization the full production can in principle start. However, first the money to cover the cost for this has to be found within the LCTPC-collaboration. The price for mounting has been specified to 14:38 Euro per piece, which for 800 dies results in a total cost of about 11.500 Euro.

### In Lund:

- A new test socket, which adopt to the BGA pattern of the substrate, has been ordered and delivered.
- A new development board has been designed in Lund and is presently checked carefully by the group.
- PCB:s will be ordered as soon as we are convinced that there are no mistakes in the design.
- Expected lead time for the production 10 - 15 days.
- The test socket and the components on the development board will be mounted by the Lund group. Expected time 1 week.

- In order to be ready for chip tests until the middle of June we have to submit the order for PCB:s latest middle - end of May.
- We have requested to get a few unmounted substrates as soon as the company receives them, to place them in the test socket and test that all connections on the Development Board are ok.
- The data will be read out via serial readout of the development board to a Scalable Readout Unit (SRU). The firmware for the CPLD on the development board is taken from the ALICE experiment and the firmware for the SRU is using the ALICE and TOTEM systems. These are being modified by a master student from the engineering department to meet our requirements. Most of the firmware has been tested to work although at the moment only 512 samples can be read instead of 1000. Further, the hardware trigger has to be implemented.

The PC DAQ, which is based on the EUDET TPC ALTRO DAQ, is modified to handle Ethernet/UDP and almost ready but has to be tested.

## Side activity: Cooling (this is formally not the responsibility of Lund)

- Lund is participating in the WP13 for 'Innovative gas detectors' within the AIDA2020 project. WP9 is concerned with 'New support structures and micro-channel cooling'. There is a group from Pisa, which is interested to develop a cooling system for our purpose. It is also supported by the AIDA2020 management to find overlapping activities between the WP:s
- A mock-up board, corresponding to one row of 5 MCM-boards, has been obtained from Japan (thanks to Takahiro Fusayasu), which enables a realistic simulation of the power consumption and thus can be used to tests the performance of microchannel cooling.
- An advantage is that within AIDA2020 we don't have to pay for such a system and its tests.