

Bundesministerium für Bildung und Forschung



MUV1 Construction Work Progress

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NA62 Collaboration Meeting 3 September 2014

Ferrara, Italy

Outline



- New layout of layers
- Preparation of scintillator strips
- □ Layer construction
- □ TODO list before the October run
- □ The optimistic plan / summary







New Layout



Central strips are cut into two halves due to a too high hit rate





High Hit Rate Regions



JG U



by Riccardo Aliberti



Preparation of Scintillators



From my talk in the collaboration meeting at June 4th, CERN

~20 days of gluing

Scintillator Polishing

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Diamond polishing of about 360 strips is finally done

We got them just 2 days ago \rightarrow gluing will be resumed from the next week

Gia Khoriauli NA62 Collaboration Week 04.06.2014



JGU

Preparation of Scintillators



• One of the successful days of gluing \rightarrow fibres are glued on 20 strips



New Scintillators from Protvino



□ 29.06.2014: scintillators arrived to Germany

□ 10.07.2014: they were sent for polishing

One week later gluing was resumed

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Quality Test for Scintillators



- LED signal
 250 Hz
 20 ns
- Monitor PMT
 - TriggeringSignal fluctuation
 - Two channel PMTs
- Gaussian signal
 ADC to photo-electrons







Scintillator Quality Test with LED

Number of channel photoelectrons normalized to the number of monitor photoelectrons



Scintillator ID=467

NA 52

IG|U

Test Result for Parameter a



Fit parameter a



Results for only double sided strips are presented



Test Result for Parameter **b**





Fit parameter b

Results for only double sided strips are presented

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Scintillator Preparation Summary

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□ Preparation of scintillator strips is (nearly) finished

Strip type	Needed	To be produced
Normal	622	0
Half	228	<10
Short	184	1
Narrow	184	0
Total	1218	<11



MUV1 Layer Construction







MUV1 Layer Construction













❑ Horizontal alignment of the base plate → using additional steel plates between it and the support feet



Vertical laser beam passing trough the tiny hole at the centre of the hole of the base plate







NA 52

Top view on the vertical laser beam passing through the goal of the Plexiglas cover located at the centre of the 7th plate





NA 52

□ The 7th layer was shifted with about 2.5 mm





- A hydraulic pump has been used to align the layers
- Laser beam after the plates were aligned
- All 4 pieces of the detector inner pipe fitted trough the layers





Extra Iron Plate



- □ Detector design has been changed from 24 layers to 23 layers → one extra iron plate
- It was decided to put the extra curved plate at the wall







Extra Iron Plate







9 Days Before Ferrara Meeting



22.08.2014

❑ 19th iron plate was successfully placed
 → ready to go for building the 19th layer of scintillators







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The extra plate fell on the 20th plate, when lifting the latter up for placing on the detector









It took 3 days to resolve the problem and to put the extra plate on a safe place











Timeline of Layer Construction





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TODO: Finish Layer Construction



□ Build two remaining layers by Wednesday (10.09.2014) next week





Gia Khoriauli NA62 Collaboration Meeting in Ferrara 03.09.2014





TODO: Tuning of PCBs of LED System NA62 \Lambda

- Voltage on boards needs to be adjusted for all groups (6 LEDs per group) of LEDs
- Tests should be launched already in this week \rightarrow will take <1 (?) week
- One of our students is available to do that

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TODO: Putting Fibres into Masks



- 3864m of total length of fiber tails to be cleaned
- At least 2 persons available to work on this → less than 2 weeks of work (?)
- First panel of the PMT frame is expected to be produced in the next week





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TODO: Fibre Separation/Protection



The plan was to use metal plates between the channels to separate fibers



- Most probably, flexible shrink tubes will be used instead
- Easy to cover the whole length of a fiber tail
- Better mechanical and light leakage protection
- Final decision will be made next week





More Things to Be Done



- □ New construction bolts has to be ordered (next week)
- Detector alignment points to be collected from CERN (next week)
- Detector lifting tool is being built at CERN
- Test setup for PMTs shared with CALICE group at Mainz not ready yet (not urgent)



The Optimistic Plan / Summary



□ If no unexpected issues pop-up...

Shipping the detector to CERN on 24th of September, Wednesday

 ◆ Transportation takes two nights → the detector arrives at CERN on Friday morning, September 26th

Two working days (26th and 29th of September) remains to pull the detector down in the experimental hall before it closes

◆ Probably, cabling will need about two weeks of work → can be finalized during the November shut-down



Layout on Photos





Central region of a horizontal layer

Short strips at the edge of a layer







Corrected ADC counts



Corrected ADC counts

Test Result for Parameter a





Fit parameter a

Results for only single sided strips are presented



Test Result for Parameter **b**





Results for only single sided strips are presented

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MUV1 Layer Construction



Mounting of LED calibration system main time consumer





After we became experienced

1 person: ~7h of work 2 persons: ~4h 3 persons: ~3h



Extra Iron Plate



Using the transportation tube as a lever







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The palettes and the broken front wheel stopped the crane to crash the horizontal plate into the detector





PMT Frame and Lifting Tool





