



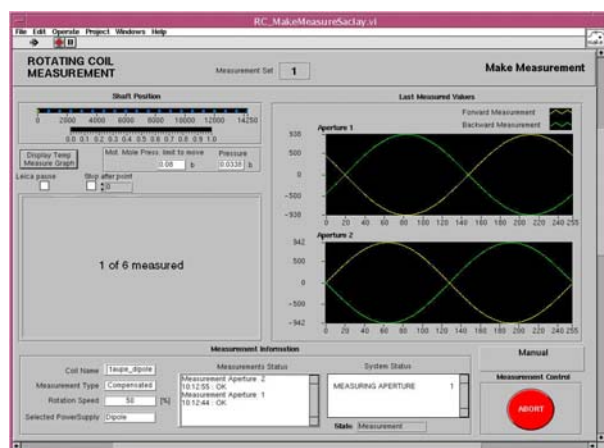
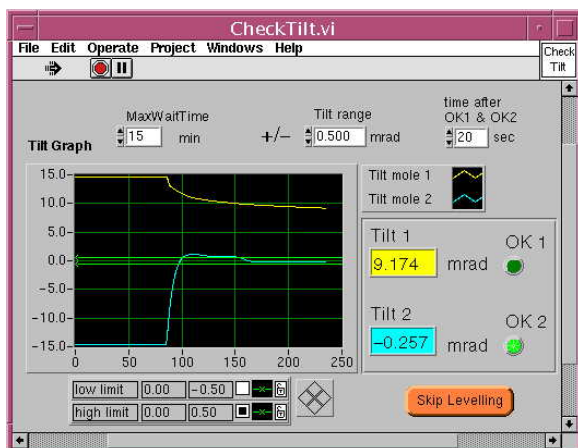
## Visit Report

<b>Name of firm :</b> Ansaldo	<b>Places :</b> Genoa, Italy
<b>Date of visit :</b> 25 – 27 May 2005	<b>Author :</b> P. Galbraith
<b>Administrative reference :</b> F302/LHC/LHC (Number of Contract or Order, Call for Tender, Price Enquiry, Market Survey, etc...)	
<b>Commercial contact (FI Division) :</b> A. Unnervik	
<b>Aim of the visit :</b> To investigate problems with the cold mass warm magnetic measuring system, DIMM6 at Ansaldo.	
<b>CERN participants :</b> Peter Galbraith (AT/MTM) Andrea Musso (AT/MAS)	
<b>Persons met and function :</b> P. Gagliardi, F. Terzi, A. Lombardo, A. Scimone (Ansaldo)	

### REPORT

The aim of the visit to Ansaldo was to investigate problems with the warm magnetic measurement system for the cold masses (DIMM6).

There had been a problem with the levelling in Aperture 1 and the measured field angle was displaced by approximately 45 degrees. The problems can be seen in the LabVIEW shots below, provided by Ansaldo.



This same problem had been seen from time to time since September 2004 and usually disappeared for no reason after cables and/or moles had been replaced or swapped. It was suspected that there was a problem with the aperture 1 mole connector on the electronics rack.

When we arrived at the factory on the afternoon of Wednesday 25th May, the cold mass number 2201 was on the test stand but had not been measured.

The system was operating correctly, but by slightly moving the aperture 1 mole connector inside the electronics rack, the value of the mole level became unstable and then went to its maximum level of about 13 volts. In this condition, when the mole was turned to approximately 45 degrees, the voltage fell to a minimum of between 8 and 9 volts, which confirmed the symptoms observed during the cold mass measurements shown above.

Examining the 48 pin chassis connector for aperture 1, it was seen that pin 38 was pushed back into the body of the connector. This being one of the electronic level connections, the observed problems could thus be explained.

The interconnection box was therefore removed from the rack and dismantled to allow replacement of the faulty contact. The other connectors' pins were also checked but no problem was found. The equipment was re-assembled and verified to be operating correctly.

On the Thursday afternoon a complete measurement of cold mass 2201 was performed by A. Scimone and A. Lombardo. This was finished successfully and the results were sent to CERN. Afterwards, we had a discussion with the above persons, as they had several questions concerning the measurements, the DIMM system and spare parts available. (Thanks to Andrea for translating!).

In particular, the integrator offset potentiometers were re-adjusted to their mid positions as one of them was at its maximum value. It was also noticed that the preamplifier temperature controller for aperture 2 needed calibration, so this module was replaced with a spare and the preamplifier offsets were adjusted. A short circuit was also installed on the output of the power supply for the corrector magnets. This unit is in fact never used, which means that its output, having no load, tends to drift up to the maximum output voltage of 22V.

Another problem mentioned occurs during the cold mass angle measurement procedure, using the level jig. Sometimes during the first measurement, the program seems to read the values correctly but then displays them all as NaN (Not a Number). Leaving the level measurement window and re-starting the jig measurements cures the problem.

## **MOLES AND MOTOR MODULES**

The following moles and motor modules are installed in the two systems at Ansaldo:

<b>DIMM4 (collared coil)</b>	<b>T1</b>	<b>T2</b>
Moles	2	3
Motor Modules	3	18
<b>DIMM6 (cold mass)</b>	<b>T1</b>	<b>T2</b>
Moles	17	18
Motor Modules	7	20

## SPARES

There is one spare motor module, number 19, which was previously installed in the DIMM6, T1, but was exchanged when trying to locate the levelling problem discussed above. As mentioned by D. Côte in his visit report of March 2005, motor modules 19 and 20 should be replaced and returned to CERN for maintenance.

There are 2 spare moles, numbers 10 and 22. A levelling problem was suspected in number 22 on the collared coil system, but it is still operational and this pair could be used if necessary. They should however be exchanged as soon as possible.

Two spare mole cables and 1 spare motor cable are available at Ansaldo. One additional faulty mole cable will be returned to CERN by Ansaldo. The black mole feeder cable ('aiguille') should be replaced in the collared coil system, DIMM4.

## CONCLUSIONS, RECOMMENDATIONS & ACTIONS

The problem with the DIMM6 has been located and repaired.

The following equipment should be sent to Ansaldo as soon as possible:

- 2 measuring moles, with their electronic module (MUPI)
- 2 motor modules
- 1 black mole feeder cable
- 1 motor module cable

Ansaldo should then return to CERN:

- 2 measuring moles, numbers 10 and 22, with their electronic module (MUPI)
- 2 motor modules, numbers 19 and 20
- 1 black mole feeder cable from DIMM4
- 1 mole cable (if not already returned to CERN)

### **Distribution list:**

/ ANSALDO

Participants + section AT/MTM-FM, J.Hadre, L.Walckiers.

M. Bajko, C. Bosteels, P. Fessia, P. Hagen, L.Rossi, F. Savary, E.Todesco, C.Vollinger (AT/MAS)

H. Reymond (AB/CO)