L-H$_2$ Absorber Progress

Vancouver, Nov-29, 2009

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For CM26 (Wing Lau)  Mar-23, 2010

No Fire ! Please
Contents

(1) Absorber test & results at KEK
(2) Propose of AFC modification
(3) Modification of L-H2-in pipe with 30 pin feedthrough
(4) Absorber cabling and connection
(5) Summary
Absorber Test at KEK
Absorber Assemble

- Aluminum Punching Board $t=0.5 \text{ mm}$
- Aluminum Plates $t=1 \text{ mm}$
- 5 Sensor Blocks
Cold Leak $\sim 1 \times 10^{-4}$ mbar at $\sim 100$K

Cause; downstream window was imperfect Indium seal without spring washer (set at company).

Double Indium ($d=1.5$mm) seal + spring washer
Absorber#1 (G-10 insulator)
New G-10 Insulator
for Absorber Body

Multi Layer Insulator
( 5 Aluminised Mylar
+ 6 Nylon Mesh )
Lead Wire Connection

8 Pin

22 Pin

30 Pin Feedthrough
New G-10 Insulator for Absorber Body

G-10 Insulator

22 Pin

8 Pin

G-10 Insulator
MICE Absorber Internet Monitor System

Programmed by
Shoji Suzuki KEK

LakeShore 218S

Keithley 2700
Cooling Time

Cooling without LN$_2$ ; 4.5 day
Cooling with LN$_2$ ; 1 day
Insulation Vacuum

----- No Cold Leak -----

LH$_2$ in Absorber

COMP. off

----- No Cold Leak -----

TIME (Day)

P (Torr)

1.0E-07

1.0E-06

1.0E-05

1.0E-04

1.0E-03
H₂ Liquefaction Speed

- H₂ Liquefaction Speed: 2.5 l/day at 1 bar, 20K
- Time to Fill 20 L Absorber: 8 days

Graph showing the pressure in a 2 m³ tank over time, with a note indicating a decrease in pressure from 1200 to 200 Torr over 8 days, reaching 2.5 l/day.
Propose of AFC Modification

The request is technically not feasible to implement and require a decision from the Technical Board. (Wing, Jan-2010)
Modification of Tee with 30 Pin

May-20, 2008

Pipe Length
- 57.7 mm

Feb-20, 2010

We will order after April, 2010

151.7

30 deg

(94)

25 deg
Latest AFC drawing with Absorber
Latest AFC drawing with Absorber

(1) FLANGE THICK
L=10 --> 5

(2) SAFETY FLANGE BASE
L=30 --> 15
Latest AFC drawing with Absorber

(3) FLEXIBLE $\rightarrow$ TUBE $D=18$
(NOT KEK PARTS)
Sensor and Heater (Overall)

- Cernox (Body)
- HTR-25Ω-100W
- D=1/4"
Absorber 30 Pin Feedthrough

Ultra High Vacuum Feedthrough

MULTIPIN TYPE
(BAYONET LOCK SERIES)

Measurement and control use. Bayonet lock socket compatible. Various shape and type are available.

30PIN

Fe-Ni-Co ALLOY
CERAMIC AlOx
Fe-Ni-Co ALLOY
Connection Plugs

G-SERIES

PLUG (G6A-NE-JG)

8 Pin

22 Pin

30 Pin Feedthrough

<table>
<thead>
<tr>
<th>Pin for</th>
<th>Socket for</th>
<th>Shell Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Pin</td>
<td>G6A104PNE-JG</td>
<td>G6A104SNE-JG</td>
</tr>
<tr>
<td>12 pin</td>
<td>G6A128PNE-JG</td>
<td>G6A128SNE-JG</td>
</tr>
<tr>
<td>14 pin</td>
<td>G6A142PNE-JG</td>
<td>G6A142SNE-JG</td>
</tr>
<tr>
<td>16 pin</td>
<td>G6A161PNE-JG</td>
<td>G6A161SNE-JG</td>
</tr>
<tr>
<td>18 pin</td>
<td>G6A182PNE-JG</td>
<td>G6A182SNE-JG</td>
</tr>
<tr>
<td>20 pin</td>
<td>G6A203PNE-JG</td>
<td>G6A203SNE-JG</td>
</tr>
<tr>
<td>22 pin</td>
<td>G6A223PNE-JG</td>
<td>G6A223SNE-JG</td>
</tr>
<tr>
<td>24 pin</td>
<td>G6A244PNE-JG</td>
<td>G6A244SNE-JG</td>
</tr>
</tbody>
</table>

For Pin | For Socket | Shell Size
Support Flame for Shipping to RAL

Three units were arrived on Mar-09, 2010.
1. The absorber cooling test was performed from Dec-4th, 2009.

2. Cooling time to 20K; 4.5 days without LN₂ cooling, 1 day with LN₂ cooling

3. The H₂ liquefaction speed was measured as ~2.5 l/day, and it will take ~8 days to fill 20 l absorber.

4. Proposed the AFC modification to avoid interference
   → 3 of 4 were agreed

5. The modification design of LH₂-in pipe with 30 pin feedthrough was finished. Also, the cost was estimated.
   → Asking new drawing for TESLA

6. The new LH₂-in pipe with 30 pin feedthrough will be ordered after April, 2010.