

Thermal Control System Progress and Issues

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AMS02 TIM at MIT

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Thermal Issues

Magnet

**No Cryocoolers Radiator Yet
No Helium Endurance Number Yet**

Tracker

**Entirely New System (no backup)
Space Qualified Pump**

TRD

Yearly Range of Average Temperatures Too Large

Weight

Includes Heavy Brackets for Electronics Crates

Keep Thermal ICD Udated

(<http://ams.cern.ch/AMS/thermal>)

Debris – PNP for Mission Success

Cryocooler and Crates Radiators vs. Weight

One More “Free” Round of Calculations

Thermal Control System Weight Breakdown

Jan. 2002 Version at MIT TIM

| | | |
|--------------------------------------|----------------|-----------------|
| 1. Ram Radiator | | 72.5 kg |
| Radiator plate | 40 kg | |
| including heat pipes and MLI | | |
| Brackets | 32.5 kg | |
| 2. Wake Radiator | | 72.5 kg |
| Radiator plate | 40 kg | |
| including heat pipes and MLI | | |
| Brackets | 32.5 kg | |
| 3. Zenith Radiator | | 31.0 kg |
| Radiator plate | 25 kg | |
| including heat pipes | | |
| MLI | 3 kg | |
| Tubing to cryocoolers | 3 kg | |
| 4. RICH + ECAL crate brackets | | 25.0 kg |
| and radiators | | |
| 5. Subsystem Thermal Control | | 110.3 kg |
| TRD | 4.9 kg | |
| ToF | 8.0 kg | |
| Tracker | 72.9 kg | |
| RICH | 10.5 kg | |
| ECAL | 14.0 kg | |
| TOTAL | | 311.3 kg |

(51.3 kg overweight vs. 260 kg)

(~77 kg are brackets for radiators [118.5kg]
and crates [452 kg])