

From sgr@ing.iac.es Fri Nov 12 15:25:29 1999
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From: "Simon G. Rees" <sgr@ing.iac.es>
To: Gordon Talbot <rgt@ing.iac.es>, Kevin Dee <kmd@ing.iac.es>,
Chris Packham <cp@ing.iac.es>, Paul Jolley <jolley@ing.iac.es>,
Matthieu Bec <mdcb@ing.iac.es>, Peter Moore <pcm@ing.iac.es>
Cc: Frank Gribbin <fjg@ing.iac.es>,
IMPB Software Project Correspondence <impbsoft@ing.iac.es>
Subject: Thermal Cycle 1: Report on INGRID Mechanism Tests

Dear all

Here's the results of the mechanism tests Paul and I have performed, both before cooling INGRID down, and afterwards.

I won't bore you with the fine details, I'll just present the major conclusions. If you want to look at the raw test data it's available in the Software Project File Area (entrance to 4th floor on right hand side). Feel free to take a copy, but please leave the masters.

Overall summary: within the constraints of testing that was conducted visually it looks like we can get a system that's reliable when running cold. Worst case wheel move times take longer than we would like.

Before Cooling

During this phase of the testing we focussed mainly on the Pupil Stop Wheel as this has the most stringent repeatability specification (and being at the front of the window is easiest to see !).

Within the limitations of what we could determine by eyesight:

1. The default settings Matthieu used for exercising the test jig also appeared to work reliably and repeatably for INGRID 'the instrument'.

These settings specify a max velocity of 4.22 (don't know what the units are) and acceleration time of 0.9 seconds.

[Note: the sample size was limited to about 15 moves - we could really do with some 'soak' testing. I'll try to fit this in before warming up again - SGR].

2. With a max velocity of 15 (ie 3 times the default) the pupil stop wheel was starting to occasionally fail (lock up for a bit, then free itself)
3. At a velocity of 35, the pupil stop wheel was consistently failing.

4. We couldn't seem to improve the reliability/settling times by changing the acceleration rates.
5. A worst case move (index position 11 -> 1) took 86s. This is slower than we would like.
6. Other mechanism wheels seemed to work ok, but were not tested thoroughly.

We didn't exercise the Pupil Imager as it wasn't fitted, nor the Focus Drive (as Paul didn't want to for some reason which I forget).

After Cooling

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1. The default pupil stop motor settings all appeared to work reliably at cold temperatures too. A similar number of moves were sampled.
 2. The velocity at which the pupil stop wheel appears to start failing is reduced (VEL = 10). Thus our 'reliability margin' at cold temperatures may well be reduced.
 3. Could get the system to work reliably at VEL = 6. At this velocity a worst case move took 63s.
 4. We tested all the other mechanism wheels at the default motor settings. All were ok. When running them at higher velocities they didn't seem any more reliable than the Pupil Stop Wheel (although the testing in this area was very much reduced).

Any queries / comments / ideas - please get back to me or Paul.

Best Regards

Simon