

Magnetic Modelling

07/05/2013

VF have been in contact and have highlighted a few minor issues with the model – there were 6 air blocks that were defaulting to the wrong potential type. These were tricky to find but have been corrected. I wouldn't define this as critical but they needed correcting.

VF are asking for a simpler model for their initial analysis – I'm not sure of reason despite requests for information on this however the most up-to-date version of the hall model seems broken...

On this matter the model meshes fine and is passed to the solver but it keeps hanging on the second iteration through the solver. (This has nothing to do with the minor issues pointed out by VF). Because the model gets passed to the solver ok I'm getting no debug information on this. Tbh this couldn't have happened at a worse time and is a kind of error that I've never seen before.

If you recall I made improvements to the hall mesh and this model ran ok.(Model 77) I made some improvements to the NSW, SSW mesh and this model ran ok. (Model 78) I then made a number of further tweaks based upon results and this model keeps hanging. (Model 79)

I'm trying to backpedal the recent meshing 'improvements' to the model to try and understand which component is causing this, but it is a time consuming process, as it takes about 2 days before you know that the process has hung on the second iteration...Managed to work through a couple of iterations this weekend but I'm doing this in the background.

The last saves to the repository was before all the recent mesh changes, just before changes to (Model 77)- and after the mesh changes (Model 79).

I've never known a model that gets through the mesher not to solve –that's when I back up to repository, so this is unusual and I don't want to lose all the recent changes by going back to the last backup. **I also want to know what is specifically causing the problem.**

I've asked VF for some help on this and to clarify how soon they want a simpler model but I'm unlikely to get a response until tomorrow due to the member of staff dealing with this being on A/L.

Interestingly VF have got our model (Model 78) working on 15R3 with no problems – just a few warnings in the mesher. I can only assume that the errors that I've removed from the model over the last few months were the cause of the grief that I had when trying to run on Opera 15R3 last year. I will try running the Hall Model on 15R3 again when I've sorted the current issue out as their new solver is so much more efficient.

Also they have also got a Biot-Savart version of the Hall model running on a multi-threaded version of OPERA with notable improvements to the solve time over 15R3 but I don't know the details of hardware. I believe the multi-threaded version is due for release shortly!

At the moment there are two other things that I'm looking at:

Scheduling – This came out of the meeting we had at RAL last week. I've made some progress here but there are so many unknowns that a lot of this is crystal ball gazing at the moment.

Revisiting the Fry List – I think the hall model is sufficiently advanced that we can start to use existing Hall Models to compare output with what is on the Fry List.

This process may need to be re-done when VF complete their reporting.

The point is that we can get a feel for what components we can tick off the list and what components may need more attention – modelling or intervention. My feeling is that this will help drive the scheduling –insomuch as it will help to nail down some of the unknowns.

I've not got very far with either of these due to model corrections from VF and other issues but these are my priorities at the moment next to getting the model functioning again.