

Instructions

Yu-Ping Yang

December 20, 2017

- The following five files will be output from the interface (under `inputs/` directory):

- `eweld.in`
- `eweld_weld_parameters.in`
- `eweld_boundary_condition.in`
- `eweld_preheat_interpass_temperature.in`
- `eweld_temperature_monitor.in`
- `eweld_mesh_key.txt` (Not need to do now. This option will allow users to input their own meshes.)

- For automatic mesh, the following steps will be run:

1. Check if `pass_coordinates.out` exists in `input` directory, if no, run `determine_passes_arc_v4.exe` to create `pass_coordinates.out`¹. `eweld.in` will be input.
2. Run `Automesh_v14.py` with SALOME to create `Mesh_3D.unv`
 - (a) The files will be input:
 - `./inputs/eweld.in`
 - `./inputs/eweld_weld_parameters.in`
 - `./setting/Setting_arc_efficiency_dfault.in`
 - (b) The files will be output:
 - `Mesh_3D.unv`
 - `model_dflux.for`
 - `model_step.in`

¹On linux, compile `determine_passes_arc_v4.out`, to get `determine_passes_arc_v4.out` via `gfortran determine_passes_arc_v4.for -o determine_passes_arc_v4.out`

3. Run

```
python2 tools/unv2calculix.py Mesh_3D.unv Model3d
```

`Model3d.inp` will be created.

4. To generate the `model_film.in` file (using `cgx` and `unical`), run:

```
./createFilm.sh
```

5. Run

```
python Analysis_file_create.py
```

– The files will be input:

- * `./inputs/eweld.in`
- * `eweld_boundary_condition.in`
- * `eweld_preheat_interpass_temperature.in`

– The files will be output:

- * `model_bc.in`
- * `model_ele4.in`
- * `model_ele6.in`
- * `model_ele8.in`
- * `model_film.in`
- * `model_group.in`
- * `model_ini_temperature.in`
- * `model_material.in`
- * `model_node.in`

6. Move `model_dflux.for` to the Calculix directory and rename to `dflux.f`, and compile CalculiX

7. Run `analysis.inp` with `calculix`