

# Instructions

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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`<sup>1</sup>. `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`

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<sup>1</sup>On 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

```
python unv2calculix.py Mesh_3D.unv Model3d
```

`Model3d.inp` will be created.

4. 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` (not now)
- \* `model_group.in`
- \* `model_ini_temperature.in`
- \* `model_material.in`
- \* `model_node.in`

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

6. Run `analysis.inp` with calculix