WE Postprocessing Files

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ADDITIONAL FILES (POST-PROCESSING OF RESULTS)

plot_custom_aerodynamic_force_results.py -- takes the data from Drag_structure_custom_drag.dat and plots two plots. Therefore, this python file can be included in the project folder AFTER the simulation has completely run and then simply executed.

Where do we get/how do we make the Drag_structure_custom.dat file?

add_cp_to_h5.py -- helper script to postprocess H5 pressure output using additional ref pressure file. Not sure where this additional ref pressure file comes from.

Do we only need to apply to the ASCII data and the structure h5 data?

add_cp_to_h5_3digits.py -- same as before

check_forces.py -- uses three different output files (struture drag, global force, and level force) and evaluates some kind of error between the global and level forces, not entirely sure though.

What does this actually do, and what do we need to change? Also, what output do we get?

convert_kratos_to_paroptbeam.py -- takes those same files from before and turns them into a dynamic force file in a format ParOptBeam can understand.

What should we change here, and what output do we get?

pressure_eval.py -- sample line plot for pressure results, again, not sure about the ref_p file. Is it generated, because I cannot find it in the example -- ACTUALLY they are in the sample_line_plot_scripts folder, but still not sure how to generate all those data files (there are 7 different ones) or where to get ref_p.dat -- ref_p is the reference ouput data

The example file makes plots for the cp along the front horizontal line

velocity_eval.py -- sample line plot for velocity results, also I'm not seeing right now which files are used for this -- see sample_line_plot_scripts folder again.

The example file makese plots for the mean velocity and the height along a vertical line.

Our own xdmf file has only these variables available, while the example one has more available.
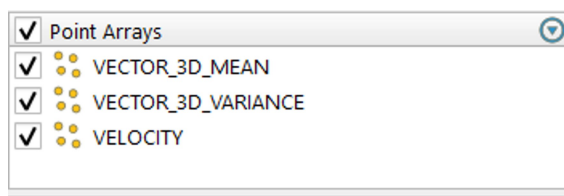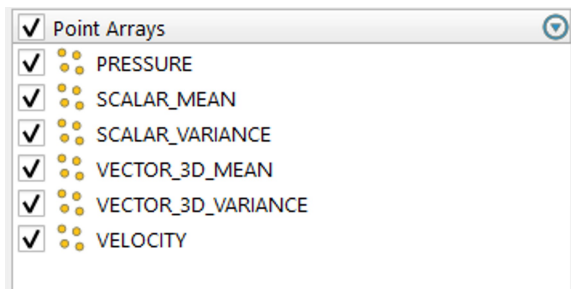
POSTPROCESSING

1. **VISUALIZATION USING PARAVIEW AND H5 FILES**
   - ☐ Apply add_cp_to_h5.py to the h5 files
   - ☐ Produce .xdmf files, keep in same folder as h5 files
   - ☐ Create visualization: slices, GIF, video
2. **PLOTS**
   - ☐ Velocity and turbulence intensity plots for each of the vertical lines using velocity_eval.py
   - ☐ Pressure coefficient plots for each of the horizontal lines (smaller side of octagon probably not necessary) using pressure_eval.py
   - ☐ Pressure coefficient plots for each of the horizontal lines (smaller side of octagon probably not necessary) using modified version of pressure_eval.py (have not found script that does this)
3. **GATHER INFORMATION**
   - ☐ GiD and Paraview: Domain and zone sizing, mesh settings and quality (see NotesPostProcessing pdf)
   - ☐ Results output size and computation time
4. **PAROPTBEAM**
   - ☐ Honestly, complete unknown to me, can probably get generalized stiffness, mass, damping, eigenfrequencies, GIFS of modes…

Should we get information requried to obtain drag coefficient, Strouhal number, Scruton number, vortex shedding critical velocity, galloping critical velocity… Can ParOptBeam get this for us in any way?