THE HIGHLY-EFFICIENT CAE PRE-AND POST-PROCESSING SOLUTIONS BASED ON OPENFOAM

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Keywords: FastCAE, OpenFOAM, pre-processing, post-processing, Designer, GUI

Abstract — As a widely used open source computational fluid dynamics software, OpenFoam has many advantages, such as the diversity of the pre-and post-processing interfaces, the stable fundamental class library, and the outstanding capability of large-scale parallel computing. Due to the deficiency of visualization window interface of this open source software, user learning is costly. Therefore, an interfacial interaction system based on the FastCAE platform contains OpenFOAM pre-processing, parameter configuration, solution calculation and post-processing is developed. The platform also capable of design specific interactive interface based on the integration of the two preprocessing meshes, the BlockMesh and SnappyHexMesh, from OpenFOAM. It also can automatically map different dictionary files, and provide users with parameter configuration entries when calculation parameters of solver are importing to the platform. The post-processing uses independently developed visual software to analyze the result files generated by the OpenFOAM calculation and support the functions of two-dimensional curves, contour graphs, vector graphs and animation. The OpenFOAM GUI based on the FastCAE platform, can greatly reduce user's use-cost and improve its application efficiency.
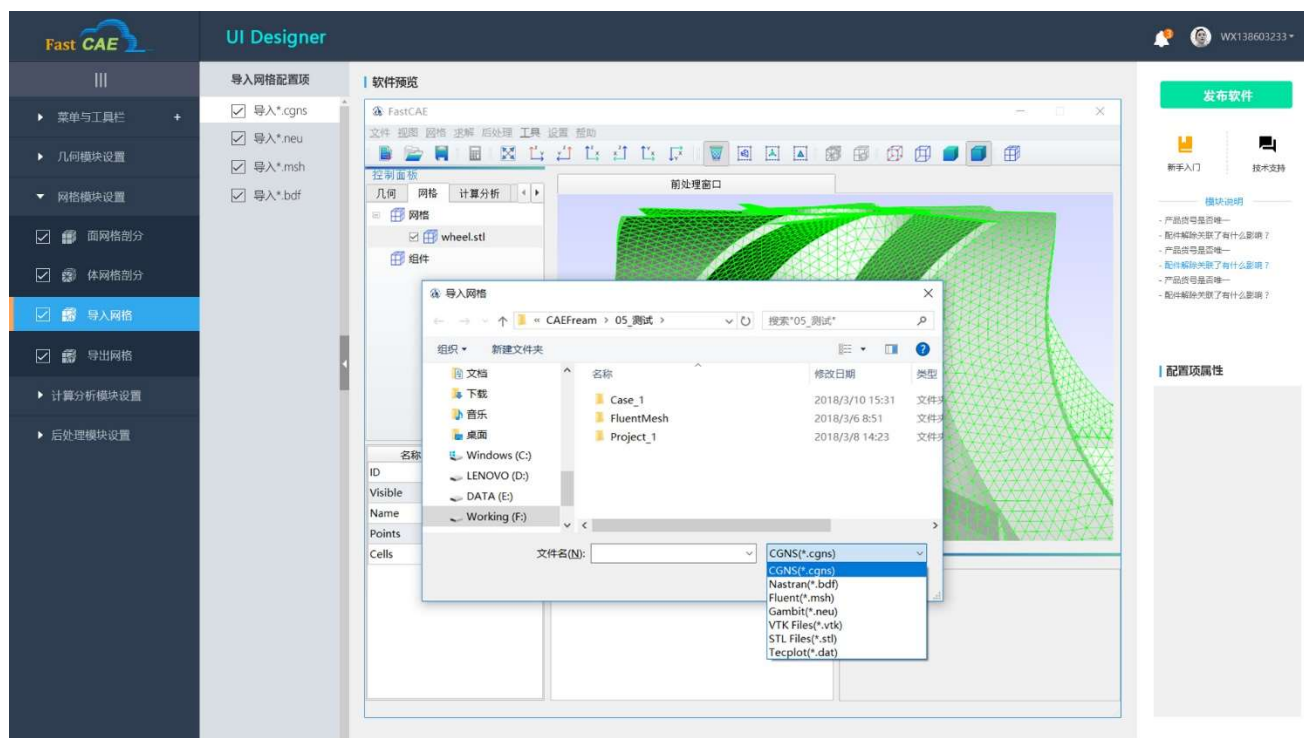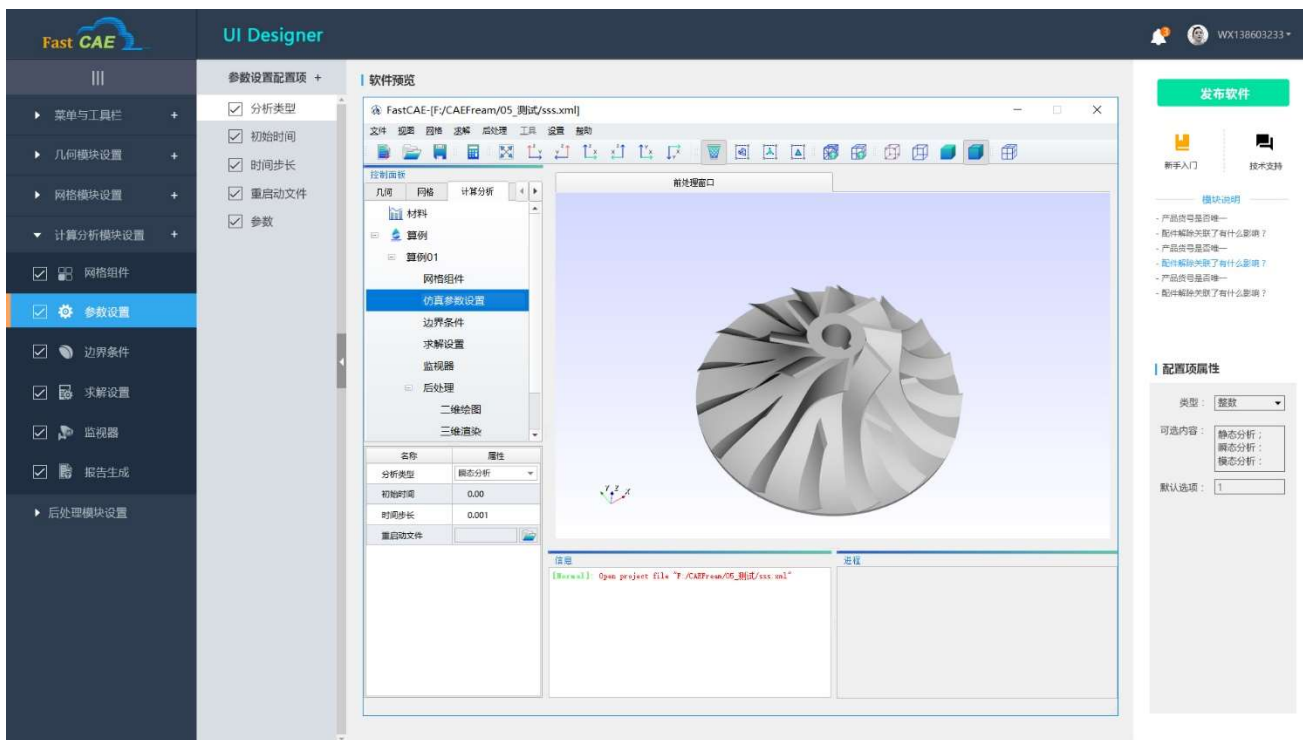
Figure 1: Designer pre-processing
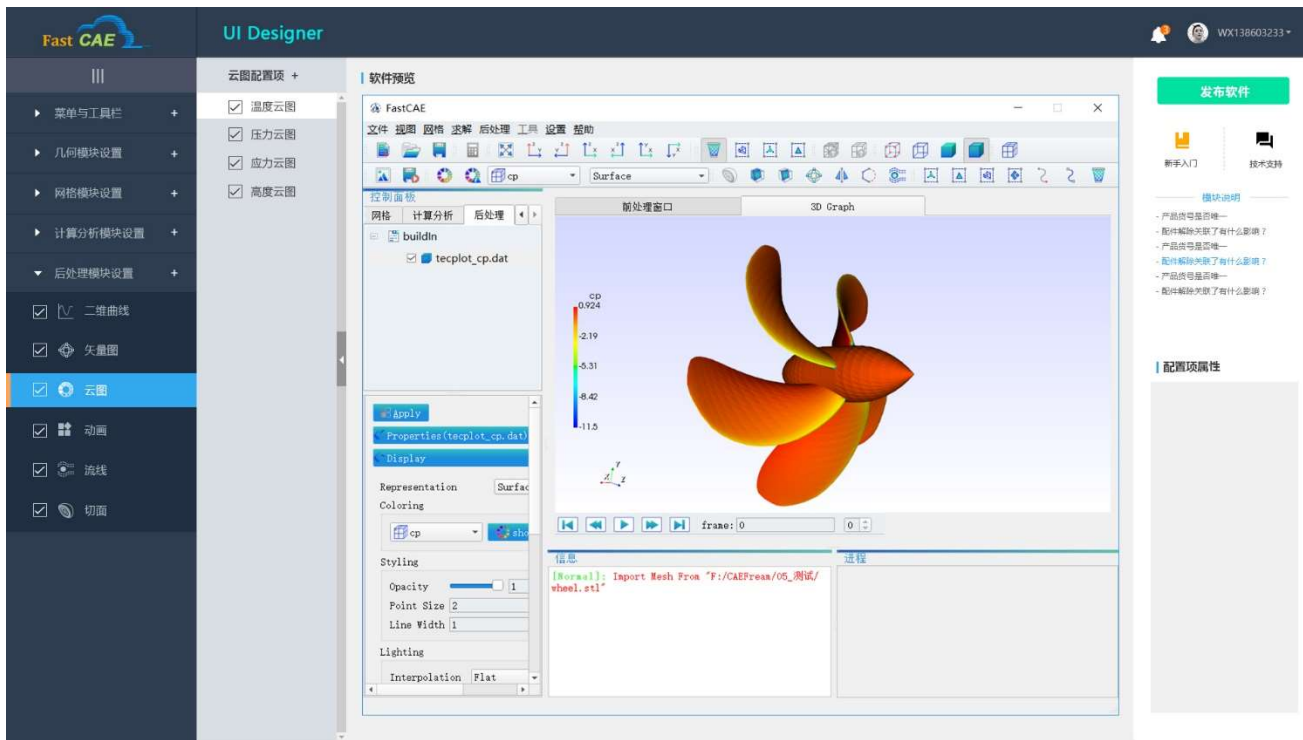
Figure 2: Designer parameter configuration

Figure 3: Designer post-processing

Acknowledgements

References

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