

Research of Advanced Rotorcraft

Report Number : R17ECMP11

Subject Category : Competitive Funding

URL : <https://www.jss.jaxa.jp/ar/e2017/4432/>

● Responsible Representative

Yasutada Tanabe,
Aeronautical Technology Directorate, Next Generation Aeronautical Innovation Hub Center

● Contact Information

Masahiko Sugiura sugiura.masahiko@jaxa.jp

● Members

Yasutada Tanabe, Masahiko Sugiura, Hideaki Sugawara

● Abstract

Research on advanced technologies of aircraft (helicopter) is conducted to construct and validate an optimization design tool.

<http://www.aero.jaxa.jp/eng/research/frontier/rotary/>

● Reasons for using of JSS2

It is absolutely necessary to utilize a super computer, regarding understanding aerodynamic performances which require large scale computations.

● Achievements of the Year

Aerodynamically optimal design of helicopter rotor blade.

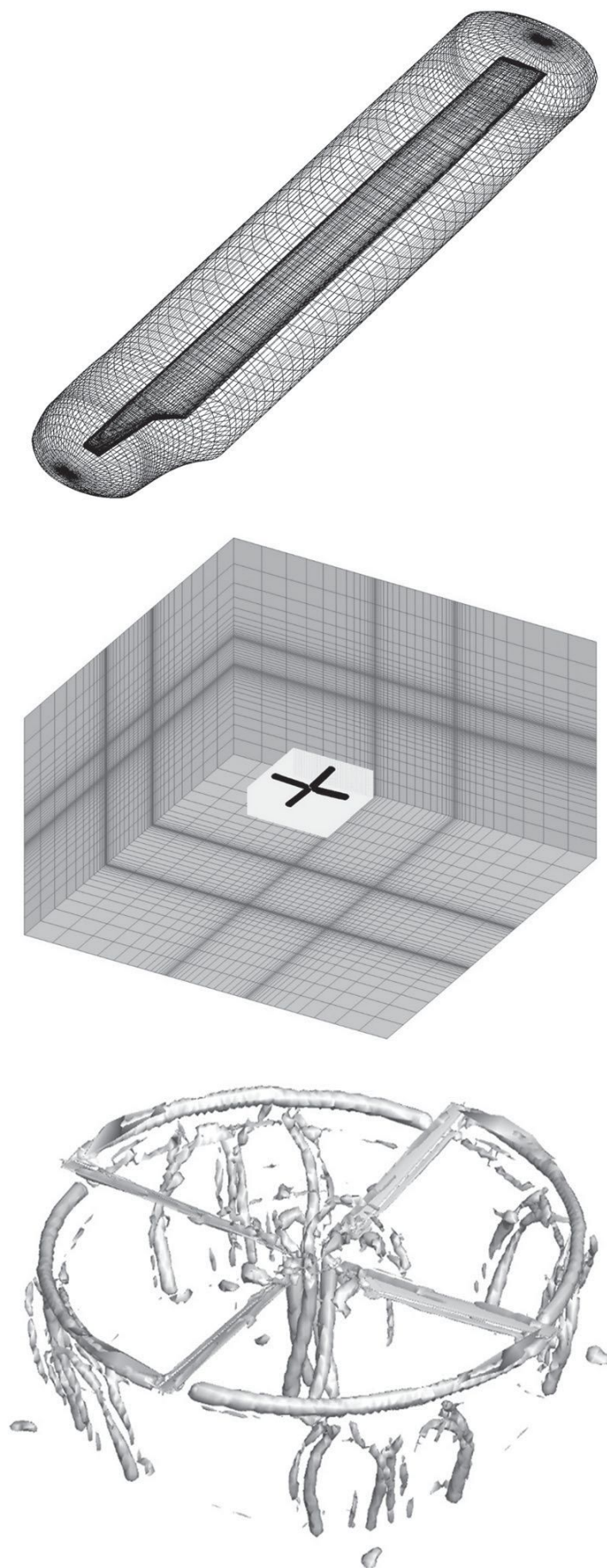


Fig.1 Computational grids of a hovering helicopter rotor

- Peer-reviewed papers

- 1) Atthaphon Ariyarit, Masahiko Sugiura, Yasutada Tanabe, and Masahiro Kanazaki, "Hybrid surrogate-model-based multi-fidelity efficient global optimization applied to helicopter blade design", Engineering Optimization, September, 2017.

- Usage of JSS2

- Computational Information

Parallelization Methods	N/A
Thread Parallelization Methods	OpenMP
Number of Processes	1
Elapsed Time per Case	12.00 hours

- Resources Used

Fraction of Usage in Total Resources*1 (%): 0.06

Details

Computing Resources		
System Name	Amount of Core Time (core x hours)	Fraction of Usage*2 (%)
SORA-MA	176,463.66	0.02
SORA-PP	40,651.28	0.51
SORA-LM	3,184.92	1.64
SORA-TPP	4,780.06	0.53

File System Resources		
File System Name	Storage assigned(GiB)	Fraction of Usage*2 (%)
/home	140.27	0.10
/data	6,917.32	0.13
/ltmp	813.80	0.06

Archiver Resources		
Archiver System Name	Storage used(TiB)	Fraction of Usage*2 (%)
J-SPACE	0.00	0.00

*1 Fraction of Usage in Total Resources: Weighted average of three resource types (computing, file system, and archiver)

*2 Fraction of Usage: Percentage of usage relative to each resource used in one year