

Development of technologies for hydrogen aircraft

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Subject Category: Competitive Funding

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● Abstract

According to the specifications of hydrogen aircraft, we prototype and test a "boost pump" to pump up liquid hydrogen from a tank and an "engine pump" to supply high pressure hydrogen to the engine, and support product development by KHI and others. This work was supported by the funding from Development of Core Technologies for Hydrogen Aircraft program in the Green Innovation Fund Projects of NEDO.

● Reasons and benefits of using JAXA Supercomputer System

Fluid analysis of internal flow is required in pump development and JSS3 was chosen because Ansys CFX is suitable for the analysis.

● Achievements of the Year

In order to confirm the boost performance when multiple pumps are connected in series, we analyzed the internal flow of the pumps and confirmed that the required specifications were met.

● Publications

N/A

● Usage of JSS

● Computational Information

Process Parallelization Methods	MPI
Thread Parallelization Methods	N/A
Number of Processes	1 - 4
Elapsed Time per Case	60 Hour(s)

- **JSS3 Resources Used**

Fraction of Usage in Total Resources*1(%): 0.01

Details

Computational Resources		
System Name	CPU Resources Used (core x hours)	Fraction of Usage*2(%)
TOKI-SORA	0.00	0.00
TOKI-ST	355.04	0.00
TOKI-GP	0.00	0.00
TOKI-XM	0.00	0.00
TOKI-LM	0.00	0.00
TOKI-TST	0.00	0.00
TOKI-TGP	0.00	0.00
TOKI-TLM	0.00	0.00

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage*2 (%)
/home	0.00	0.00
/data and /data2	0.00	0.00
/ssd	0.00	0.00

Archiver Resources		
Archiver 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.

- **ISV Software Licenses Used**

ISV Software Licenses Resources		
	ISV Software Licenses Used (Hours)	Fraction of Usage ^{*2} (%)
ISV Software Licenses (Total)	900.96	0.62

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