En-Core Project / Turbine internal cooling analysis

● **Responsible Representative**

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● **Abstract**

We will contribute to strengthening international competitiveness by demonstrating technologies for high-temperature, high-efficiency turbines and ultra-low NOx lean burn combustors that reduce nitrogen oxide (NOx) and CO2 emissions.

● **Reasons and benefits of using JAXA Supercomputer System**

There are many large-scale analyzes and case studies for turbine cooling in En-Core porject. To avoid schedule delay of the project, JSS3 is necessary.

● **Achievements of the Year**

Flow analyses of the turbine internal cooling of the test rig were carried out.

● **Publications**

N/A

● **Usage of JSS**

● **Computational Information**

Process Parallelization Methods	MPI
Thread Parallelization Methods	Automatic Parallelization
Number of Processes	46 - 180
Elapsed Time per Case	100 Hour(s)

● **JSS3 Resources Used**

Fraction of Usage in Total Resources[*1](%): 0.78

Details

Computational Resources		
System Name	CPU Resources Used (core x hours)	Fraction of Usage[*2](%)
TOKI-SORA	0.00	0.00
TOKI-ST	5,426,653.03	6.68
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	42.88	0.04
/data and /data2	10,744.55	0.11
/ssd	316.06	0.08

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)	386.61	0.27

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

- **ISV Software Licenses Used**