En-Core Project / Turbine internal cooling analysis

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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

Large-scale analyses of the turbine stage including the cooling holes are conducted in En-Core porject. To avoid schedule delay of the project, JSS3 is necessary.

Achievements of the Year

Large-scale analyses of the turbine stage including the cooling holes were conducted. From the results, the design of turbine stage was valid.

Publications

N/A

Usage of JSS

Computational Information

Process Parallelization Methods	MPI
Thread Parallelization Methods	N/A
Number of Processes	216 - 324
Elapsed Time per Case	10 Hour(s)

- **JSS3 Resources Used**

Fraction of Usage in Total Resources[*1](%): 0.02

Details

Computational Resources		
System Name	CPU Resources Used (core x hours)	Fraction of Usage[*2](%)
TOKI-SORA	0.00	0.00
TOKI-ST	103,848.14	0.13
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	104.55	0.10
/data and /data2	11,361.21	0.12
/ssd	299.39	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)	65.34	0.05

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