R&D phase | Research **Expected Commercialization** | FY27-

Mehr Licht!
More Photonics for Intelligence

#E12

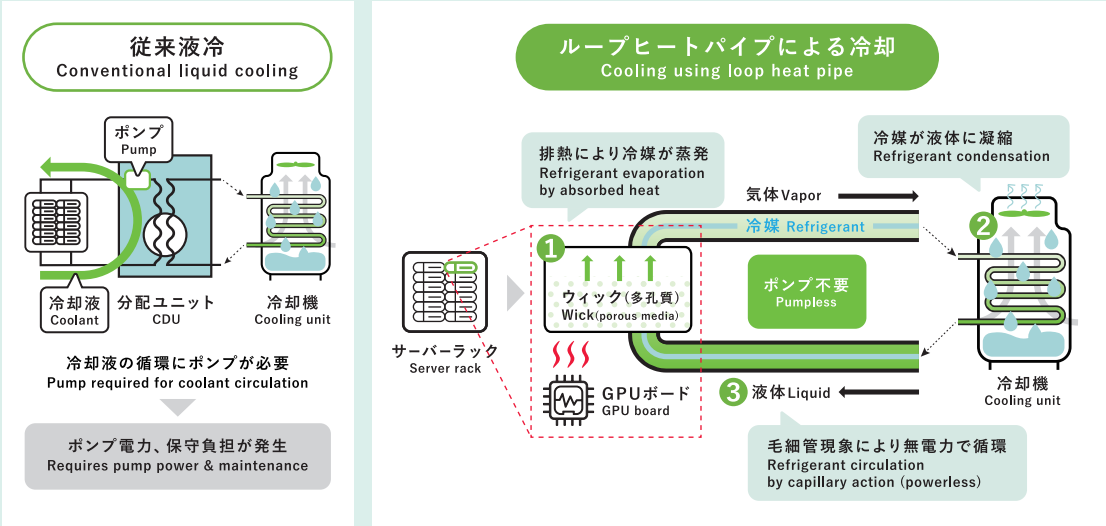
#Operational Efficiency#Safety and Security

Pumpless Cooling for High-Power Servers

Reducing power use for server cooling by implementing loop heat pipe

Technical Challenges & Goals

AI is driving higher data-center power demand, making efficient cooling essential. Conventional liquid cooling requires pumps to circulate coolant, increasing power use and maintenance. Our capillary-driven loop heat pipe provides pumpless heat transport and cooling, reducing power consumption and operating costs.



ポンプに頼らない冷却によりデータセンタの低消費電力化・運用コスト削減に貢献

Pumpless cooling contributes to reduced data-center power consumption & operation cost

Key Technologies

Core Technologies

- Power-free refrigerant circulation via phase change and capillary action
- Optimized loop-heat-pipe design for enhanced GPU server-cooling performance

Key Differentiators

- Pumpless circulation cuts data-center power by about 15% and reduce maintenance work
- Refrigerant flow adapts to heat load passively, enabling stable cooling without complex controls

Use Cases

Smart City

For containerized data centers expected to serve as regional AI infrastructure for smart cities, our loop heat pipe enables pumpless cooling of GPU servers, reducing cooling-system power consumption while lowering maintenance requirements.

Exhibitors

NTT, Inc. Space Environment and Energy Laboratories

External Partners

Nagoya University

CONTACT:Zero Environmental Impact Research Project