CEA TECH SERVICES FOR DATA CENTERS

Technology for data center challenges:

DATA CENTER CHALLENGES

Computing power
Enhancing electronic components and architectures; optimizing data storage; microservers

Energy efficiency
Reducing energy consumption; waste-heat recovery; integrating renewables; smart networks; optimizing heat flows in buildings and equipment; cooling systems

Cybersecurity and security
Protecting physical infrastructures against intruders, fire, and other hazards; cryptography; and information security, privacy, and data protection

Data and load management
Optimizing data flows and computation distribution; optimizing available energy resources

Reliability and maintenance
Improving system resilience; enhancing data backup; optimizing uptime; and developing low-carbon auxiliary electrical, HVAC, and other systems

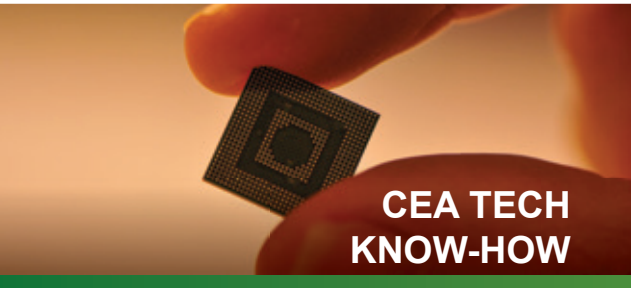
CEA Tech technology

- Thermal analysis
- Renewable energy production and storage
- Energy harvesting systems
- Sensor systems and integration
- Microelectronics and electronics
- FDSOI and 3D photonics
- Big data and data analysis
- Software

CEA Tech can help the following businesses:

- Building systems manufacturers (HVAC, air treatment, backup generators)
- Data center builders and hosts
- Network equipment manufacturers
- Electronic component manufacturers
- The digital industries

Here are some of the ways CEA Tech can support your development:



Energy efficiency	Heat network models to optimize heat recovery, storage, and conversion for heating and cooling
Renewable energy production and storage	Integration of CPV systems; photovoltaic solar; stationary storage; solar cooling; and battery or hydrogen systems for UPSs
Electronic components and architectures	Multicore architectures and high-performance energy-efficient components leveraging advanced technologies (FDSOI, 3D, and photonics); memory components (MRAM, PCRAM, OxRAM, and CBRAM)
Characterization and reliability	Electronic component and architecture risk, reliability, and robustness testing
Security, software engineering, and cryptography	Embedded software; software security and reliability; software development tools; secure, effective implementation of cryptography protocols; advanced cryptology (homomorphic encryption, pairing)
Big data and data analysis	Dynamic data flow management based on priority, computing resources, and the availability of renewable energy
Vision systems and lighting	Optimized, integrated LED components; temperature monitoring to prevent system overheating
Interactive simulation	Data center urbanization design tools
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