



Horizon Europe Partner Search & Competence Offer

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Proposition

Topic 1: [HORIZON-CL4-2027-04-DATA-09](#), Energy efficiency and sustainability of AI data processing in Data Centres (IA)

Topic 2: [HORIZON-CL5-2027-05-D4-06](#)

Thermal energy optimisation and waste heat recovery of high energy demand IT rooms in buildings or small edge data centres

Organization: Center of Technical Physics (CTPH), Poland

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Center of Technical Physics (CTPH) offers in-depth full-cycle engineering expertise in the design, mathematical modeling, prototyping, and experimental verification (from TRL 6 to TRL 8) of advanced two-phase and liquid cooling systems for high-performance computing data centers. With 30 years of experience in developing highly reliable thermal control systems for spacecraft and large industrial facilities, CTPH is ready to perform the full engineering synthesis of an adaptive intelligent cooling system for AI servers and data center infrastructure.

We offer the following areas of work:

- determination of the optimal architecture and parameters of the cooling system, including subsystems of air-conditioning, liquid or two-phase cooling for servers and racks;
- development and testing of cold plates, heat exchangers, and other components;
- mathematical and physical modeling of individual unique components and the system as a whole;
- development of adaptive top-level control systems ensuring optimization of operating modes and system energy consumption under variable thermal loads, external conditions, and the possibility of heat recovery;
- creation of a functional cooling system test bench for demonstration of new cooling technologies, experimental

research, and verification of component characteristics;

- real-time instrumental monitoring of thermal engineering systems for air-conditioning and heat and cold supply, and development of proposals for energy-saving measures.

CTPH's approach to innovative developments is based on methodology of "Engineering Synthesis of Complex Technical Systems". The methodology combines elements of scientific research, mathematical modeling of thermophysical processes, experimental research, and multi-criteria optimization of the system.

Track Record & Infrastructure

Space reliability standards:

Participation in the development of an innovative thermal control system based on two-phase mechanically pumped loop (2p-MPL) for very-high-throughput telecommunications satellites (SES-17 and EUTELSAT KONNECT VHVS) jointly with Thales Alenia Space France. CTPH carried out the development, manufacturing, testing, certification, and supply of prototype and flight components, including a high-tech Heat Controlled Accumulator (HCA), for which it provided the full cycle: from design to certification and supply of flight HCAs.

Large-scale ground projects:

Development and implementation of energy-saving industrial systems of air-conditioning and cold supply with cooling capacities of 10 MW and above.

R&D Infrastructure:

In-house research laboratory and test benches operating with modern single-phase and two-phase working fluids.

Partnership Profiles & Roles

Preferred role:

Beneficiary / Work Package Leader for cooling and automation systems. With experience in coordinating space programs, CTPH is also ready to consider the role of Coordinator.

Who we are looking for:

We are interested in partnerships with consortium coordinators, AI server/chip manufacturers, commercial data center operators, developers of energy storage systems and pilot demonstration sites in the EU.

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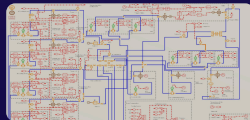
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