

PRESS NOTE

Leonardo: with GemaTEG for the thermal management of next-generation chips

- **DaTEG, the solution developed by GemaTEG, will increase the efficiency of next-generation chips in Leonardo's Artificial Intelligence (AI) infrastructure by 30%**
- **The collaboration focuses on Leonardo's data center in Chieti, with plans to expand to the davinci-1 HPC (High-Performance Computing) system**

Rome, 04 Sept 2024 - Leonardo and GemaTEG have initiated a partnership to reduce the energy costs of next-generation chips used in Artificial Intelligence (AI) infrastructures. GemaTEG has developed DaTEG, the first integrated and modular active thermal management system. Leonardo will deploy this innovative solution in its High-Performance Computing (HPC) systems to reduce the energy footprint of datacenters and increase their efficiency.

The partnership involves GemaTEG's laboratories and Leonardo's Chieti datacenter. This collaboration will explore a wide range of applications in the most relevant and impactful technological areas, with plans to expand to the HPC davinci-1, Leonardo's supercomputer. The goal is to achieve an average efficiency increase of 30% by reducing energy consumption and increasing chip performance in some of the configurations within Leonardo's AI infrastructures. This initiative aims to combine innovation and sustainability in the AI sector.

DaTEG allows precise control of operating conditions, by adjusting the cooling power to the actual chip loads, with a "localized cooling" approach. This provides a dynamic regulation of the temperature of each individual chip. Next-generation chips, such as Central Processing Units (CPUs), Graphics Processing Units (GPUs), and accelerators, driven by performance demands, generate unprecedented amounts of heat, increasing from 300-400 watts to over 1000 watts. Conventional cooling technologies struggle to dissipate this heat level. Overheated chips respond by slowing down computational cycles and reducing performance up to 50% less.

The benefits of adopting the DaTEG solution are numerous. The computing power of each chip is increased because it runs consistently in optimal conditions. Each GPU in the cluster is independently controlled through with localized cooling, allowing the system to address and eliminate bottlenecks from chip overheating. Total energy consumption is minimized with customized thermal management strategies that automatically decide where and how much to cool.

DaTEG's adaptive thermal management system increases computing power within the same infrastructure while reducing energy consumption associated with cooling. This innovation transcends AI industry limitations by enhancing performance while meeting sustainability objectives.

"The launch of the partnership with GemaTEG represents a significant step for Leonardo in ensuring an increase in the speed of our Artificial Intelligence applications while significantly reducing the overall energy impact, maximizing the efficiency-to-sustainability ratio of our HPC infrastructure," commented Carlo Cavazzoni, Head of Digital Infrastructures at Leonardo.

"The partnership between GemaTEG and Leonardo is a testament to our joint commitment to promoting innovation and sustainability in the field of artificial intelligence. Our innovative solutions enhance chip performance and contribute to environmental protection by optimizing resource use," stated Maurizio Miozza, Co-Founder and CTO of GemaTEG.

Leonardo

Leonardo is an international industrial group, among the main global companies in Aerospace, Defence, and Security (AD&S). With 53,000 employees worldwide, the company approaches global security through the Helicopters, Electronics, Aircraft, Cyber & Security and Space sectors, and is a partner on the most important international programmes, within these sectors, such as Eurofighter, NH-90, FREMM, GCAP, and Eurodrone. Leonardo has significant production capabilities in Italy, the UK, Poland, and the USA. Leonardo utilises its subsidiaries, joint ventures, and shareholdings, which include Leonardo DRS (72.3%), MBDA (25%), ATR (50%), Hensoldt (22.8%), Telespazio (67%), Thales Alenia Space (33%), and Avio (29.6%). Listed on the Milan Stock Exchange (LDO), in 2023 Leonardo recorded new orders for €17.9 billion, with an order book of €39.5 billion and consolidated revenues of €15.3 billion. Included in the MIB ESG index, the company has also been part of the Dow Jones Sustainability Indices (DJSI) since 2010.

www.leonardo.com

GemaTEG

GemaTEG's Thermal Management solution, DaTEG, transcends AI industry limitations by enhancing capacity without increasing resource demands. Since its founding in 2019, it is on a mission to accelerate AI infrastructure. It achieves this through its extensive experience in deep science exploration and innovation with environmental responsibility to create Thermal Management advancements that materially drive performance, significantly reduce costs and improve sustainability for all stakeholders.

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