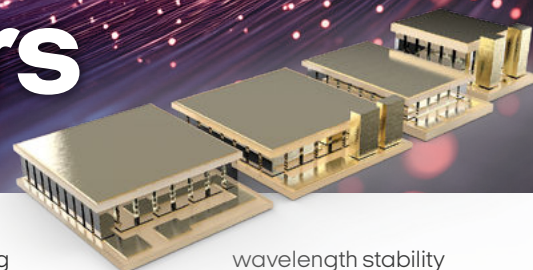


# Proven Cooling for Transceivers and Co-Packaged Optics in AI Data Centers



**As data centers race to support next-generation AI, the need for high-bandwidth, low-latency interconnects has never been greater. Phononic’s solutions are engineered to meet these challenges head-on, delivering best-in-class performance, quality, and reliability at scale—combining hyperscale-ready expertise with precision thermal control.**

AI workloads are driving a fundamental shift in back-end network design, requiring higher lane rates, longer reach, and more wavelengths per fiber—all while meeting strict power budgets to maintain PUE targets. These demands push optical components to their limits, making advanced thermal management essential for performance and efficiency.

The doubling of modulation with next-generation optics and the growing need for 2 km [“FR”] reach put additional pressure on EML performance specifications. Modulating to encode twice the data increases temperature sensitivity through chirp, making wavelength stability critical. The right thermoelectric cooler [TEC] ensures precise EML temperature control—reducing bit error rate, maintaining low latency, and minimizing module power consumption.

The standard approach to 800G [2x400G FR4] pluggables uses CWDM4, combining multiple wavelengths onto a single fiber. Longer reach compared to DR optics amplifies chromatic

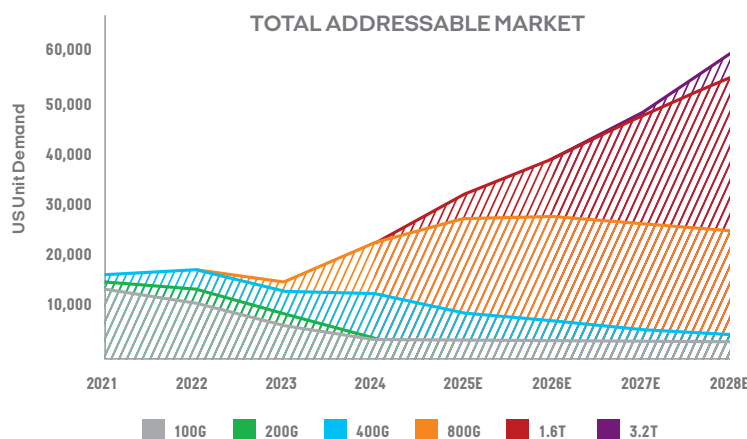
**The global Co-Packaged Optics market is set for transformative growth, driven by the demands of AI, large language models, and generative AI.**

- RESEARCH AND MARKETS, 2026

dispersion, making crucial. Phononic’s proven TECs with the fastest response time and tightest temperature stability, locking in wavelength for these strict requirements.

Co-Packaged Optics [CPO] is reshaping network architecture by integrating optics and switching in a single package. The result: lower power, higher bandwidth density, and reduced latency. AI deployments that take advantage of CPO will need mission critical precise and high quality cooling. Phononic’s unmatched design expertise delivers leading cooling solutions through thermal kits for CPO, and becomes even more mission-critical as CPO adoption expands.

Phononic’s expertise is built on proven innovation with solutions deployed in all major hyperscale cloud data centers across the globe. Our proprietary modeling and design process, combined with ISO-certified quality and global manufacturing, ensures rapid development, supply chain resilience, and zero field failures. Whether your back-end network prioritizes longer reach, higher lane rates, or both, Phononic TECs are custom-engineered to scale optical performance with precision and reliability—empowering the AI-driven future.



Source: Goldman Sachs Global Investment Research, Light Counting, Analysis



PHONONIC'S PROPRIETARY APPROACH TO DESIGN:

# Collaborative Design, Real-World Thermal Modeling, Industry-Leading Performance, Efficiency and Cost

Phononic has a deep and rich understanding of the optoelectrical market's past, present and future. Our Field Application Engineering (FAE) team has decades of experience and knowledge, and hundreds of patented materials, approaches and designs at their disposal that collectively ensure Phononic's TECs are consistently at the cutting edge of today's technology, empowering our customers to not only meet the current market demands but be fully prepared to meet and exceed the skyrocketing bandwidth requirements of tomorrow.

When designing a laser package, you need to maximize performance while minimizing component cost and validating full-scale supply to meet market demand. At Phononic, we have a proprietary approach to our design process. With millions of our TECs in the field, this time-tested approach consistently produces the highest quality of results.

With deployments across every major hyperscaler and the industry's first qualified and deployed 1.6T HVM solution, Phononic's unmatched portfolio offers capabilities with no true peer in the market.



Learn more about Phononic's  
CPO-Ready Thermal Kit:  
<https://phononic.com/thermal-kit-for-cpo>

## Phononic TECs enable High-Speed Optical Transceivers for AI and Machine Learning – 800G, 1.6T & beyond.



### Consistent Delivery of Dependable, High-Quality and Proven Technology

At Phononic, we have imposed some of the most rigorous standards in the market upon ourselves, and we continuously invest in top-of-the-line methods to deliver the highest quality and reliability to maintain our status as an industry leader, and The International Organization for Standardization (ISO) has noticed. The ISO provides the world's most widely recognized certifications for Quality Management Systems (QMS) and Environmental Management Systems (EMS), and Phononic has earned certifications toward ISO 9001:2015 and 14001:2015 standard requirements.

In addition, Phononic's copy-exact process between NPI and full-scale production avoids surprises, re-work or lost time, helping our customers ensure efficient speed to market. Phononic further sets itself apart from others through our 100% in-line testing for key quality and performance metrics, a key way our team works to ensure the highest quality and performance for our customers, every time. By leveraging our proprietary TEC technology and scalable device architecture, we are uniquely positioned to reliably deliver high performance cooling that meets the most rigorous demands, regardless the sector.