Horizon Kinetics Equity Opportunities Fund, LP – Class MD (the "Fund")

SANDBOXAQ™

October 2026

New Frontier Product Launch and Strategic Business Evolution Updates

In 2025, we participated in SandboxAQ's capital raise; since then, and especially since our last update in June, the company has been moving quickly to commercialize its large quantitative models, with a focus on critical sectors of the economy.

The company has been deepening and strengthening its three key moats:

- Proprietary data: SandboxAQ has developed interfaces to make its proprietary models easier to access through familiar Large Language Model (LLM) AI channels, including Claude, Google, and AWS Marketplace. This is while continuing to pursue large strategic programs in drug discovery, materials science and semiconductor manufacturing, such as a $500M contract with The Department of Commerce (described in more detail below).
- Proprietary models: The company builds AI systems that are trained directly on quantitative data—that is, on the laws of physics, chemistry, and biology—to model real-world systems at scale.
- Customer and real-world validation: In addition to strategic partnerships with the Pentagon, University of California, San Francisco, Dow, Sanofi, and many others, SandboxAQ scientists continuously publish technical research, often featured in top scientific journals such as *Nature*.

Our last review[1] provided an introductory insight into how the company's LQMs might work. For example: Starting with some existing data about a physical process (say a library of existing proteins or catalysts and a protein or other molecule to which some of them might bind), it runs large numbers of managed and refined computational iterations of interactions between them.

This process can identify functional matches to select compounds for synthesis in an experimental feedback loop—researchers are provided with a small output group of likely candidates with which they can work, and thereafter request further refinement from the model. This also enables the company to deepen its moat of proprietary data on physical properties at the molecular and sub-molecular (quantum) level, enabling further commercial development.

SandboxAQ has recently built interfaces of its models with Claude and other conventional AI Large Language Models (LLMs), more of which below. The company can now lower the cost and time barriers enough to enable—or catalyze, to borrow from some of the company's most critical work—commercial research activity for prospective users who couldn't otherwise afford to engage in certain lines of research. This is reminiscent of the productivity wave that followed the 2006 introduction of rentable cloud

[1] **HKEO Class MD – SandBoxAQ June 2026 Update**

computing time by Amazon Web Services for small or startup businesses that didn't have the scale to afford to own that much computing power.

Since the SandboxAQ team is very adept at succinctly describing their own activities, they've done the work for us; the following draws on new *product* announcements as well as *strategic business evolution* announcements during the past few months. We've simply aggregated them from disparate communications and done a bit of rearranging. Any comments of ours are italicized.

New Frontier Product: Commercial & Product Milestone Launch of SandboxAQ Models

AQCat and AQPotency *(described more fully below)* are now available through the SandboxAQ Model Catalogue. The strategy is to meet researchers where they already work, so they can access models trained to make quantitative predictions.

The strategy of putting the SandboxAQ LQMs inside a marketplace is to democratize access to these highly advanced scientific models and make them as easy to reach as possible, so that any researcher can tap the LQM, an AI model trained to predict the physics of the materials, simply by asking questions in plain English.

Before a model like AQCat, innovation in catalysis came at a steep price. You had to pull people off a deployment or manufacturing line, gamble on reappropriating machinery and reagents, and physically test an idea. SandboxAQ has lowered the bar for simulation. The alternative was a costly, multi-million dollar joint venture to develop something like a sustainable aviation fuel. Ask a large oil and gas company to turn fats and biologics into fuel and you are asking it to spend millions. Simulating that problem on a system already built on first principles compresses the time to innovation and cuts the cost of getting there.

The modules initially integrated with LLMs are around materials and drug discovery:

a) AQCat: High-throughput catalyst screening

Catalysts are involved in the production of over 80% of manufactured goods and 90% of commercial chemicals, but traditional screening is extremely slow and costly. AQCat accelerates catalyst discovery by predicting adsorption energy to rank thousands of candidates rapidly. Running up to 20,000 times faster than traditional methods with near-high-accuracy precision, it is spin-aware *(spin being a quantum property of an electron—describing its orientation, which affects properties like its magnetic field)* and handles magnetically complex metals like iron, cobalt, and nickel.

Accessible via natural-language prompts on Claude Science without coding, AQCat is available through Claude and SandboxAQ, as well as AWS Marketplace *(Amazon's cloud computing platform)*.

Making AQCat generally available in AWS Marketplace marks a shift from bespoke scientific engagements to scalable, self-service commercial distribution. Customers can subscribe and deploy within infrastructure they already use and trust, keeping every calculation inside their own AWS account for security and governance. The launch extends a cloud go-to-market strategy that also spans **Anthropic**, where SandboxAQ offers users access to AQCat via MCP *(an Anthropic open-source communication protocol that allows AI models to connect with external data sources, like SandboxAQ's, without building custom integrations for each such entity)*.

b) AQPotency: Structure-free virtual screening

AQPotency addresses a key drug discovery bottleneck by ranking protein-ligand pairs without solved 3D structures. *(Ligands are the molecule or atom that might bind to the receptor on another molecule, like a protein, which is central to new-drug development.)*

Operating on standard CPUs in seconds (~$1 per 1,000 comparisons), it provides uncertainty and applicability scores. It has demonstrated impact across eight successful programs delivered by the SandboxAQ team to customers. AQPotency is currently available via Claude (MCP) and SandboxAQ's website, with availability on Google Cloud Marketplace coming soon.

Strategic Business Evolution Updates:

A) Commercial partnership with Apheris

SandboxAQ has entered into a five-year, $50 million strategic collaboration with Apheris to commercialize SandboxAQ's physics-based LQMs. Apheris is a Berlin-based privacy-preserving AI drug discovery platform that allows pharma companies to train models without moving proprietary data. This collaboration integrates AQPotency and AQState into major pharmaceutical AI workflows while keeping customer data in-house. It accelerates commercial LQM distribution across 15+ global pharma pipelines, enabling customized model expansion.

Through its Federated Networks *(which allow multiple clients to collaboratively train a model while keeping their respective data separate)*, Apheris provides Sandbox direct and immediate access to scientists and researchers. Key companies in this network include:

- AbbVie
- Astex Pharmaceuticals
- AstraZeneca
- Takeda
- Boehringer Ingelheim
- Bristol Myers Squibb
- Genentech
- Johnson & Johnson
- Lundbeck
- Orion Pharma
- Recursion
- Sanofi
- Servier

B) $500 million award from the U.S. Department of Commerce's CHIPS Research and Development Office to address one of the most urgent challenges in American manufacturing: the foreign control of critical materials and chemistries that are essential to semiconductor manufacturing. In connection with the award, the Department of Commerce will receive a minority, non-voting equity stake in SandboxAQ.

Announced in June, the award provides funding to develop novel molecules and formulations for semiconductor manufacturing within four programmatic areas in which foreign supply has suppressed domestic production for decades, and will ultimately strengthen national and economic security:

- PFAS-free process chemicals
- Battery systems
- Rare earth-free magnets
- Catalysts

The strongest breakthrough results will be advanced into scaled domestic manufacturing and commercialization, via high-performing American manufacturing partners.

> "The next era of semiconductor leadership will be shaped not only by device architecture, but by who can invent and scale the materials that make those architectures possible. We are entering a period where materials innovation becomes a defining strategic lever for industrial resilience and technological advantage."

a) Per- and Polyfluoroalkyl substances (PFAS) are "forever chemicals" that appear throughout chip manufacturing as heat-transfer fluids, lubricants, insulating coatings, and surface treatment chemicals. The U.S. semiconductor industry cannot achieve long-term self-sufficiency without a domestic supply of PFAS-free process chemicals, and no compliant alternatives yet exist at scale.

SandboxAQ has developed approaches to predict PFAS degradation pathways and will extend that work into a new frontier: using our LQMs and AI-accelerated materials discovery platform to identify and validate PFAS-free drop-in replacements for critical semiconductor process chemicals.

b) Catalysts play critical roles throughout the semiconductor fabrication process, including in the generation of ultra-pure gases that enable materials to be precisely deposited one atomic layer at a time, and also to mitigate the resulting hazardous fluorinated exhaust that such processes produce. The formulations and process know-how behind these catalysts

are almost entirely owned and controlled by foreign suppliers. Furthermore, current production methods for semiconductor precursors are high cost and inefficient, generating excessive waste and low yields.

SandboxAQ will build on the progress already made by its AQCat workflows (which are built on 13.5 million high-fidelity quantum chemistry calculations developed in collaboration with **NVIDIA**) to screen catalyst candidates at near-quantum-chemistry accuracy 20,000 times faster than traditional methods, and reduce catalyst development timelines in commercial deployment.

c) **The permanent magnet** supply upon which America's semiconductor factories depend are primarily foreign-controlled. China controls more than 90 percent of global neodymium-based permanent magnet production, and those sit inside every advanced chip printing machine, vacuum pump, and precision actuator that positions silicon wafers to tolerances smaller than a virus.

SandboxAQ will use ReAQT and its LQMs to screen magnet chemistries that eliminate or sharply reduce reliance on neodymium and other heavy rare earth elements, at a speed and precision no prior method has matched, targeting formulations that can be manufactured using existing U.S. production equipment, lowering the capital barrier to commercialization.

d) **Batteries** are integral to rebuilding domestic semiconductor manufacturing, which requires uninterrupted, precisely controlled, localized power. A current disturbance lasting only minutes can force tool shutdowns, reduce wafer yields, and trigger costly unplanned downtime. Most chip factory backup power systems depend on battery materials (lithium, cobalt, key chemical precursors) that are heavily concentrated overseas. As a result, a geopolitical or supply chain shock could potentially disrupt a U.S. semiconductor factory.

SandboxAQ will build on the progress already made by its AQVolt workflows, which is a frontier AI model for battery chemistry. This programmatic area will develop battery chemistries that do not depend on lithium and other materials that have foreign chokepoints.

C) Switch product released

On 8/26/26, SandboxAQ announced Switch, open-source software that brings people and AI agents together in the collaboration tools that companies already use. Switch can be activated within minutes in any standard enterprise environment at no cost.

Developers are building increasingly capable AI agents, but putting them to work across a team still requires integrations and repeated context sharing. Many AI products require companies to commit to a specific model, agent or platform.

Switch takes a different approach. There's no migration, no new workflow and no vendor lock-in.

"Every team we talk to has capable agents trapped in separate tools, and a coordination tax eating the productivity those agents were supposed to deliver," said Mohammed Aboul-Magd, General Manager, SandboxAQ. "Switch pulls agents into the channels where teams already work, where knowledge compounds instead of being relearned with every task. If you can message a colleague, you can put an agent to work."

Switch is a platform for running AI agents together, connecting agents into shared workspaces such as Slack, Microsoft Teams and Discord where people and agents work together with the same context, resources, and history. It is vendor agnostic, so teams can use agents and models across providers without locking their workflows, context, or collaboration environment into a single AI ecosystem—with shared context *(the relevant information about a project—background, goals, etc.)* that stays with the work. This upcoming suite of agentic products, which includes agent ROI measurement and security solutions, is a crucial step in unlocking better use of AI in enterprise.

D) Saudi Aramco Catalyst Commercialization Participation

Upon renewal of a 19-month Saudi Aramco contract to model computational fluid dynamics, Aramco will also use LQMs to accelerate the discovery and design of next-generation catalysts for CO2 conversion. On top of the immediate project value for both of us, SandboxAQ will also share in ownership of the resulting catalysts, creating meaningful long-term upside from future commercialization. *Horizon Kinetics clients will be familiar with and appreciate the distinctive economic value of what appears to be, effectively, potential future royalty streams.*

For more info on SandboxAQ, their YouTube page provides some more accessible discussion of their now-wide-ranging activities: https://www.youtube.com/@sandboxaq/videos

Horizon Kinetics Equity Opportunities Fund, LP – Class MD (the "Fund")

SANDBOXAQ™

October 2026

IMPORTANT RISK DISCLOSURES

This material has been authored by Horizon Kinetics Asset Management LLC, a registered investment adviser ("Adviser"). This information should not be used as a general guide to investing or as a source of any specific investment recommendations. This is not an offer to sell or a solicitation to invest.

Opinions and estimates offered constitute the judgment of Horizon Kinetics and are subject to change without notice, as are statements of financial market trends, which are based on current market conditions. Under no circumstances does the information contained within represent a recommendation to buy, hold or sell any security, and it should not be assumed that the securities transactions or holdings discussed were or will prove to be profitable. As always, past performance is not indicative of future returns.

Horizon Kinetics Asset Management LLC is the general partner to Horizon Kinetics Equity Opportunities Fund, LP – Class MD. Interests are non-transferrable and are non-exchangeable except under the terms of the Fund's Offering Memorandum. The Fund may invest in securities and other assets that are illiquid, or otherwise cannot be disposed of promptly. You should be familiar with the terms of the Fund before investing. Investors are required to meet certain net worth thresholds to invest.

This information is based on information available to the public; no representation is made with regard to its accuracy or completeness. Horizon Kinetics and its employees and affiliates may have positions in securities of companies mentioned herein. All views expressed in this report accurately reflect the research analysts' personal views about any and all of the subject matter, securities or issuers.

Side-by-Side Management: A number of The Adviser's portfolio managers are responsible for managing one or more funds or client accounts. A portfolio manager may manage a separate account or other pooled investment vehicle that may have a materially higher or lower fee arrangement or that may have a performance fee arrangement. The side-by-side management of these accounts may raise potential conflicts of interest relating to cross trading, the allocation of investment opportunities and the aggregation and allocation of trades. In addition, it is possible that due to varying investment restrictions among accounts and for other reasons, certain investments could be made for some accounts and not others or conflicting investment positions could be taken among accounts. The Adviser has a fiduciary responsibility to manage all client accounts in a fair and equitable manner. The Adviser seeks to provide best execution of all securities transactions and aggregates and then allocates securities to client accounts in a fair and timely manner. To this end, the Adviser has developed compliance policies and procedures that seek to mitigate and manage the potential conflicts of interest that may arise from side-by-side management of accounts, which include its allocation and aggregation policies.

Material Relationships: The Adviser and certain of its management personnel have relationships or arrangements that may present potential or actual conflicts of interest. The Adviser seeks to address these potential conflicts of interest through various policies and procedures, which include both electronic and physical safeguards. Texas Pacific Land Corporation ("TPL") and Miami International Holdings Inc. ("MIAX"), both of which are public companies whose shares trade on the New York Stock Exchange, are significant portfolio holdings in many of the advisory accounts managed by the Adviser. To the extent the Adviser's policies and procedures prevent the Adviser from trading in certain securities (e.g., TPL or MIAX stock) for a client account during certain periods of time, the account and its performance could be negatively impacted. Furthermore, because the Firm has discretion over a substantial percentage of the outstanding shares of TPL and MIAX, it may be deemed to be an affiliate of TPL and MIAX. As a result, the Firm might be restricted from selling TPL or MIAX on behalf of certain types of client accounts.

Board of Director Relationships and Personal Transactions: Mr. Eric Sites, an employee of the Adviser, is a member of the Board of Directors of MIAX but does not have investment discretion over any trades involving MIAX in client accounts. Furthermore, Adviser personnel, including Mr. Sites and other personnel who are or may be involved in the management of advisory accounts managed by the Adviser, may have personal investments in TPL and/or MIAX stock or the stock of a company that has a material business relationship with TPL and/or MIAX. These personal investments may also present potential or actual conflicts of interest. The Adviser has adopted a Code of Ethics governing the manner in which employees may engage in personal securities transactions. The Code requires employees to periodically report their personal holdings and to pre-clear personal securities transactions. The personal holding information and pre-clearance requests are reviewed by the Adviser's compliance personnel.

This information is not approved for distribution or re-distribution and the contents are not permitted for public dissemination. If you have any questions about this material, you may contact Horizon Kinetics at info@horizonkinetics.com.

©2026 Horizon Kinetics LLC ®