

# QUANTUMSPHERE, Inc. - Corporate Profile

## OTCQB: QSIM

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For the thousands of highly inefficient chemical plants in operation today, producing nearly one trillion dollars of Ammonia, Methanol, Light Olefins and other basic chemicals annually, QSI has developed a high-performance catalyst accelerator technology which is seamlessly integrated with existing commercial catalysts to significantly improve process efficiency and production output. The result is a reduction in energy costs and greater revenue and profits for chemical plants. QSI's patented processes and catalyst enhancement technology offer a value proposition that could be worth billions to chemical plant owners and operators, globally, over time.

**FeNIX™ Product Benefits** – QSI's advanced catalyst accelerator (product name: FeNIX) is designed for the ~\$100 billion USD ammonia industry. FeNIX, applied as a high surface area coating to existing standard commercial catalysts, delivers higher activity and overall conversion efficiency, which can increase ammonia plant production output up to 15% or decrease operating costs by allowing the plant to operate at lower temperatures and pressures. A 5% increase in catalytic activity can translate to millions of additional profits for a typical-sized ammonia plant, over the life of the catalyst. [More about FeNIX™ nano catalyst accelerator technology.](#)

**FeNIX™ Commercial Validation** – QSI has engaged in strategic programs with a number of industry-leading corporations including Casale, and other top catalyst producers around the globe. In 2015, QSI and its partners validated FeNIX in two industrial-scale ammonia plants in China by delivering a 10-15% increase in catalytic activity and production output. This important initial commercial validation is anticipated to help drive further validations and early technology adoption and revenues for QSI via the Casale partnership; ~40% of global ammonia and methanol production utilize Casale technology.

**Target Market** – QSI's lead chemical sector focus is the ~\$100 billion USD ammonia market which offers several hundred million dollars of total available market to QSI. QSI has partnered with industry-leader, Casale, a 95-year-old, Swiss-based engineering firm whose converter technology is utilized in the manufacture of nearly 40% of the world's ammonia production.



QSI's ultra-high surface area FeNIX™ nano catalyst accelerator technology can deliver improved catalytic activity, greater conversion efficiency, and increased production rates to commercial ammonia producers, globally. Leveraging a patented, economically scalable, and ISO-compliant manufacturing process, QSI can deliver FeNIX™ nano catalysts in commercial volumes.

QSI is also leveraging its intellectual property to develop advanced, high-efficiency catalysts for other key chemical markets, such as methanol (used for fuels, paints, and plastics) and light olefins (petrochemicals, plastics, and polymers), which are expected to follow FeNIX to commercialization. The annual methanol and light olefins markets equate to ~\$50 billion USD and ~\$300 billion USD, respectively.

By way of background, more than 82% of all ammonia produced globally is used to make fertilizer to grow food more efficiently. Ammonia is one of the most critical chemicals produced for global food supply and is responsible for providing up to 50% of the protein consumed by humans. Production of ammonia consumes nearly 2% of the world's energy and is responsible for more than 5% of global natural gas consumption each year.

**Sales & Marketing Strategy** – The Go-To-Market strategy for the chemicals sector consists of (i) a contractual relationship with Casale for ongoing joint development and commercial validation, and joint international marketing and sales; and (ii) continuing to establish and strengthen relationships with multiple catalyst manufacturers, ammonia producers, and engineering firms that are anticipated to result in a key commercialization of FeNIX technology with Casale in 2017.

**Business & Revenue Model** – QSI's integrated products and services generate revenue streams through a bundled product offering consisting of (i) catalyst sales, (ii) intellectual property licensing, and (iii) engineering and consulting services to offer a full-product solution to customers. With this flexibility, QSI is able to work closely with its key partners and customers throughout the value chain to maximize the potential of each opportunity while mitigating risk and delivering shareholder value. The revenue model, for example, consists of Casale refurbishments of up to 15 plants per year, at up to \$3M per plant to QSI, resulting in up to \$45M in annual revenue. QSI and Casale are currently in sales discussions with multiple plant operators. Gross margins are expected to be >50%; corporate expenses are expected to be ~\$2M per year at scale.

**Competitors** – QSI's business model identifies the largest players in the chemical catalyst markets as potential business partners rather than competitors. By leveraging QSI's patented, highly automated, and ISO 9001:2008 compliant manufacturing processes, these partners can rapidly incorporate and benefit from the high quality and unique performance characteristics of QSI nano catalyst accelerator products. To QSI management's knowledge, no other company can match the size, purity, uniformity, and catalytic activity of QSI products, deliver in large volumes, or demonstrate meaningful results in large, near-term commercial applications with compelling economic value propositions.

**Competitive Advantage** – QSI products have unique properties that create superior results with cost-effective scalability. The ability to bulk-manufacture advanced high surface area nano-scale metallic particles with a controlled oxide layer and leverage their unique catalytic properties in multiple industrial chemical processes - addressing higher efficiency and lower energy needs - makes QSI a strong partner and industry-leading value-added technology provider. These competitive advantages are backed by 10 issued patents, external 3rd party validation, and ISO 9001:2008 compliance.

#### Press Releases and 8K Filings

- 03-08-16 [QuantumSphere Enters Into a Commercialisation Partnership Agreement with Casale, S.A.](#)
- 03-01-16 [QuantumSphere Announces Issuance of U.S. Patent for Next Generation Ammonia Production Technology](#)
- 05-27-15 [QuantumSphere Announces Joint Development Agreement with Casale, S.A.](#)
- 05-05-15 [QuantumSphere Announces Production Validation of Nano Catalysts for Multi-Billion Dollar Ammonia Industry](#)

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