microstaq
Innovations that flow

Technology for a Greener Tomorrow

Who we are

We are a team of creative experts in the field of semiconductor engineering. We have come together to help companies move forward with innovative technology guiding their hand. Our team of experts has pioneered MEMS-based valve technology to reduce the energy consumption of HVAC/R systems across the globe.

Energy Efficiency and Reliability

Founded in 2001, with the aim of bringing advanced technology to the flow control industry, Microstaq is a company dedicated to developing and marketing micro-valve technology solutions for real-world flow control problems. Microstaq is a privately held, venture capital backed company.

Microstaq™ operates on a fabless semi-conductor model, with direct product sales to OEM's, Energy Service Companies (ESCO's) and distributors. Headquartered in Austin, Texas, we have sales offices and channel partners across North America, Asia and Europe. We have established manufacturing partnerships in Asia as well as a division in China to support sales to our Chinese customers.

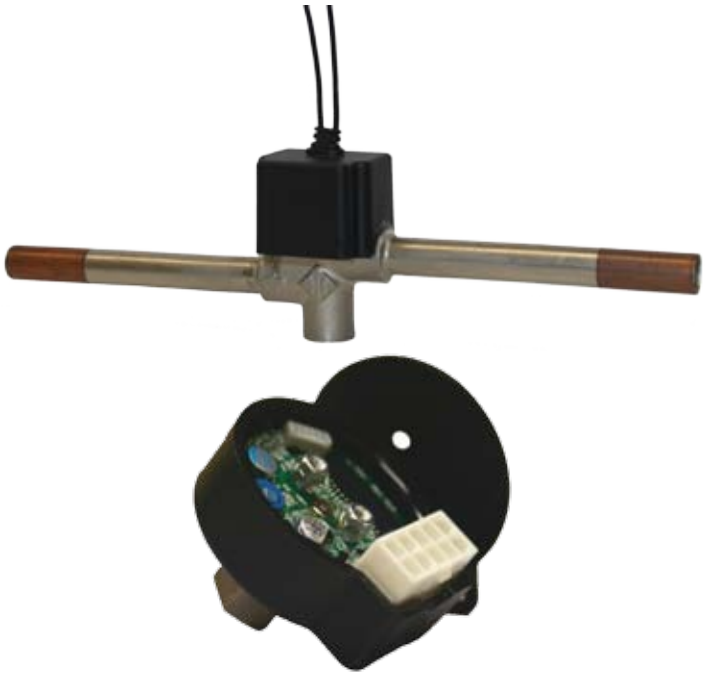
What we do

Microstaq designs, develops, and markets high-performance MEMS silicon valve systems, which can operate across a wide spectrum of flow control environments. Today's Microstaq products include the Silicon Expansion Valve (SEV) and Super Heat Controller (SHC) for use in HVAC/R original equipment and retrofit applications.

Revolutionizing Flow Control

The SEV is designed to replace existing, slower, and less accurate mechanical expansion valves, to immediately improve a cooling system's efficiency and reduce the energy it uses. Paired with the SHC, a market first electronic controller with embedded temperature and MEMS pressure sensors, the SEV stands strong as the first true revolution in HVAC/R expansion valve technology in over 50 years.

A silicon microvalve designed for ultimate energy efficiency gain, it provides the first ever semiconductor control of fluid movement. It also simplifies the design of HVAC control systems and dramatically increases the life and durability of compressors in HVAC/R systems.



Energy in Today's World

According to the US Energy Information Administration (EIA), nearly 550 billion kilowatt-hours (kWh) of electricity is used for cooling and ventilation by residential and commercial sectors, or nearly 20% of total US energy consumption.

Facts & Figures:

- Nearly 300 billion kWh is used by the commercial sector, equating to almost 25% of the total commercial sector energy consumption.
- 230 billion kWh is used by the residential sector, nearly 20% of the total residential energy consumption.
- In total 31% of US electricity use is attributed to HVAC/R.

Reducing Energy use for Tomorrow's World

Microstaq's products are designed specifically to meet the needs of both OEM and retrofit markets. Microstaq's precision fluid metering affords superior superheat control, providing increased reliability and energy savings at the same time.

OEM's incorporating Microstaq's MEMS-based valve systems will see:

- Increased system reliability
- Increased comfort and energy efficiency through enhanced capacity modulation
- 20% energy savings
- Protection of the compressor, the most expensive component in the system

Similarly, retrofit markets will see:

- 20% energy savings
- Payback periods as short as 18 months, without government rebates
- Extremely low installation time - as little as one hour

Bringing Semiconductor Technology and New Ideas to Mechanical Systems

Microstaq products are based on the Microstaq Ventilum™ chip, a pioneering industry technology, designed to replace bulky solenoids and other mechanical devices with an intelligent miniature MEMS-based valve, capable of the same level of fluid delivery capacity.

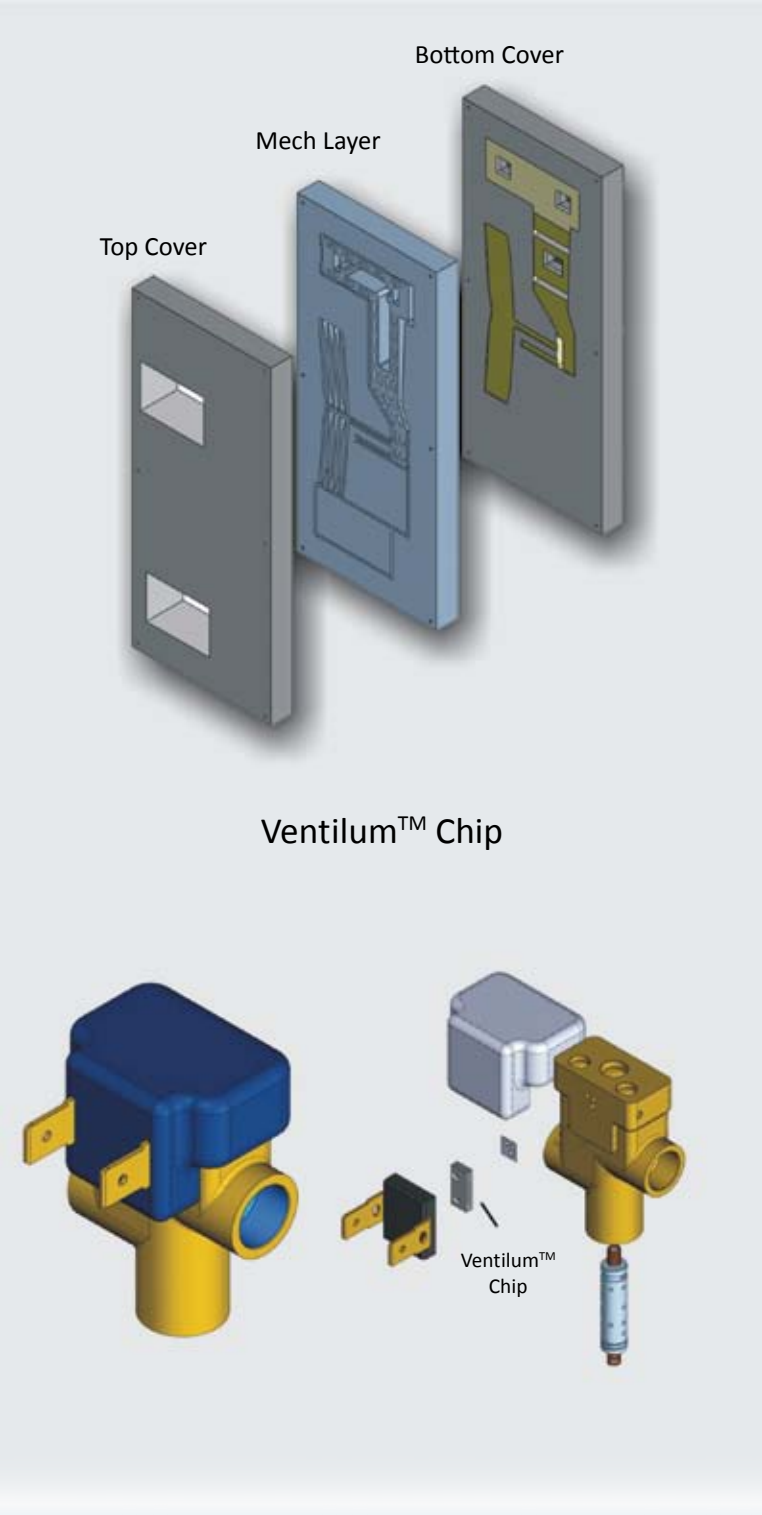
Macro Flow in a Micro Package

While most microfluidic devices can only control micro-liters of fluid and gas flows, Microstaq's MEMS microvalve technology can control more conventional flow systems such as those in the $60 billion HVAC/R market.

- Microstaq's MEMS-based microvalves are fabricated from three layers of silicon. Microfluidic ports open and close through electrically controlled thermal activation of a central mechanical element.
- The technology can be used to control a conventional spool valve that handles flows of hundreds of liters per minute

These microvalves are not limited to the HVAC/R markets alone. Microstaq has pioneered the use of their MEMS microvalves in automotive transmissions as well.

Requiring three times less space compared to today's bulky solenoid valves, the MEMS micro-valve allows for the construction of smaller, lighter and less expensive automotive applications.



Microstaq's Strategic Expansion:
Penetrating the Chinese Market

GCiS China Strategic Research surveyed a collection of HVAC equipment across a cross-section of applications, budgets and thermal zones, between Q3 2008 and Q1 2009. The study discovered that:

- Despite a slowing economy, China's construction industry in driving a multibillion dollar HVAC market, particularly with green equipment.
- Green HVAC accounts for roughly 20% of the total HVAC market and 35% of the HVAC equipment market.

With such strong factors acting as a motivator and with the intention of making its presence felt in such a rapidly expanding HVAC arena, Microstaq now has an office in Science City, Guangzhou, China in addition to its office in Austin, TX.

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