



Balanced Flow Meter Keeps Business Moving for NASA Partner A+ FlowTek



Above: NASA photo. Right: Two designs of the Balanced Flow Meter are pictured above. Photos courtesy of A+ FlowTek.

In 2003, A+ FlowTek licensed the Balanced Flow Meter Technology from NASA's Marshall Space Flight Center, where principals of the start-up company had collaboratively developed the advanced flow measurement device along with NASA innovators via a Space Act Agreement (SAA). The novel meter measures fluid or flow with a high degree of accuracy, reliability, and safety using no moving parts and offering simple manufacture and installation. As the flagship product for A+ FlowTek, the technology is integral to the small company's business growth, with thousands of units sold and sub-license agreements in place for distributors in the U.S., South America, Europe, and Asia.

Benefits of Technology Transfer

Partner Benefits

- **Commercialization:** Provided a commercially viable product that served as the basis for a successful and growing start-up company
- **Time and cost savings:** Enabled the company's use of NASA's technical expertise and testing facilities to collaboratively develop the technology, rather than building complicated fluid flow analysis methods in-house
- **Future growth:** Served as a foundation for other custom-sized flow meters developed by A+ FlowTek in house

Technology Benefits for NASA Missions and Commercial Applications

- **Accurate:** Provides improved performance for highly reliable flow metering over a wide variety of applications
- **Robust:** Requires no moving parts, minimizing the risk of breakage and intrusion into the fluid flow
- **Efficient:** Facilitates rapid recovery of fluid pressure, helping to decrease power requirements and their associated costs
- **Easy-to-install:** Mounts between two flanges in a fluid-flow conduit, threaded or welded into the conduit, or integrated into pipe fittings
- **Flexible:** Serves as the base technology for a full suite of fluid metering and mixing options, all of which can be achieved with few hardware modifications to serve varying aerospace and commercial needs

SUCCESS

On the Record

“[NASA] has been and is very supportive of the technology transfer and partnering process, and we simply would not have been able to do this work and realize the commercial success we are seeing without them.”—*Paul Van Buskirk, Co-founder, A+ FlowTek*

About A+ FlowTek

A+ FlowTek is a small, woman-owned company specializing in fluid flow metering technologies. Based in Humble, Texas, the company was formed in 2002 with the goal of commercializing NASA and A+ FlowTek co-developed technologies.

Technology Origins

Many aerospace applications like liquid rocket engines and space propulsion—as well as ground testing of these technologies—require fluid flow measurements. The limitations of previous metering technologies gave NASA a vested interest in developing a more accurate and robust metering device to be used in aerospace applications. Specifically many other devices are highly intrusive, featuring moving parts that protrude into the fluid and can disturb its flow. These parts can also break and damage equipment, and make recovery of pressure difficult.

The Balanced Flow Meter addresses these issues by providing accurate measurements with no moving parts and excellent pressure recovery. Thus, NASA now has a patented technology that outperforms previous methods of flow metering for many aerospace applications, and it also can be modified to perform additional functions such as fluid mixing and conditioning.

The Basis for a Start-up

In addition to aerospace applications, chemical-processing facilities also could greatly benefit from a flow meter with a simpler, less intrusive design that is capable of handling high-velocity fluid flows. The founders of A+ FlowTek recognized this need for a better flow meter, thus leading to a partnership with NASA's Marshall Space Flight Center in 2001 to co-develop the Balanced Flow Meter. In 2002, they formed A+ FlowTek, licensed the patented technology from NASA, and ramped up full commercialization activities. The company also developed custom sizes of the flow meter technology—with a product line ranging in size from 0.5-inches in diameter (useful for residential installations like water hoses) to 12 feet in diameter (applicable for chemical processing facilities or water treatment for a city).

A+ FlowTek's commercialization activities have been highly successful with more than 4,000 units sold and distributor agreements either signed or pending for parts of the U.S., South America, Europe, and Asia. In fact, several Fortune 500 chemical and petroleum companies have made the Balanced Flow Meter standard across all of their facilities.



The Transfer Process

The Technology Transfer Office, part of NASA's Innovative Partnerships Program (IPP), helped coordinate the collaborative development of the Balanced Flow Meter technology as well as its subsequent license to A+ FlowTek among technical contacts, personnel at A+ FlowTek, and the Intellectual Property Office at NASA's Marshall Space Flight Center.

For More Information

If you would like more information about Marshall's Balanced Flow Meter technology (MFS-31952-1) or about other technologies available for license, please contact:

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