



NASA's Impact in Minnesota: A Tech Transfer Perspective

You know that NASA studies our planet, our sun, the solar system, and the Universe. But did you know about the space program's economic impact here on Earth?



In 2011, NASA invested over **\$9 million** in the state of Minnesota.

Since 2001, NASA's SBIR/STTR Program has invested nearly **\$11.5 million** in **15 Minnesota companies** and more than **\$1.2 billion** nationwide.

How NASA's SBIR/STTR Program Benefits Minnesota

NASA is committed to moving technologies and innovations into the mainstream of the U.S. economy, and the Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) program helps fulfill this goal.

SBIR/STTR stimulates technological innovation by encouraging small, high-tech companies—particularly minority and disadvantaged businesses—to partner with NASA to help meet its research and development needs in key technology areas. At the same time, this program strengthens small companies by enabling them to bring cutting-edge new products into the U.S. economy.

The list to the right highlights Minnesota businesses that received SBIR/STTR contracts from NASA since 2001. (Visit <http://sbir.nasa.gov> for more information on the SBIR/STTR program.)

NASA SBIR/STTR Companies in Minnesota

Advanced Medical Electronics Corporation.....	Maple Grove
Adventium Enterprises, LLC.....	Minneapolis
BRS Aerospace.....	St. Paul
Architecture Technology Corporation.....	Eden Prairie
Ballistic Recovery Systems, Inc.	South St. Paul
Chi's Research Corporation	Minnetonka
Firefly Technologies.....	Shakopee
H.V. Setty Enterprises, Inc.	Burnsville
MUSYN, Inc.	Minneapolis
NVE Corporation	Eden Prairie
SIFT, LLC.....	Minneapolis
SVT Associates, Inc.	Eden Prairie
T3 Scientific, LLC.....	Arden Hills
The IIIAN Company, LLC	Minneapolis
TLC Precision Wafer Technology, Inc.	Minneapolis

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NASA Innovations Significantly Improve Aircraft Safety (Duluth)

Cirrus Design Corporation has earned an industry-leader position by ensuring that its aircraft include comprehensive safety features, developed in concert with NASA. The company has installed airbags and full-aircraft parachutes, modified airfoils to help prevent spins, and improved crashworthiness. Thanks to these innovations, the Cirrus SR22 has been the top-selling FAA-certified single-engine airplane every year since 2002.



Rocket-Powered Parachutes Rescue Entire Planes (Saint Paul)

With the help of NASA funding, BRS Aerospace has developed a whole aircraft parachute recovery system that has saved hundreds of small aircraft—and their pilots and passengers. A NASA SBIR contract enabled BRS to develop lighter, stronger parachutes with smart deployment systems, and provided the credibility necessary to create a broad market for the innovation. BRS has sold more than 30,000 systems worldwide and the parachute is standard equipment on many top-selling small planes.



NASA Material Helps Patients with Heart Failure (Minneapolis)

An extremely tough, lightweight thermoplastic developed for high-speed aircraft is now being tested for use in patients experiencing heart failure. Medtronic, Inc., a world leader in medical technology, licensed the NASA material to insulate the thin metal wires connected to its implantable cardiac resynchronization therapy (CRT) devices. The material makes the lead wires on heart devices thinner, giving surgeons more flexibility to place the leads in the most beneficial location for each patient.



NASA Design Strengthens Welds (Eden Prairie)

Friction Stir Welding (FSW) is a solid-state joining process that uses friction, combined with forging pressure, to produce high-strength welds. MTS Systems Corporation licensed NASA's patented auto-adjustable pin tool, enabling the company to introduce products that advanced FSW applications for high-strength structural alloys. The products are cost-competitive, efficient, and can be used with a wide range of alloys, including previously unweldable aluminums and high-temperature materials.



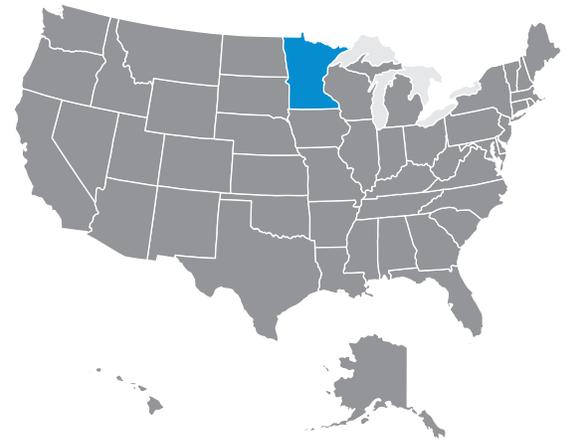
Water Filtration System Improves Dental Care (Fergus Falls)

NASA's investment in water filtration for space missions is paying huge dividends to the dental industry and its patients. Thanks to a NASA technology, MRLB International, Inc. developed a product that reduces harmful bacteria from dental water and protects patients and staff from exposure. Better filtration, greater capacity, and longer service intervals have also led to significant savings—the University of Maryland Dental School estimates a savings of \$274,000 per year.



Device Improves CPR and Survival Rates (Minneapolis)

A partnership between NASA, the U.S. Army Institute of Surgical Research, and Minneapolis-based Advanced Circulatory Systems, Inc., is improving the quality of life for patients suffering from cardiac arrest, low blood pressure, and head injury. This team has developed a non-invasive device that increases circulation throughout the body, thereby improving the opportunity for survival and quality of life for patients who experience major medical emergencies and life-altering circulatory conditions.



NASA actively seeks partnerships with U.S. companies that can license NASA innovations and create “spinoffs” in areas such as health and medicine, consumer goods, transportation, renewable energy, and manufacturing. When businesses leverage NASA technologies to develop new products, it not only benefits the regional economy, but significantly strengthens the nation's competitiveness in the global marketplace.

NASA's centers across the country have helped 41 Minnesota companies develop revolutionary spinoff technologies.

Learn more about how NASA innovations benefit the public in *Spinoff*, an annual publication that highlights NASA's most significant technology transfer successes. (Available at: <http://www.sti.nasa.gov/tto>)

National Aeronautics and Space Administration

**Office of the Chief Technologist
NASA Headquarters
Washington, DC 20546**

www.nasa.gov

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