Electronic Technology

Enhanced Infant Car Seats

NASA's Marshall Space Flight Center (MSFC) has developed a suite of technologies designed to enhance the **safety** and **quality** of infant car seats. These patented technologies provide improvements in remote video monitoring, biotelemetry, tracking, portability, comfort, and entertainment, producing a more secure car seat and an enriched experience for the infant.

Benefits

- Advanced features can continue to be used when infant car seat is converted to a baby carrier
- Active noise cancellation creates quiet environment for infant
- Built-in speakers allow infant to listen to unique audio sources (e.g., heartbeat)
- Driver's video display of car seat eliminates the need to turn around to view infant
- Use of miniature technologies results in minimal weight increase (about 1.5 pounds)
- Tracking feature alerts driver if unusual car seat movement occurs
- Biotelemetry provides advanced notification of health concerns (e.g., a sudden fever or a blocked airway due to a slumped head)
- Cushion system adjusts to a variety of positions to provide maximum comfort to infant
- Temperature control system adjusts car seat to the ideal temperature for infant's comfort
- Adjustable ventilation system provides filtered warmed or cooled air to infant to improve air quality

technology opportunity

For More Information

If you would like more information about this technology or NASA's technology transfer program, please contact:

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The Technology

NASA has applied its systems integration expertise to a common domestic application—infant car seats. Many juvenile products have similar advanced features, such as strollers with CD players and bassinets with vibrating mattresses. NASA has extended these advanced features to enhance the quality and safety of infant car seats. Each of the NASA technologies strives to improve an infant's comfort and safety during transport and reduce the number of driver distractions related to an unhappy infant. Each of these systems can be used whether the seat is installed in a vehicle or is being carried by hand.

- **Entertainment system** – Uses audio and tactile methods to create a relaxing environment for transporting an infant. The system plays desired musical selections and provides other soothing audio methods to keep the infant calm, even if ambient sound levels are distracting or disturbing.
- **Remote video monitoring system** – Remotely monitors an infant's activity in the car seat. The driver can safely keep eyes on the road instead of turning around to determine the infant's status. This technology is especially helpful when used with rear-facing infant car seats.
- **Biotelemetry and tracking system** – Provides a means to monitor important infant biometric data such as heart rate, perspiration rate, breathing patterns, or diaper wetness. This safety system can also detect the location of the infant safety seat relative to the driver. If any unusual conditions arise, the driver is notified that the infant may need attention.
- **Cushion system** – Adjusts seat cushions around the infant to provide maximum support and comfort. The cushions can be configured regardless of seat orientation in such uses as a car safety seat, stroller, highchair, or bed.
- **Environmental control system** – Maintains a comfortable temperature around the infant by gently heating or cooling the car seat relative to the car's air temperature. An adjustable ventilation system improves breathable air quality by directing filtered warmed or cooled air toward the infant's nose and mouth.

Opportunity

This technology is part of NASA's technology transfer program, which seeks to stimulate commercial use of NASA-developed technology. Currently in the early stages of development, NASA's patented (U.S. 6,696,943; U.S. 6,809,643; U.S. 7,039,207; U.S. 7,284,792; and U.S. 7,320,223) car seat technologies exist as untested designs. NASA is flexible in its agreements, and opportunities exist for exclusive, nonexclusive, or exclusive field-of-use patent licensing.