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THE EXCLUSIVE MAINTENANCE RESOURCE FOR THE TRANSIT AND MOTORCOACH INDUSTRY

LIQUIDSPRING:

**Improving Rides
and Maintenance
Across America**

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Tailored for shuttle buses, ambulances, RVs and military vehicles, LiquidSpring's proprietary Suspension System is a uniquely "smart" system, featuring an on-board processor that automatically and instantaneously adjusts the suspension's ride in response to terrain and driving conditions. The system keeps the ride soft and smooth over rough roads, then automatically stiffens on sharp turns, cornering, and emergency maneuvers.

The system enables drivers to adjust ride modes, alter suspension heights, and respond to system issues via an interactive driver interface.

In addition to the "smart" system's improvements in ride quality, handling, and control over traditional leaf, coil-over or air spring modifications, the LiquidSpring system uses an onboard CPU and microprocessor to constantly monitor and optimize the vehicle's ride based on speed, steering direction, braking level, and the motion at each wheel.

While this technology comes with a higher price point than leaf-spring and air-ride suspensions, the system proves its value over time by creating noticeable savings on maintenance costs, greatly increasing

driver satisfaction, and of course the safety, well-being, and enjoyment of your ridership. Additionally, unlike an air-ride suspension, the Smart Suspension has no air bags or lines which need to be monitored and requires no action from the operator for the system to perform. The suspension's fluid levels can be simply monitored through the reservoir on the central power module, but no refills or system replacements are typically required in a vehicle's lifetime. In areas with poorer road conditions, the LiquidSpring suspension may offer even more maintenance savings over other suspensions.

These distinct performance advantages and significant ride and handling improvements are an important factor in establishing safe and comfortable on-board environment for any effective transit agency.

New Mexico at NCRTD

As a rural New Mexico transit agency servicing an area of 10,079 square miles, including the counties of Los Alamos, Taos, Rio Arriba, and Santa Fe, eight native Pueblos and the Jicarilla Apache Nation, New Mexico's North Central Regional Transit District (NCRTD) understands the value of providing its riders with a smooth and comfortable commute.

After becoming a LiquidSpring customer in 2017, and self-financing the suspension system on one of its buses, NCRTD officials wanted hard data to help justify further upgrading the fleet.

In 2018, David Funck Sr., NCRTD fleet and facilities maintenance

David Funck, NCRTD fleet and facilities maintenance manager



manager, installed a LiquidSpring suspension system on one of NCRTD's new buses. From there, LiquidSpring and NCRTD embarked on a comparative study using the "SMART" suspension. Since late 2018, NCRTD has run a bus with the LiquidSpring system on the same route as a (mirrored routes) bus using the agency's previous suspension system.

The buses not equipped with LiquidSpring require more maintenance thus far, Funck said, due to many factors including something as simple as the required routine tightening of screws, nuts, and bolts. While it may only be a nominal cost per bolt, but worth noting because over time it adds up. Funck further stated that the LiquidSpring system has had no failures or required maintenance since the agency's trial began.

Funck also noted that some drivers who have used the suspension system have approached him about being "favorably" placed on a route using one of the LiquidSpring-equipped vehicles, citing the vehicle's smooth ride and enhanced maneuverability.

More than anything, Funck said, the suspension represents an enhancement for driver and passenger safety, comfort, and overall happiness at NCRTD.

South Dakota at Prairie Hills Transit

Operating across 16,500 square miles, with eight bus facilities, 45 vehicles, and nearly 60 employees, Prairie Hills Transit serves as the main public transportation provider for nine rural counties in South Dakota. Because of the scope of its service, ride quality is always of paramount concern for founder Barb Cline and the Prairie Hills Transit team.

In February 2018, Cline attended the Bus Summit at Stone Mountain in Atlanta where she met the President of LiquidSpring, Dean Bartolone. After visiting with Bartolone, Cline and her team decided to participate in a LiquidSpring Suspension System demonstration.

According to Cline, Prairie Hills Transit opted for aftermarket installations on three vehicles the agency had recently purchased, intending to purchase vehicles with pre-installed suspensions in the future.

Driving over terrain such as bridge abutments, bumps in parking lot entrances, or even potholes can cause jarring and discomfort for passengers who experience pain due to medical conditions. According to Cline, the system has made a significant difference for those passengers.



As Cline intended, Prairie Hills Transit's four most recent bus purchases (made in February 2020) included pre-installed suspensions by LiquidSpring. The agency now operates seven vehicles equipped with the "smart" suspension.

Cline noted that she often refers other South Dakota and North Dakota agencies to the system; spreading the word about the positive impact that system has had on agency drivers, passengers, and mechanics.



Hawaii at TheHandi-Van

TheHandi-Van, operated by Oahu Transit Services in Hawaii, knows all about rough roads. The busy island of Oahu features steep, winding paths which often give way to roads affected by the tropical climate and heavy rainfall. For some passengers, ride quality can mean the difference between utilizing paratransit services or not.

Since 2017, the agency has partnered with LiquidSpring to provide smoother rides for passengers and improved handling. Oahu Transit Services's paratransit operation operates 191 cutaway vehicles (largely servicing Honolulu County passengers who are unable to use fixed-route services). Today, 117 of the agency's vehicles feature the smart suspension system by LiquidSpring.

Soderholm Bus & Mobility is the top bus distributor in the Pacific Islands, working closely with TheBus and TheHandi-Van. In business for more than 35 years, Soderholm has sold more than 600 buses to Honolulu County.

According to superintendent of maintenance for Oahu Transit Services' paratransit operations, Spencer Louie, when the first batch of LiquidSpring-equipped vehicles rolled out to the Oahu ridership, the agency immediately received commendations from customers. The community had been advocating for smoother rides for some time, which made Oahu Transit Services officials confident in their selection.

Since 2019, Soderholm Bus & Mobility has installed more than 100 smart suspensions on TheHandi-Van vehicles, with more vehicles on the way.

R. Erik Soderholm, founder and vice president of Soderholm Bus & Mobility, said he is confident that the LiquidSpring Smart Suspension is the best system for paratransit riders with stability problems, back and hip issues, or other ailments. While the suspension represents a higher price point than its competitors, Soderholm said that ride quality and overall customer satisfaction more than makes up the difference. **BRM**