



RT - REVOLUTIONARY TECHNOLOGY

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VELOCITY
FIRE EQUIPMENT SALES

 **rosenbauer**

FREQUENTLY ASKED

WHY AN EV FIRE APPARATUS

The RT EV fire apparatus was a complete ground up reconsideration of a fire apparatus. Rosenbauer looked at today's requirements and what potential future requirements could be. The RT EV fire apparatus was designed taking many aspects into consideration including but not limited to the connectivity of the unit to crews and scene management, ergonomics for the health and safety of the crews operating it, the drivability with a shorter wheelbase and lower center of gravity, cost efficiency across the fleet with lower maintenance costs over the life of the apparatus and the overall goal to lower the carbon foot print of the unit

EV DRIVETRAIN

The EV drivetrain consists of (2) 50-Kw batteries, two electric motors (one on each axle) along with a range extender. The range extender is a BMW 6-cylinder diesel engine that will provide on-board charging for the batteries with its 200-Kw generator. It will also aid in operating the water pump during an extended fire operation. The range extender output is double the capacity of the batteries so it can produce more electricity than the batteries can use

BATTERIES

In the fire service today, most calls are for EMS. The driving distance on these calls in an urban environment is approximately 5-8 miles. Based on this information, The RT can make several back to back calls on full battery power before any recharging would be necessary. The most commonly asked questions with an electric fire truck are how far can I drive and how long can I pump water on a fire scene. Driving - The RT with the dual 50-Kw battery package can drive 62-miles at highway speed on battery power before the range extender would automatically start charging the batteries. The range extender has a 33-gallon diesel tank which extends the mileage to 310-miles Pumping - The RT with the dual 50-Kw battery package can pump for 1-hour before the range extender would automatically start charging the batteries. The range extender has a 33-gallon diesel tank which extends the pumping capacity an additional 4-hours.

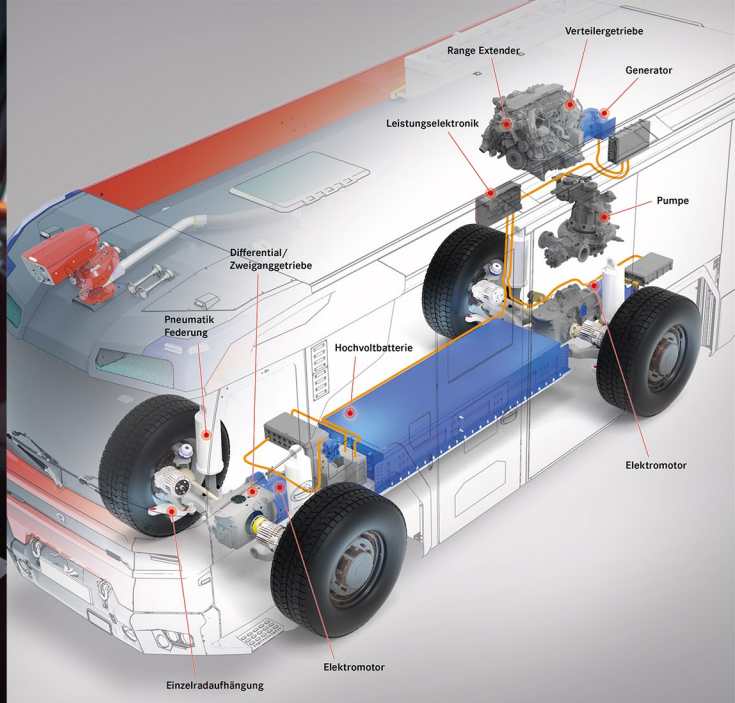
AGILITY

The wheelbase on the RT is approximately 18" - 24" shorter than a traditional fire truck. The shorter wheelbase allows for a much tighter turning radius. If the rear steer option is included it can be reduced by an additional 15%. The RT also includes many driving aids such as: EBS - electronic braking system which includes ABS and electronic stability control along, with regenerative braking. The regenerative braking uses the energy created in the braking process to aid in charging the batteries.

EPB - electronic park brake which includes a "hill holder" function allowing the unit to be safely stopped and started on a grade

ADAS - front collision warning, lane departure warning, turning assist and blind spot monitoring





VERSATILITY

The RT includes a variable ride height system providing 4-different ride heights based on the operational needs of the apparatus.

- On-scene ride height is 7". The 7" height allows for much easier access to and from the cab of the vehicle versus a traditional truck at 18" - 24". This also allows for easier access to the equipment on the truck providing less stress and strain on the crew while operating on-scene.
- Driving height is 10"
- Off-road height is 14" - The off-road height allows for travel into areas where a traditional truck cannot go especially with the all-wheel drive and front/rear independent suspensions.
- Fording (wading) mode is 19" - This mode allows the unit to travel through water approximately 24" deep. This isn't possible with most traditional trucks due to the location of the air intakes used by diesel engines.

ENVIRONMENTAL IMPACTS

Based on information gathered from a study looking at short haul delivery style trucks which are most similar to a fire apparatus with stops and starts, the EV unit produces approximately 50% less greenhouse and 67% less NOx than a traditional diesel truck.

ANNUAL GHG EMISSIONS

	Short tons	
	National Avg	CA Avg
EV	72.7	56.9
Diesel	122.4	122.4

65,000 miles/year

<https://afleet-web.es.anl.gov/afleet/>

ANNUAL NOX EMISSIONS

	Well-to-Wheels (lbs)	
	National Avg	CA Avg
EV	92.7	71.3
Diesel	261.8	261.8

The reduced GHG and NOx output also aids in the safety of the fighters. By reducing the amount of cancer causing chemicals in and around the apparatus, we are reducing the already high risk levels firefighters deal with on a day to day basis



Velocity Fire Equipment Sales is a division of Freightliner of Arizona and has been serving the fire community since 1997. We are headquartered at 9899 W. Roosevelt St. Tolleson AZ with three additional facilities located throughout Arizona.

PARTS

We keep over six million dollars in parts at our Tolleson location and fifteen million in parts throughout Arizona with most parts being available the same day. We also keep a manufacturer recommended inventory of parts wherein we identify most used or potentially long lead time parts and keep them in inventory to make sure we can provide parts in the timeliest manner.

SERVICE

Our Tolleson facility employs 80-technicians including our onsite paint and body shop. Our technicians can provide four-wheel alignments, run dyno test and are trained to work on multiple component brands including but not limited to Rosenbauer, Spartan, HME, Detroit, Cummins, Caterpillar, Allison, Meritor, Eaton, Waterous, Hale and Darley.

We have two dedicated EVT technicians. They manage all fire system repairs (pumps, plumbing, foam systems etc.) and fire chassis repairs. They can also provide onsite pump tests and ground ladder testing

Within the next six months we will have three technicians trained on EV drivetrains, two of which will also be trained specifically for the Rosenbauer RT EV drivetrain.

