



RESCUE BEACON

NEWSLETTER OF MONTEREY COUNTY SEARCH & RESCUE TEAM



SPECIAL EDITION

AN ELECTRIC LITTER THAT MAY BECOME
A GAME CHANGER IN THE SAR WORLD

APRIL 24, 2024



ABOUT US

The Monterey County Sheriff's Office Search and Rescue (SAR) Team was created in 1963. The volunteer unit was established in 1989 to assist the sheriff's office. Monterey county SAR team is a nonprofit organization that supports the sheriff's office by providing trained personnel and equipment to aid in the recovery of sick, injured, lost or deceased persons in all areas of the County of Monterey. The Monterey SAR team is a full member of the Mountain Rescue Association as a Type I elite rescue unit. The Monterey SAR Team is entirely self supporting, and receives no financial assistance except occasional grants and donations.

AN ELECTRIC LITTER THAT MAY BECOME A GAME CHANGER IN THE SAR WORLD

The Monterey County Search and Rescue Team often deals with steep slopes while extracting patients from the rugged backcountry in areas such as the Los Padres National Forest, which includes Ventana Wilderness and Big Sur. Typically, a "mule" team of about six people are needed to move through a terrain that is characterized by steep-sided ridges and V-shaped valleys with a loaded litter. One day, Wesley Hayward (Wes), a SAR team and board member, had a genius idea: why not make the litter a motorized electric litter, like our E-mountain bikes?

It did not take long before the idea went from being a concept to reality. Monterey SAR team participated in the 2024 Sea Otter Classic at Laguna Seca in April, supporting the Sheriff's Office by patrolling and providing PSAR (preventative SAR). Toby from Bimotal, a technology company developing world-class electric powertrains for small electric vehicles, stopped by our booth, and asked if motors on our bikes would be useful for SAR. Our team already owns and operates E-bikes, so we did not need motors for the bikes.

However, Wes who had been following Bimotal's product since its launch two years ago, showed Toby our litter/wheel and told him how he had been trying to get funding to motorize it for quite some time. He asked Toby if he thought his product could work on our litter. Toby curiously examined our wheel took some pictures and said he thought it was possible. About an hour later Toby came back with his chief engineer to examine our wheel more closely. Toby asked if they could keep our wheel overnight and see what they could do. We gave our wheel to Toby and wondered what he might come up with as our application was very different than the 20 mph e-bike conversion system Bimotal markets. *(continued on next page)*

SUPPORT US

Give a little, help a lot
So That Others May Live

The Monterey County SAR Team is a nonprofit, charitable organization that receives a modest allowance each year from the Sheriff's Office to help offset the cost of equipment, uniforms, and training. But the great majority of our operational budget is funded directly by the volunteer unit from donations and fundraising efforts. We have a substantial and ongoing need to replace equipment and to seek professional training in the many disciplines needed to be a proficient SAR unit. You can support us by donating online at MCOSAR.COM.

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Electric Litter Continued..

The next day, Toby's team brought back our wheel fully powered with several custom parts and upgrades including a larger brake rotor and hydraulic brake system. They wrote custom software for our application including limiting the wheel speed to 5mph. We put the wheel back on the litter and did some burnouts on the pavement.



It was clear that the motor system had plenty of power, but more work needed to be done so we took the litter and wheel over to the Bimotal tent and he and his Engineer feverishly went to work.

After some impressive on the fly modifications, it was time to test our newly powered wheel. We put Toby in the litter and found a steep hill for testing. Toby's system had plenty of power to haul his 220lb body up the steep grade. The Bimotal system made it possible for two rescuers to haul a patient nearly effortlessly to the top of the hill. There were still some refinements that were made after, but Toby and Bimotal hit this one out of the park, overnight re-engineering an e-bike product to work for a rescue application!

The combined weight of the motor and the battery pack is six pounds, which is considered quite lightweight. The motor is estimated to be able to climb 3000 feet on 15% grade with a 250lb load. This should cover enough ground for the rescues our team does.

An E-litter would certainly be a game changer for our team if not for the industry. Hauling a patient in a litter is very taxing on rescuers and requires a lot of manpower. With an E-litter, we will be able to safely do extractions more efficiently. Currently, this system is on trial and we will be evaluating it over time.