

## Steve Heckeroth's Ag Bio.

On the first Earth Day in 1970 Steve Heckeroth dedicated his life to finding alternatives to burning non-renewable resources because of the negative effects on future generations. With a Bachelor of Architecture from Arizona State University he pioneered the design of zero energy solar homes. He then turned his attention to transportation and encouraged by the California Air Resources Board (CARB) Zero emission mandate of 1990 he started building electric vehicles of all kinds and founded MendoMotive and Electrac in 1992. He used Porsche Spyder Replica Kits to build electric sports cars with a range of over 100 miles. Understanding that the weight of batteries was the biggest problem for electric cars, Heckeroth switched his attention to tractors because they need weight for traction. He also found that electric motors have the instant torque at low speed making tractors ideal electric vehicles. Heckeroth made several tractors for individuals and then received a commission to build an experimental electric tractor for Ford/New Holland in 1995. In 1996 he was commissioned by a Japanese company (EFRIG) to build an electric tractor that could be used to explode land mines left behind after wars. Three scratch built prototypes were built with many new innovations like steer by wire zero radius steering, Remote control operation, the use of wheel motors, on board inverter/chargers for mobile AC power, motors mounted on implements to replace dangerous PTO's and the first ever use of linear actuators on a full function electric tractor.

Between 2000 and 2007 Heckeroth worked as the Director of Building Integrated Photovoltaics for the largest thin-film solar manufacture in the world designing PV roofing products. After a hostile take-over and closure of the solar company by Chevron he went back to designing and building electric tractors. In 2012 Heckeroth founded Solectrac LLC to take small farm electric tractors into commercial production. In 2013 Solectrac, with Heckeroth serving as designer and fabricator received a \$500,000 grant from the US Indian Science and Technology Fund to develop four all electric tractor prototypes. In 2016, Solectrac received a \$250,000 National Science Foundation (NSF) Phase 1 grant to develop components for commercial production. With Heckeroth serving as the Principle Investigator the first phase was successfully completed. Unfortunately, the new administration cut the NSF budget and \$1.5M second phase was not awarded. Solectrac is currently seeking funding to ramp up production of clean and quiet, renewably charged replacements for noisy polluting diesel tractors.