SOUTHWEST RESEARCH INSTITUTE®

Urban Concept Vehicle

COMPACT BUILD

LASTING POWER

ECO-MINDED

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Shell Eco-Marathon

Southwest Research Institute® (SwRI®) is a regular partner with Shell Eco-marathon. Hosted by Shell, this annual event gives a demonstration platform to STEM students who want to challenge their skills by creating an energy-efficient vehicle and testing it against other teams, for the sole purpose of aiding STEM development.

In the spirit of innovation, SwRI enabled the Shell Urban Concept Vehicle to be autonomously navigable, promoting the event and its advancements toward the future of transportation.

Urban Concept Vehicle Specifications

Vehicle Type: 2-door, 2-passenger, rear-wheel drive (RWD) microcar

Body Material: Twill-woven and unidirectional carbon fiber prepreg in epoxy resin matrix; resin-impregnated paper honeycomb core

Build: Compact, easily maneuverable in urban environments

Battery: Rechargeable; full charge in less than 2.5 hours

Design: Sustainability based on resource efficiency

Drivetrain	Performance	Electrical System	Dimensions	Suspension
Throttle Drive-by-wire electric	**Max. Speed, FWD** 40 kph	**Drive Train Battery Module** 48 V, 40 Ah, LiFePO4	**Wheelbase** 1796 mm	**Wheels/Tires** Custom, 16 x 33, three-piece center lock wheels, hybrid ceramic bearings
Drive Modes Normal, Eco 1, Eco 2	**Max. Speed, REV** 10 kph	**Electronics Battery Module** 12.8 V, 138 Ah, LiFePO4	**Track, FR/RR** 1150 mm	**Brakes** 4-wheel, dual-circuit, hydraulic disk, 225 mm rotors
Motor Axial flux PMAC	**Acceleration 0–40 kph** 12 s	**Computing** Nvidia AGX 30 W power, 512 GPU cores	**Weight** 235 kg (not including ACS sensors)	**Steering** Rack-and-pinion, 2.125 turns lock-to-lock
Transmission 6:1 belt reduction, direct drive (left wheel)	**Energy Usage** 60 km/kWh (est.)	**Power Distribution** Infinitybox Powercell PDM system	**Length** 2850 mm	**Turning Circle Radius** 4.3 m curb-to-curb
Max. Power Output 4000 W @ 2200 rpm		**Wheel Speed Sensor** Gear position sensor; 25 pulses per wheel revolution; mounted on each wheel	**Width (max. w/o mirrors)** 1260 mm	
Max. Horsepower 5.36 hp @ 2200 rpm		**Steering Actuator** DC Electronics EPAS Ultra, modified	**Height** 1224 mm	
Max. Torque 80 Nm @ 0-2000 rpm @ axle		**Engine Control** MotoHawk ECM-5554-112-0904 3 CAN 2.0B 1 RS 485	**Min. Ground Clearance** 100 mm	

We welcome your inquiries. For more information, please contact:

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