

# RAMBLER

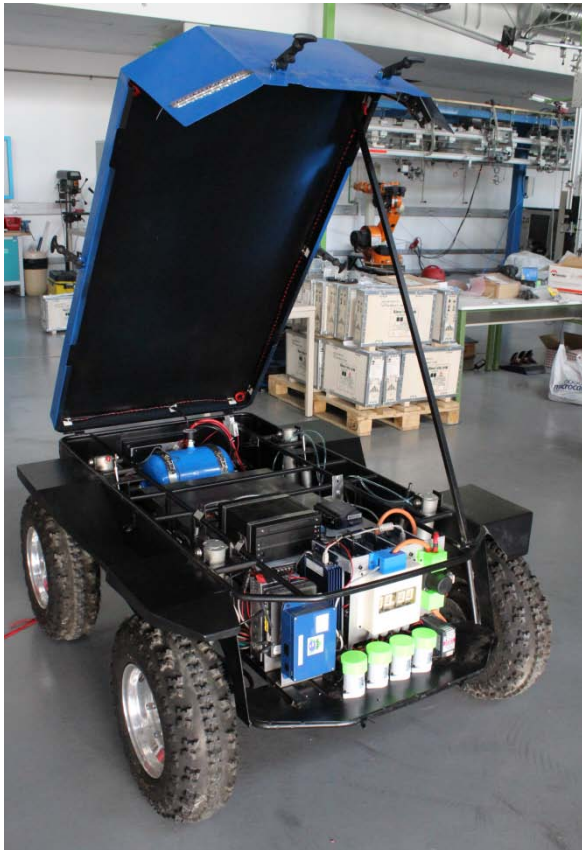
The RAMBLER mobile robot is the natural evolution of our CUADRIGA robot. Is the head of a group of robots in the frame of RAMBLER project. RAMBLER is a 4-motor-wheel skid-steer mobile robot, with active suspension.



## RAMBLER MOBILE ROBOT

### General characteristics:

- Dimensions: 1.6m length, 1.2m width, 0.66m height.
- Vehicle weight: 370 kg.
- Payload: >320 kg.
- Distance between the front and rear wheel contact points: From 0.95 to 1 m.
- Wheels: pneumatic tires of 50 cm diameter.
- Suspension: Active / Semiactive suspension system. Pneumatic.
- Distance between left and right wheel contact points is  $L = 1.05\text{m}$ .
- Maximum linear speed: 80km/h, 22.2m/s.
  
- Battery: (LiFePO<sub>4</sub>); Range 44,8<V<59,2; 160 Ah (4 cells x 40Ah); Configuration:16S4P. Temperature: 0°C < t < 70°C. Operativo Control: BMS. contactor 600A/80eVdc SPST-NO (Normally Open). Charge Control: External, 59,2V/80A, 4,7 kW.
  
- Motors: Brushless DC Electric Motor with Outrunner Configuration. Range:36–72 Vdc, 500–3000 W. Nominal speed:300–1000 rpm.



**RAMBLER** used 4 in-wheel brushless motors. Each motors are controlled by an embedded board that integrates a microcontroller ( $\mu\text{C}$ ) and an independent H-bridge power stages.

Power is supplied by a 60V battery pack, which is composed of 64 ( $\text{LiFePO}_4$ ) cells connected in a 16S4P series-parallel configuration.

Data acquisition and high level motion control are performed by a compact onboard computer using a LabVIEW program.

This computer interfaces with the embedded motor controller through four serial links.

Manual operation is possible through a wireless joystick.

The **RAMBLER's** sensorial system also includes a three-axis inertial measurement unit, a 3D thirty meter range laser finder, an ethernet camera with pan&tilt and, a RTK GPS receiver.

Communication with a teleoperation station is done using a wireless router (2.4Ghz), bluetooth and zigbee radios, 3G and 902 - 928 Mhz radio link.



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