Automated tire monitoring and inflation system comprises a housing (1), an air injection unit, a tire inflation valve (15), an air duct (5), and a counterweight (8); the housing (1) consists, in turn, of a base (6) and a cover (7). The base (6) is attached to the wheel mounting structure. The system also includes an interactive control unit (11) and a pressure sensor (13). The air supply unit is designed according to a diaphragm compressor configuration (14), and the tire inflation valve (15) is electrically controlled. The rotation axis (4) of the wheel coincides with the rotation axis of the counterweight (8), which is designed to generate electrical energy using permanent magnets (16) and inductance coils (17) with ferromagnetic cores. Inductance coils (17) with ferromagnetic cores are mounted on the outer edge of the counterweight (8). The permanent magnets (16) are located at equal angular intervals from one another and are mounted in the annular magnetic circuit (18) at equal distances from the center of the counterweight mounting (8).