The invention refers to the field of power engineering, in particular to the technologies and devices for fuel burning under the action of electric field.

The process consists in mixing the fuel and the oxidant, firing and flame of the mixture, wherein, according to the invention, burning of the mixture is realized under the action of a rotary electric field transversal to the flame and flow direction of the fuel jet with the oxidant, the opening angle and the speed of which is controlled by controlling the intensity of the field, and the decrease intensity of heat emission by the flame – by controlling the field rotational speed.

The device for realization of the process for fuel burning consists at least of a burner with earthed nozzle, provided with a system of electrodes, connected to a high voltage source and installed into the furnace embrasure, wherein, according to the invention, the electrode system is mounted into the furnace in the burner flame expansion zone and is made in the form of two metallic rods, installed in parallel and diametrically opposite about the longitudinal axis of the burner nozzle with the possibility of rotating around the axis, kinetically joined with the electric motor with adjustable rotations and connected by means of a mobile system of shifting to the negative output of the high voltage source – one of the rods and to the positive output – the other rod, and the source is provided with an electrode system supply voltage regulator.

The result consists in the possibility of adjusting the geometrical, kinetic and thermal responses of the flame.