Combined wind photovoltaic power system comprises a support frame with a circular base, a photovoltaic cells assembly located at the top of the system, and a vertical-axis wind turbine located at the bottom of the system. The photovoltaic cells assembly is designed as a three-dimensional structure, the upper part of which is shaped like a hemisphere with a hemispherical surface containing photovoltaic cells assembly, wherein the hemispherical surface is formed by a spherical belt of the hemisphere, formed from photovoltaic cells assembly, above which a cover in the form of a spherical segment containing photovoltaic cells assembly is placed, and below which the spherical belt is extended by a skirt designed as the lateral surface of a truncated cone containing photovoltaic cells. The photovoltaic cells assembly is mounted so that it can rotate about a common axis, on which a vertical-axis wind turbine is also mounted, and for forced cooling of the photovoltaic cells assembly, the power system additionally includes an electric drive with a thermal relay, connected to the photovoltaic cell assembly and designed to automatically rotate this assembly when the set operating temperature of the photovoltaic cells is exceeded.