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"GROWIAN II" FOR MORE WIND POWER
AND
FIRST EUROPEAN SOLAR FARM INAUGURATED

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**Abstract**

A wind power installation with a power of five megawatts to be used in the Federal Republic of Germany is described. The first European solar farm has been inaugurated in Madrid, and its operation is discussed.

**Key Words**

- Wind energy
- Solar farm
- Germany
- Madrid
- Operation
"Growian II" for More Wind Power

A wind power installation with a possible power of five megawatts is planned for the Federal Republic. The aeronautics and astronautics company MBB on behalf of the BMFT is developing a single-blade installation with a height of 194 meters. Engineers believe, however, that even larger plants could be built.

The "Growian II" generator will have a rotor diameter of 145 meters. Its main characteristic is the asymmetrical single-blade rotor of glass fiber reinforced plastic. Compared to multi-blade systems, this enables a more simple rotor head since the attack forces are smaller. The tolerance ranges in production can be larger since symmetry is not necessary. The wind power rotor was developed on the basis of findings with glass fiber reinforced helicopter rotors.

The planned installation is designed to have a power of five megawatts at a wind speed between 11.3 m/sec (wind force 6) and 20 m/sec (wind force 8 to 9). The blade tips of the rotor thus reach speeds of more than 450 kilometers per hour. Including the 120 meter high reinforced concrete tower, the plant will weight 1,250 tons. A model installation on a scale of 1:3 will be built in Bremerhaven in Spring 1981.

Model Drawing of "Growian II". The asymmetrical single-blade rotor with a counter weight is unusual (photo: MBB, Munich).

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First European Solar Farm Inaugurated

The first European solar farm has been inaugurated in the vicinity of Madrid. Experiments for the use of solar power for process heat production will be set up at the Getafe test installation which was built jointly by the Spanish state enterprise Auxini and the German company M.A.N. The solar farm consists of a field of collectors of three different types with a total area of 580 square meters.

Temperatures between 150 and 400°C are reached using concave mirrors at an efficiency of up to 50%. Studies are also underway on the solar farm to determine how thermal energy can be converted into an electric current using a new type of water vapor motor. The capacity of the plant at its present state is 250 kW thermal and 36 kW electric power. The collectors are distinguished primarily by tracking. They follow either the azimuth of the sun, its elevation or through two axes thereby. Direct solar irradiation is concentrated using parabolic reflectors on an absorber pipe flooded with a thermal oil. This oil generates steam at 300°C in a heat exchanger. Companies involved estimate that the use of solar process heat in this average temperature range could be competitive within 5 to 10 years; however, economical generation of electric energy from solar farms could not be expected before 10 to 20 years.

Three Different Solar Collectors are Being Tested on the First European Solar Farm in Spain. The test installation in the vicinity of Madrid is used to generate industrial process heat and electric power by solar energy.

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