

STATEMENT IV

Mark Wüst, boat builder and skipper «sun21»

The «sun21»

The «sun21» is a catamaran with two hulks, which are fourteen meters in length and which reach a maximum breadth of one meter forty. The breadth of the whole catamaran is 6.6 meters. According to the weight of the cargo, the boat has a load draft between 80 and 85 meters. Both hulks are held together by four rectangular aluminium bearers. The construction consists of pipe frames upon which the plywood deck floor rests.

In each hulk, there is a direct current motor, each with a power of 8 kW (16 kW motor power in total). The system voltage of both motors equals 48 Volt. The latter dispose of a belt gearing with a ratio of 1 to 4. This results in a low rotation speed of the propeller, 800 rounds per minute being the maximum number of rotations. The slower the carbon fibre propeller rotates, the higher the efficiency. There are 48 two-volt-lead-gel-batteries which are divided into two groups, each group possessing a storage capacity of 500 ampere hours. Each hulk is equipped with its own battery and motor, each hulk is autonomous and the ship can still run when one of the motors has to be repaired, for instance. 48 photovoltaic glass modules with mono-crystalline cells span the deck. Every module has a power of 210 Wp; the total power of the solar generator is thus 10,080 W respectively 10 kW. The entire rooftop surface of the photovoltaic installation is 65 square meters. Besides the 48-volt-network for the boat drive, the boat also has a board network of 12 volts. This provides electricity for comfort (interior lighting, coffee machine) and the navigating instruments.

We hope to reach a speed of 4 till 5 knots, preferably at a constant rate day and night. We will have to find out how to move most efficiently. We still have to clarify whether we want to maintain the same speed all the time or whether we better drive more slowly when the batteries are operating.

It shall be proven that solar energy is so reliable that one can calculate the journey in advance, like with a normal motor yacht.