CLAIMS

1. Method for operating an internal combustion engine of a watercraft, in particular on inland waters, in which

- in an electrolysis unit (11) for the production of hydrogen, water is split into hydrogen and oxygen,

- a carbon dioxide sorption unit (12) extracts carbon dioxide from the ambient air,

- the hydrogen and the carbon dioxide are fed to a methanol synthesis unit (34) for the production of methanol, and are synthesised therein to methanol,

- a photovoltaic unit (24) absorbs solar energy and converts the latter into electrical energy, wherein

the electrolysis unit (11), the carbon dioxide sorption unit (12) and the methanol synthesis unit (34) are powered by the electrical energy generated in the photovoltaic unit (24), wherein the methanol produced is transported by means of a distributor system to at least one tank of the watercraft, and is ~~fed~~supplied from the tank as required to the internal combustion engine, and therein is combusted for the generation of mechanical energy.

2. Method according to Claim 1,

characterised in that,

the internal combustion engine is part of a power unit (120) of a hybrid electrically powered watercraft, wherein in the power unit (120), the mechanical energy of the internal combustion engine is converted into

electrical drive energy for the propulsion of the watercraft.

3. Method according to Claim 1 or 2,

characterised in that,

the water is desalinated in a seawater desalination unit (27), and is subsequently fed to the electrolysis unit (11), wherein the seawater desalination unit (27) is operated mainly, in particular completely, by the electrical energy generated in the photovoltaic unit (24).

4~~7~~. Method according to one of the preceding claims,

characterised in that,

the internal combustion engine is a reciprocating piston engine (121), which is operated with a compression ratio of at least 14:1, in particular at least 16:1, in particular at least 18:1, in particular at least 20:1.

5. Method according to one of the Claims 1 to 3,

characterised in that,

part of the methanol is split in a splitting unit into a synthesis gas comprising or consisting of hydrogen and carbon monoxide, and the synthesis gas is fed alone, or together with the methanol, into the reciprocating piston engine, wherein the splitting unit is arranged in the watercraft, in particular between a tank and the reciprocating piston engine.

6. Utilisation of methanol as fuel in an internal

combustion engine, in particular a power unit (120), of a watercraft, in particular a hybrid-electrically driven watercraft, wherein the methanol is produced in a method ~~according to one of the preceding claims.~~, in which

- in an electrolysis unit (11) for the production of hydrogen, water is split into hydrogen and oxygen,

- a carbon dioxide sorption unit (12) extracts carbon dioxide from the ambient air,

- the hydrogen and the carbon dioxide are fed to a methanol synthesis unit (34) for the production of methanol, and are synthesised therein to methanol,

- a photovoltaic unit (24) absorbs solar energy and converts the latter into electrical energy, wherein

the electrolysis unit (11), the carbon dioxide sorption unit (12) and the methanol synthesis unit (34) are powered by the electrical energy generated in the photovoltaic unit (24).

7. Utilisation according to Claim 6,

characterised in that,

the methanol produced is transported by means of a distributor system to at least one tank of the watercraft, and is fed from the tank as required to the internal combustion engine, and therein is combusted for the generation of mechanical energy.

8. Utilisation according to Claim 6 or 7,

characterised in that,

the water is desalinated in a seawater desalination unit (27), and is subsequently fed to the electrolysis unit (11), wherein the seawater desalination unit (27) is operated mainly, in particular completely, by the electrical energy generated in the photovoltaic unit (24).

~~8. Watercraft, in particular a hybrid-electrically driven watercraft, with a drive system, wherein the drive system has a power unit (120), at least one drive battery, and at least one electric motor, which draws electrical energy from the drive battery, wherein the power unit comprises a two-cylinder reciprocating piston engine (121) with two cylinder-piston units (122, 123) in a tandem arrangement, and at least one generator (130) for the generation of electrical energy, wherein each cylinder-piston unit (122, 123) has a crankshaft (127), and the crankshafts (127) of both cylinder-piston units (122, 123) are mechanically coupled to one another, and wherein at least one crankshaft (127), in particular both crankshafts (127), in each case is/are mechanically connected to the at least one generator (130).~~

~~9. Watercraft according to Claim 8,~~

~~characterised in that,~~

~~the electric motor operates, via a gearbox or directly, on a drive shaft of a propeller.~~

~~10. Watercraft according to Claim 8 or 9,~~

~~characterised by,~~

~~a tank fluidically connected to the two-cylinder reciprocating piston engine (121), and at least partially, preferably completely, filled with regeneratively-produced methanol.~~

~~11. Method of operating a watercraft according to one of the Claims 8 to 10, wherein the two-cylinder reciprocating piston engine (121) is operated in accordance with the method of one of the Claims 1 to 4.~~